

CENTER FOR GLOBAL &
STRATEGIC STUDIES, ISLAMABAD



INTERNATIONAL CONFERENCE
REPORT

WATER
FUTURE WAR
AND PEACE IN SUBCONTINENT

“CGSS is a Non-Profit Institution with a mission to help improve policy and decision-making through analysis and research”

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International Conference Report

“WATER: FUTURE WAR AND PEACE IN SUBCONTINENT”



**Organized by
Center for Global & Strategic Studies, Islamabad at
Hotel Margala, Islamabad on
10th December 2018**

Participants

The Conference was attended by almost 300 participants including water experts, climatologists, government representatives and students from across the country including the individuals from public and private entities.

Host **Lieutenant General Muhammad Zahir Ul Islam, HI(M), (Retd) - Chairman, Center for Global & Strategic Studies (CGSS)**

Guest Speakers His Excellency Mohammad Farogh Naseem – Federal Minister for Law and Justice, Government of Pakistan

His Excellency Mr. Sherali Jononov – Ambassador of the Republic of Tajikistan to the Islamic Republic of Pakistan

Admiral (Dr.) Jayanath Colombage, RSP, VSV, USP, (Retd) – Former Commander of Sri Lankan Navy

Lieutenant General Muzammil Hussain, HI (M), (Retd) – Chairman Water and Power Development Authority (WAPDA)

Vice Admiral Ahmed Tasnim, HI (M), SJ & Bar, SBt, (Retd) – Former Chairman of Karachi Port Trust

Mr. Imtiaz Ali Qazilbash – Former Chairman, Planning Commission Hydro Power and Alternative Energy Working Group

Dr. Azhar Ahmed – Head of Department, Department of Humanities and Social Sciences, Bahria University, Islamabad

Dr. Hassan Abbas – Chairman Forte, Integrated Water Resources Management

Prof. Dr. Audil Rashid – Professor, Department of Environmental Sciences, Pir Mehr Ali Shah, Arid Agriculture University, Rawalpindi

Introduction of Speakers

Lieutenant General Muhammad Zahir ul Islam, HI (M), (Retd) – Chairman



Center for Global and Strategic Studies

Lieutenant General Muhammad Zahir Ul Islam, HI (M), (Retd), is the former Director General of the Inter-Services Intelligence (ISI). He has also served at Commander 5 Corps, Karachi. Presently he is the Chairman of Center for Global & Strategic Studies, Islamabad.

Mr. Mohammad Farogh Naseem – Federal Minister for Law and Justice,



Government of Pakistan

Mr. Mohammad Farogh Naseem is a politician and lawyer who is the current Federal Minister of Law and Justice, in office since 20 August, 2018. He is also member of the Senate of Pakistan. He has previously served as Advocate General of Sindh. He has completed his graduation in Bachelor of Laws (LLB) from the University of Wales, Master of Laws (LLM) from the London School of Economics and Doctor of Philosophy (PhD) in comparative constitutional law from the University of London. He was elected to the Senate of Pakistan from Sindh against technocrat's seat on March 12, 2012. In March 2018, he was re-elected on general seat from Sindh.

His Excellency Mr. Sherali Jononov – Former Ambassador of the Republic of Tajikistan



His Excellency Mr. Sherali Jononov – Ambassador of the Republic of Tajikistan to the Islamic Republic of Pakistan is a graduate of law from Tajikistan National University. He appointed as Ambassador in the Islamic Republic of Pakistan in the year 2013, before his appointment as ambassador to Pakistan he served on

various key positions as, Ambassador of Tajikistan in Austria, head of legal department of MFA and at the same time national coordinator of Tajikistan for Shanghai Cooperation Organization.

Admiral (Dr.) Jayanath Colombage, RSVP, VSV, USP, (Retd) – Former Commander of Sri Lankan Navy



Admiral (Dr.) Jayanath Colombage is a former chief of Sri Lanka Navy, who retired after an active service of 37 years as a four-star Admiral. He is a highly decorated officer for gallantry and for distinguished service. He served the Sri Lankan Navy during the entire spectrum of war with the LTTE terrorism and commanded various ships and four naval areas. He is a graduate of Defence Services Staff College in India and Royal College of Defence Studies, UK. He holds a PhD from General Sir John Kotelawala Defence University (Sri Lanka). His doctoral thesis; ‘Asymmetric Warfare at sea. He was the former Chairman of Sri Lanka Shipping Corporation and an adviser to the President of Sri Lanka on maritime affairs. He is a Fellow of Nautical Institute, London UK. Admiral Colombage is currently the Director of the Centre for Indo- Lanka Initiatives of the Pathfinder Foundation. He is also a member of the Advisory council of newly formed think tank under the Ministry of Defence, ‘Institute of National Security Studies Sri Lanka’. He is a Guest Professor at Sichuan University in China.

Lieutenant General Muzammil Hussain, HI (M), (Retd) – Chairman Water and Power Development Authority (WAPDA)



Lieutenant General Muzammil Hussain has a vast military experience. He held key role positions including Inspector-General Training and Evaluation (IGT&E). He was appointed as Corps Commander Gujranwala in 2012. Currently, he is

serving as Chairman of Water and Power Development Authority (WAPDA) from 2016.

Vice Admiral Ahmed Tasnim, HI (M), SJ & Bar, SBt, (Retd) – Former Chairman of Karachi Port Trust



Vice Admiral Ahmad Tasnim HI (M), SBt, is a retired three-star rank admiral in the Pakistan Navy who is notable for his command of the Hangor, a submarine that sank the INS Khukri on 8 December 1971 during the third war with India, off the Diu, Gujarat in India. He was appointed Chairman of the Karachi Port Trust and the Pakistan National Shipping Corporation while serving in the Navy until retiring from his service in 1994. Now is an expert in the field of water resources and water security.

Dr. Azhar Ahmad – Head of Department, Department of Humanities & Social Sciences, Bahria University, Islamabad

Dr. Azhar Ahmad, is Presently Head of Department, Department of Humanities & Social Sciences, at Bahria University, Islamabad. Additionally he has association with;

- i. Distinguished Researcher at Asia-Africa Development & Exchange Society of China, Beijing
- ii. Senior Research Associate at Institute of Policy Studies, Islamabad
- iii. Associate Member of Corbett Centre for Maritime Policy Studies, King's College, London
- iv. Member Board of Studies of Pakistan Navy War College, Lahore



Dr. Hassan Abbas – Chairman Forte, Integrated Water Resources Management



Dr. Hassan Abbas is a PH.D and currently chairman forte, integrated water resources management and possesses extensive research and industrial experience in water resources evaluation, hydrological field investigations, climate change, environmental instrumentation, civil engineering works, GIS applications, ground water modeling, environment modeling, data analysis through massive databases and project management. Dr. Hassan Abbas regions of worldwide work experience includes the Great Lakes Basin, USA/Canada, Murray Darling Basin, Australia, Hunter River Valley, Australia, Indus River Basin and Makran Coastal Belt, Pakistan, Euphrates-Tigris Basin, Iraq, Riyadh Central Province, Saudi Arabia and, Doha, Qatar.

Professor Dr. Audil Rashid – Professor, Department of Environmental Sciences, Pir Mehr Ali Shah, Arid Agriculture University, Rawalpindi



Dr. Audil Rashid is a professor at Department of Environmental Sciences, Pir Mehr Ali Shah – Arid Agriculture University, Rawalpindi. Professor Audil is a PH.D in Environmental Biology from Quaid e Azam University, Islamabad and post-doc peking university, China.

Mr. Imtiaz Ali Qazilbash – Former Chairman, Planning Commission Hydro Power and Alternative Energy Working Group



Mr. Imtiaz Ali Qazilbash is a Former Chairman, Planning Commission Hydro Power and Alternative Energy Working Group. Mr. Imtiaz is a Pakistani engineering company executive, consultant and a recipient award for outstanding services to Pakistan in engineering and economic development, Association Pakistan Scientists and Engineers North America, Houston in 2000.

Opening Remarks

Lieutenant General Muhammad Zahir ul Islam, HI (M), (Retd) – Chairman Center for Global and Strategic Studies, Islamabad

Lieutenant General Muhammad Zahir ul Islam, HI (M), (Retd) – Chairman Center for Global and Strategic Studies (CGSS), welcomed the esteemed guests to the conference titled “Water: Future War and Peace in the Subcontinent”. In his introductory remarks, he said:



It is my proud privilege to welcome you all on behalf of Center for Global and Strategic Studies (CGSS). My special thanks to the worthy members of the panel who would talk on this important subject of “Water: Future War and Peace in the Subcontinent”. I hope that today’s conference would be an informative session for all of us.

Ladies and Gentlemen,

Many believe that, if there is ever to be a Third World War, it will be fought over water, with South Asia serving as the flashpoint. Water issue is gradually becoming the prime focus between the interstate relations. Increasing water shortage has made South Asia a water-stressed region. Since their inception in 1947, India and Pakistan are locked in water controversy. Both the countries are in a continuous debate over water sharing due to uneven distribution of rivers at the time of partition leading to water blockade by India hence, causing a severe damage to Pakistani agriculture. Division of the subcontinent blocked the water from reaching the irrigated land of Punjab. With the growing population, division of water resources are compounded in industrial activity, agricultural and domestic uses, melting of glaciers and environmental degradation. This increasing need has made use of rivers as a bone of contention between countries. South Asia has four major rivers basins – Brahmaputra, Indus, Ganges and the Meghna which provides livelihood to millions of people. Some of the important water disputes in South Asia are between 'India-Pakistan'. 'India-Bangladesh'. 'India-Nepal' and 'India-China. The region houses a quarter of the world’s population and has less than 5 percent of the global annual renewable water resources. Low water availability per person and high

frequency of extreme weather events, including severe droughts, further increase the vulnerability of the area.

By 2040, the global demand for freshwater resources will exceed availability according to The National Intelligence Council's report on Global Water Security (2012). The report acknowledges that large-scale water wars are unlikely to happen within the next ten years, but water-related challenges such as shortages and sanitation are already increasing smaller-scale conflict and instability within and across national borders.

The availability of drinking water per capita is inadequate and shrinking worldwide. The causes, related to both quantity and quality, are many and varied; they include local scarcity, limited availability and population pressures, but also human activities of mass consumption, misuse, environmental degradation and water pollution, as well as climate change. Water is a strategic natural resource, and scarcity of potable water is a frequent contributor to political conflicts throughout the world.



When we talk about the impact of water on Pakistan's security, we know that Pakistan is a lower riparian state and there are international conventions protecting the rights of such states. We have a large capacity of water preservation. However, due to poor management on the part of Pakistan we have turned our opportunity into a threat. For Pakistan, water is a critical issue, being essentially an agrarian economy. Unfortunately for us, most of

our water resources emanate from hostile territory i.e. India, who is now bent upon using this natural resource as a strategic weapon. The rhetoric from India has increased during Mr. Modi's government with threats to turn Pakistan into a desert and other similar statements. You are well aware of the weaknesses in the Indus basin water treaty and how it has failed to protect Pakistan's interest, partly due to our mishandling and failure to react in time, but mainly due to the aggressive policy of the Indians.

The vision of the Quaid well appreciated by us all, when he called Kashmir the jugular vein of Pakistan, meaning the flow of water from Kashmir. He could foresee the threat which the country could face due to the Indian mentality. This is a major reason why the Kashmir dispute need resolution.

Some international think tanks had predicted that the 21st century will see water wars in the world. This assessment could well materialize in our region, with the added risk that both the concerned countries are nuclear armed and the snow melt in the Himalayas in increasing at a speed faster than we thought. The international community needs to recognize this danger and help in resolving the Kashmir issue on an urgent basis.

In the end, I would say, if we can manage properly, water serves as a tool for sustainable development, peace building and preventive diplomacy. If not, there are real dangers ahead. The slow transfer of water management from scientific domain to security domain is a risk that should be tackled wisely and timely. The world should utilize and promote 'soft power' not 'harsh power' to avert the possibilities of water wars.

To avoid water wars, we have "to manage our water resources better, learning from past experience, adopting best practices and facing up to the mounting challenges that are coming our way, not to dismiss 'water wars' issue as a myth".

And with that, I will hand you over to the experts. We are sure that we will all have a great learning experience and we should be able to come up with some recommendations as a result of today's discourse that would help our water managers to formulate policies for future water management.

Speaker 1

His Excellency Mohammad Farogh Naseem – Federal Minister for Law and Justice, Government of Pakistan.



His Excellency Mohammad Farogh Naseem – Federal Minister for Law and Justice, Government of Pakistan presented speech on the topic “Water Sharing: A critical Evaluation of the Indus Water Treaty (IWT). His speech comprised of following remarks:

Lieutenant General Zahir, Worthy Speakers and Ladies and Gentlemen, first of all I would like to extend my gratitude to Center for Global and Strategic Studies team for wonderful work. The issue that the conference intends to address is of course a fundamental issue and not only for Pakistan but globally. Water disputes have been there since times immemorial and we all know about them but in the context of Pakistan it has its own significance. Pakistan and India shares and intrinsic historical relationship, they share a common border, they share culture, traditions, languages, ethnicities and they also share waters of Indus Basin. The Indus River is one of the longest river in Asia encompasses a total area of about 1.12 million square km of which 47 percent falls in the territory of Pakistan. It flows through Jammu and Kashmir and entering into Pakistan from Gilgit Baltistan and runs through the provinces of KPK, Punjab and Sindh before it merges into Arabian Sea. The partition of subcontinent has given birth to the conflict between India and Pakistan. The partition didn't consider the implications of dividing the Indus Basin in any systematic form and it was Sir Ratcliff who had recommended some joint control of river basin but that was rejected principally by India and then also by Pakistan and we remind ourselves that these rivers start in the territory that is now India. A number of water related disputes have broken out between the two states as early as April 1948, which has even let to after say nine years of negotiations and we had the Indus Water Treaty in 1960 under the umbrella of World Bank but essentially it is an international treaty between two states. There are resolutions to resolve problems tent tined in this Indus Water Treaty (IWT) various indexes in this water treaty which deals to resolve conflict if any. Thu this treaty is not based on any

international water law but it is governed by the political compromises with a focus on engineering solutions attempting to provide a holistic framework for mutual water management between India and Pakistan. The treaty is widely and correctly as a success story for the trans-boundary sharing of water. It has survived despite was a several skirmishes, cold relations and frequent military mobilizations during the last now 60-70 years of hostility between two countries. It is an essence a technical treaty however, unlike the most international agreements of this nature the treaty is not based on the equitable distributions of water instead it is based on the division of the Indus and its five major



tributaries between India and Pakistan. As already mentioned by the Chairman CGSS that tributaries which are associated with the River Indus. If one were to come to Indus water treaty itself, I would refer to the article 3 of the treaty which allocates the unrestricted use of the western river Indus, Jhelum and Chenab and its

tributaries to Pakistan and India is under the obligation to let flow the waters of these rivers and not permitted any interference with these waters except domestic use, non-consumptive use, agricultural use and generation of hydroelectric power. These uses are regulated and restricted conceive detail in the annexures. What really is the problem, may I state the problem before the audience. The problem is that India is using this water to build its technical infrastructure with which it wants to feed its industry, whereas, Pakistan needs this water to the basic minimal level for the purposes of agriculture and domestic consumption. So this is essentially an international human right issue. The use of water, is it to be wasted away in favor of building infrastructure or whether it has to first serve agriculture and domestic use and I think this is not rocket science, if you would look at the international human right literature the legal or other non-judicial literature, at any given point at time emphasis has to be given to domestic use first and also

agricultural use. So therefore, if one can look this debate from this point Pakistan has an edge and international human right on its side but essentially the problems lies in the implementation of the Indus Water Treaty (IWT). The Indus Water Treaty India threaten us that in being a treaty we can cancel it at any point, well they can't do so under international law it is one such treaty which can only be terminated by the consent. If both parties agrees then it will be terminated otherwise unilaterally it cannot be suspended nor terminated and that is something India knows but it is using its strategy to arm twist Pakistan and this is one aspect that how India is dealing with Pakistan. Most importantly the qualification to generate the hydroelectric power is that India claims to have permission to generate hydro power is that the use of hydro power is to not effect either the quantity of water reaching Pakistan or to interfere with the natural timing of those flows. Pakistan needs this water and also the timing of the water and the flow of that water is very important. Since hydropower does not consume the water but the only issue is timing and timing is very big issue because in agriculture in Pakistan depends not on how much water comes and also the timing and season. The reality is that India could tap the all the available power without negatively effecting the timing and flows to which Pakistan is entitled. In terms of article 2 of this treaty all the waters of the eastern rivers Ravi, Bias, Sutlej and their tributaries are available for the unrestricted use of India. Now the problem with this treaty is that the Pakistan share of water is concerned although it says that Pakistan will have uninterrupted use but some exception is provided for India but as far as Indian tributaries are concerned it is unrestricted with no exception in favor of Pakistan. So this treaty itself starts with an unequitable distribution and it sought to be checked by the dispute resolution given in the annexes of the IWT. There are three types of dispute resolution modalities given in the treaty are; neutral expert, arbitral interference and through the auspicious of the World Bank but there are methodologies for three mechanisms that to which one is to be adopted under the dispute resolution. So what India does that if its suits India to adopt a particular methodology even if it does not fit into that compartment it would insist on that, e.g. a situation where a neutral expert not be resolving the dispute but for some reason if it helps India then they would Insist that this is the type of Dispute should be resolved by the neutral expert. Now this is where the World Bank and international community has to say something and has to ensure that this Indus Water Treaty and its dispute resolution is equitably and juicily applied to

properly resolve the disputes because until and unless there is a meaningful resolutions of the disputes justly, equitably and fairly then the IWT will just be a piece of paper and there is a propensity of a greater conflict looming large. There are annexures d & e of the



treaty and India is under an obligation to provide complete information regarding the location of hydropower plants, particulars, designs, spillways which are the basic water levels are to kept and instead of keeping the water levels intact India would argue that since they need the hydro power plants therefore they can't keep the minimal level, that's where the violation starts in terms of design, keeping the spillways and the minimal levels. There are at least two instances one the kishanganga and the baghdia the reason I will not go in details with regard to those or I would not make reference to those in particular because those matters are subjudice with the dispute resolution mechanisms and I think if the international community is educated or is told that these are the basic design and the basic levels of water which required for the purposes of implementing the IWT, I think more of the half of the problem will be resolved. Article 9 of the treaty discusses the questions which arise under the treaty and it pertains to the settlements of the disputes and in case of non-resolution the matter could be taken to dispute resolution modalities. As a signatory to the treat the World Bank role is limited and procedural in particular its role is in relation to differences and dispute and limited to the designation of people to fulfill certain roles when requested by either or both of the parties but having said that

even this procedural role is to be fulfilled by the World Bank in a fair and equitable manner. If the World Bank due to some reason is unable to act neutrally or impartially then again this IWT will become non-functional. The IWT has with stood for the 5-6 decades of hostilities between two rivals including major wars, during this time neither Pakistan nor India has ever target which is a good sign that they have never targeted each other's canals and hydroelectric facilities and also non o the party has taken serious stand abrogate the treaty except that India's side sometimes there is threat. In the past decade, however, India has initiated an ambitious program of a number of hydro powers across its Himalayan region involving the construction of over 60 hydro power projects of various sizes on the head water of western rivers especially Jhelum and Chenab. The Indian side has consistently emphasized that these projects flows from India's development needs and have been under taken straightly with the accordane of the treaty and this is the reason why there is a dispute because we say that firstly, the building of these hydro power projects only in this region is not without the design and secondly, India under the garb of building hydro power electric projects has been violating the paradigms of the treaty. Pakistan major concerns under this regards however, goes beyond the technical confines of the treaty rather Pakistani fear stems from the potential of the Indian projects to interfere with the natural timing flows from these rivers. The timing of the flows is a critical concern since agriculture in Pakistani plains is dependent on the adequate water flow during the planting season. It was for this reason that India to manipulate the timing of flows was hardwired into the treaty and limiting the amount of life storage in each and every dam that India would construct on the two rivers. The limiting of the life storage by India under the treaty thus provided some measures of protection to Pakistan against upstream manipulation flows. So in essence, I would say that here is a very important in vital potential problem that would give rise to a greater concern and problem leading to a bigger conflict then what is seems that what it is a just any water dispute therefore, I impress upon the international community to make its contribution in order to make this Indus Water Treaty meaningful and it implementation become successful in a fair and equitable manner.

Speaker 2

Lieutenant General Muzammil Hussain, HI (M), (Retd) – Chairman Water and Power Development Authority (WAPDA)



Lieutenant General Muzammil Hussain, HI (M), (Retd) – Chairman Water and Power Development Authority (WAPDA) addressed the audience on the topic “Water Resource Management: Challenges and Opportunities for Pakistan”. His speech comprised of following remarks:

Speakers, Excellences, Participants and Ladies and Gentlemen good morning and Asalam o Alikum, it is a pleasure this morning to be here to be part of this proceedings which are talking on the most critical component of Pakistan’s national security the water. I will just start with what I suppose to bring about at the end of the talk that the world is changing and the old stories are now ending and the new stories are coming up. There are more phenomenal uncertainties in the world and perhaps the country like ours will find it more difficult to cope up because some of those fundamental issues we have. It’s not the question we are not running short of water but we haven’t done better to manage that, there is no issue in the water there is no need to be panic. I would say in the country like ours we can focus on two things;

1. We don’t need to be panic
2. We need to be more humble in our views

And what I was about to say at the end was the future we belong to the country who has data’s that’s very important. I was struggling from where should I start but the Chairman CGSS has very well summed up in his introductory remarks and I wouldn’t talk on what plagues us. I will take you from here, where we have to go I will quickly go through the data I have with me and which I am handling from last more than two years. I am not a water expert, I am a water manager being a chairman of the largest water stakeholder in Pakistan the WAPDA. If you look in the history there are being free regulations which are actually shape the mankind in the world. First is cognitive revolution took place 70,000

years ago and commence with the concept of history. The other one is agriculture revolution which took place around 12,000 years before. What we need to remember that agriculture revolution lead to sum of total food available for humanity but it did not lead to a better life, it did not protect humanity from starvation and diseases. The people erstwhile hunters in the forager was much better than after those. The more food lead to two things more population and a pamper elite which sits all here under this roof that's it and when you come to the new history that is a technological revolution of last 500 years, now this the potential to end the history, we need to have work now that in the world which has shortage of resources and a competition of resources which is going on, do the technology disruption will help to have better life or not, this question to be answered. Now we are facing two monsters like climate change and environmental issues which lead to migrations and of course shrinking resources that is the thing which effecting the whole world.

Today ladies and gentlemen, the world has more geopolitical overtones of hydro-politics as compared to politics and we also believe the wars in the 21st century will be based on the issues of investments, trades, technologies but yet some of those water issues have the potential to



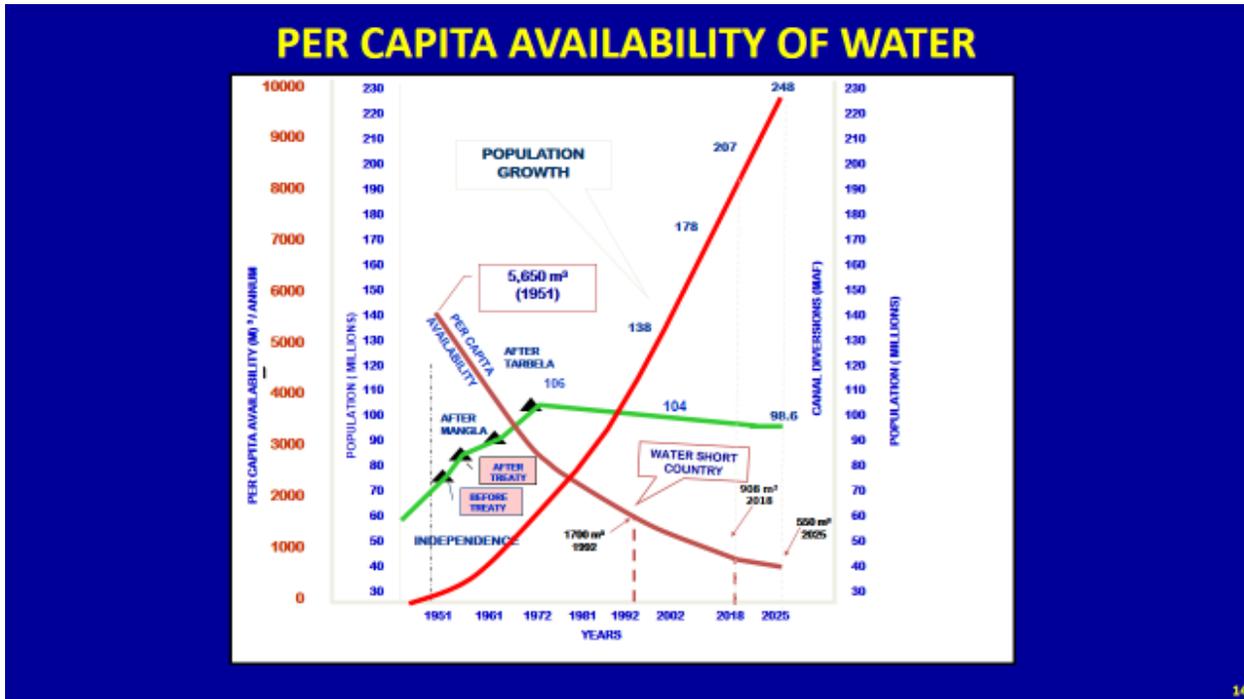
bring you back to the territorial disputes and in the context of India the honorable Minister has provided the good input on where do we stand. At the time of independence we faced three major problems; the first was basically political in nature which triggered because of a partition line which we have between India and Pakistan this was with total disregard to hydrology and ideology, you left a lot of Muslims on the other side and you left water storages head works there. The second was hydrological you had to where IWT coming in you had to shift water from western rivers to eastern rivers, this was the hydrological nightmare for Pakistan but the then engineers did the wonderful job at that time. The third one was economical because after hydrological shift you and two major issues of water logging and salinity. To overcome those two issues you had to spent a lot of money and you didn't have money, so went along in 60's and 70's we had water,

storages they build seven link canals, they build about five barrages, the second largest grit stations of Asia after Japan and Pakistan witnessed those decades of economic development of 60's and 70's. Then slumber woke up in 90's to realize that we neither



have water and nor have energy. Then we going for the IPP's what we see today a trillion of dollars of circular debt today we have that is what you trying to handle. So you had water, you have sun, you have wind but electricity you want to produce without oil, where we do stand now will be showing from the presentation. Population growth from 30 million to 207 million going up sharp and in comparison the availability of water in 1951 that was 5000 cubic meter / per person / per anum, its start to come down and today we stand at 948 cubic meter / per person/ per anum in Pakistan. Just to give you a smaller benchmarking, a country with 3000 cubic meter of water would be labeled as a water shortage country, if a country comes down to 2000 cubic meter of water that will be considered as a water stressed country and a country with about a 1000 cubic meter of water available will be known as a water scarce country and unfortunately, if you go further down to 500 cubic meter of water that will be absolute insecurity. The main crux is to narrow down the bottom with the strategy that you have more water, you have more capacity to store water and storage alone won't do enough you need to conserve water,

you need to manage water, and therefore, storage and big storage is not the solutions to the water.



World over we have water but only 3 percent of fresh water is available to be used and this fresh water in case you look at the globe about 6 to 7 billion people, the world over to have 35,000 million acre feet fresh water to be used by the humanity and on the average it comes down to about 6000 cubic meter / per person in case you divide in humanity all over the globe. If you see South Asia it is about 1500 and of course if you come to Pakistan you have about average 145 million acre water, so this way you stand today but the important point to remember is all this 80 percent of this water is available to you and for only 100 days out of 365, remaining 265 days is you have only 20 percent of water. So you have water once you relatively don't need it and you don't have water once you need it so, it is supposed to store and save for inter seasons and for inter years, that is your strategic compulsion. So God forbid if don't have fresh water today, we can only survive only for 30 days, Egypt can for 700 days and the world average is a lot more than what we have, that is where we stand. We can store only in three places Tarbela, Mangla and Chashma.

STORAGE CAPACITY

RESERVOIR	LIVE STORAGE CAPACITY		STORAGE LOSS
	ORIGINAL	YEAR 2018	YEAR 2018
TARBELA	9.692		6.047 3.645 (38%)
MANGLA	5.86	8.237	7.356 0.881 (11%)
CHASHMA	0.717		0.278 0.439 (61%)
TOTAL	16.269	18.646	13.681 4.965 (27%)

PAKISTAN'S WATER SECTOR Indus Basin vs Other River Basins

RIVER BASINS	AVG. ANNUAL FLOW (MAF)	USABLE STORAGE (MAF)	% STORAGE
COLORADO	12	59.62	497
NILE	47	132	281
SUTLEJ BEAS & RAVI	32	11.32	35
INDUS BASIN	145	14.06	10
WORLD AVERAGE	20,000	8,000	40

Our story of water is miseries is more of a sins of formation than commission but comes to us from India of course is a lot but we haven't done well what we have with us that doesn't mean that we shouldn't fight for the right, what need to remember is that we didn't manage our waters well.

Water Issues

- i. Poor governance
- ii. Weak institutions
- iii. Corruption
- iv. Lack of transparency
- v. Disoriented development planning

- vi. Poor Human Resource/capacity development
- vii. Polarization in society
- viii. Insufficient water storages
- ix. Cities are running short of water
- x. Water diversion in canals reduced from 105 MAF to 100 MAF
- xi. Losses between distributaries to fields from 25 percent to 50 percent
- xii. Low crop yield
- xiii. How the inimical forces affect the water

Indus Water Treaty

India violates the treaty on both accounts the facts and on the essence, there is a clause which gives them leverage to go for the economically most feasible projects but that doesn't mean that you have a low level outlets lower than a dead level project. If you do that for the purpose to acting as a solace and discharge of the sediments you take 35 days to refill it and those are the timings that are important. In 1958 WAPDA came up on the model of 'Tennessee Valley Authority' of USA with the basic feature was the chairman WAPDA and the chairman Tennessee Valley Authority would report to the Prime Minister of Pakistan or the President of USA respectively and the development mechanism were pretty defined the consultants are over, they had the geo tech department in WAPDA, they had the hydrology and even have the research and development with the authority that the Chairman can walk up to the president to approve the project and complete it on time. All the developments of past we have was not our run the time and cost, Tarbela is the only project in the world of that level which was constructed before time, those were the kind of developmental mechanisms were placed in Pakistan in those days.

Two Decades of Glory

1. Development of Indus Basin Projects;
 - Mangla and Tarbela Dams
 - 5 Barrages, 1 Syphon and 8 link Canals
 - More than 70 SCARPS projects
 - Project completion within Time and Cost
 - Stupendous increase in power generation, transmission and distribution

2. Through its investment capacity and with World Bank collaboration, WAPDA achieved the following milestones;
 - Created National Grid System in Asia after Japan
 - Established a vast distribution network throughout Pakistan
 - To meet the growing demand of industry and consumers in urban and rural areas of Pakistan, WAPDA added more than 5,231 MWs through thermal generation between 1969 to 1998
3. By completing the world greatest replacement projects
 - Within cost
 - Within time
 - Food self-sufficiency and economic growth

HYDEL STATIONS IN OPERATION - 2018

STATION	WATER WAY (River/Canal)	INSTALLED CAPACITY (MW)	YEAR OF COMMISSIONING
TARBELA	INDUS	3,478	1977 - 1993
GHAZI BAROTHA	INDUS	1,450	2003 - 2004
MANGLA	JHELUM	1,000	1967 - 1994
WARSAK	KABUL	242.96	1977 , 1981
CHASHMA	INDUS	184	2000 - 2001
DUBER KHWAR	Tributaries Of INDUS River	130	2014
ALLAI KHWAR		121	2013
KHAN KHWAR		72	2010 – 2012
JINNAH	INDUS	96	2012 - 2013
JABBAN	Upper Swat	22	Jul-Dec 2013

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HYDEL STATIONS IN OPERATION - 2018

STATION	WATER WAY (River/Canal)	INSTALLED CAPACITY (MW)	YEAR OF COMMISSIONING
RASUL	Upper Jhehlum	22	Jul. 1952
DARGAI	Upper Swat	20	Dec. 1952
GOMAL ZAM	Gomal	17.4	Jan 2014
NANDIPUR	Upper Chenab	13.8	Mar. 1963
SHADIWAL	Upper Jhehlum	13.5	Jan. 1961
CHICHOKI	Upper Chenab	13.2	Aug. 1959
KURRAM GARHI	KURRAM	4.0	Feb. 1958
RENALA	Lower Bari Doab	1.1	Mar. 1925
CHITRAL	LUTKO	0.6+0.4=1	1975 & 1982
SATPARA	SATPARA	17.4	2007-2013
GOLEN GOL	GOLEN GOL	108	2018
NEELUM JHELUM	NEELUM	969	2018
TARBELA 4 th EXT	INDUS	1,410	2018
TOTAL		9,406 MW	

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Stalled Projects – 2016

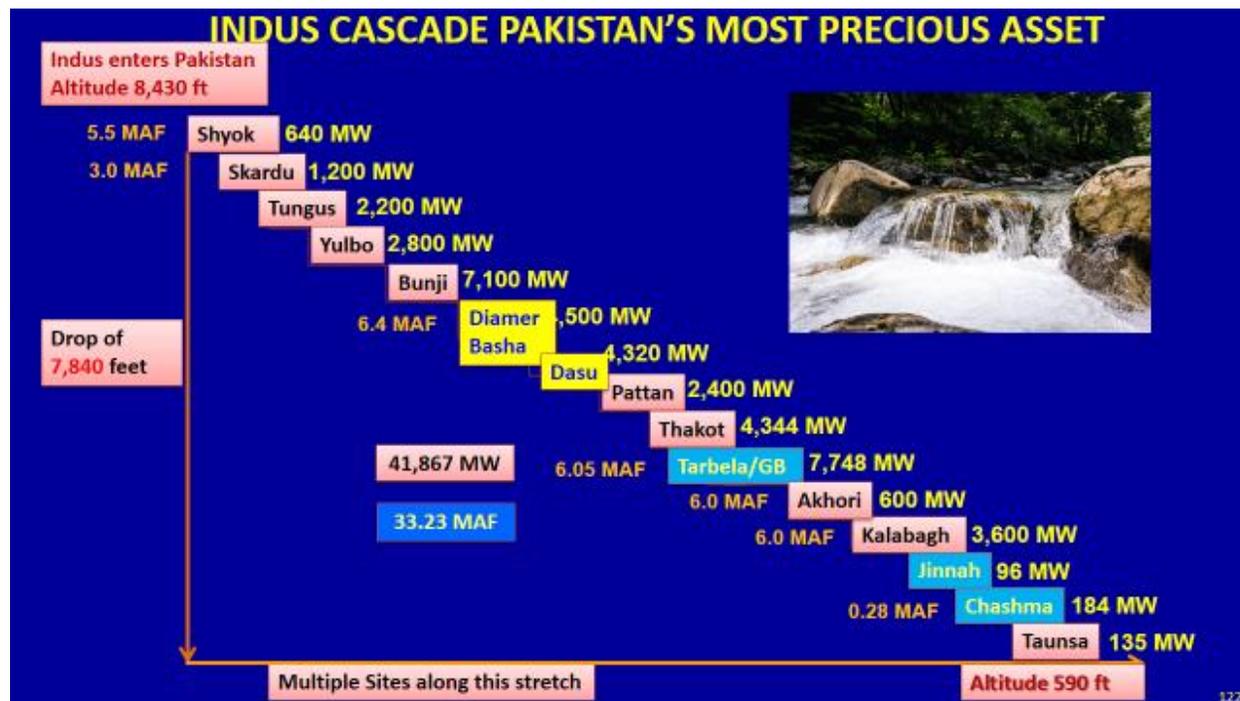
- i. Kachhi Canal
- ii. Neelum Jhelum
- iii. Tarbela 4th Ext
- iv. Golen Gol
- v. Dasu HPP
- vi. Kurram Tangi Dam
- vii. Keyal Khwar Hydropower Project
- viii. Nai Gaj Dam
- ix. RBOD-I & RBOD-III

Effects of Turn-Around Efforts

Following are the projects that were commissioned;

- i. Kachhi Canal Project Phase-I in September 14, 2017
- ii. Golen Gol Hydropower Project in February 4, 2018
- iii. Tarbela 4th Extension in March 10, 2018
- iv. Neelum-Jhelum HPP in April 13, 2018
- v. 2,487 MW Hydropower added in National Grid
- vi. 72,000 acres Barren land ready for irrigation (Dera Bugti)

We have to increase our storage capacity, other than storage capacity you also need to do the strategies to save the water and manage your water well and you have to increase your capacity from 30 days to 60 days by the year 2030 and you need to take it to 90 days by 2050. If you do that you will be among the proud nations.



DAMS IN OTHER COUNTRIES

Country	Dams (Nos.)	Country	Dams (Nos.)
China*	23,842	Spain	1,082
USA	9,265	Turkey	976
India**	5,102	Iran	800
Japan	3,116	France	713
Brazil	1,392	United Kingdom	607
Korea (Rep. of)	1,305	Australia	507
Canada	1,166	Germany	308
South Africa	1,114	Pakistan	155

* Total Dams in China = 86,000
** India plans to construct additional 2,500 dams by 2050 to add 180 BCM of storage.

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CONSTRUCTION OF DAMS- VISION 2050

SHORT TERM

(up to 2023)

2 MAF

- Mohmand - KP
- Nai Gaj Dam – Sindh
- Naulong – Balochistan
- Bara – KP
- Tank Zam – KP
- Kurram Tangi-I – KP

MEDIUM TERM

(up to 2030)

18 MAF

- DBD
- Kurram Tangi-II
- Chiniot
- KBD

LONG TERM

(up to 2050)

23 MAF

- Shyok
- Dudhnial
- Skardu
- Mid Ranjha
- Akhori
- Rohtas

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HYDROPOWER GENERATION 2030

2487 MW
(Up to 2018)

- Golen Gol – 108 MW
- Tarbela 4th Ext. – 1410 MW
- Neelum Jhelum – 969 MW

4582 MW
(up to 2023)

- Kurram Tangi – 84 MW
- Keyal Khwar – 128 MW
- Dasu (Stage-I) – 2160 MW
- Tarbela 5th Ext. – 1410 MW
- Mohmand – 800 MW

16180 MW
(up to 2030)

- Chiniot – 69 MW
- DBD – 4500 MW
- Thakot – 4700 MW
- Dasu (Stage-II) – 2160 MW
- Lower Spat Gah – 655 MW
- Lower Pallas valley – 496 MW
- KBD – 3600 MW

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The people will witness the start of the construction of Diamer Bhasha Dam not later than June 2019. We are in very advance stage of procurement for the consultants and the civil works. This dam is about 272 meters rcc dam with having 4500 megawatt of electricity and stores about 6.2 million acre feet water. We had three major studies by the leading companies from Germany and Americans, they all endorsed the design with no issue on it.

DIAMER BASHA DAM (DBD)

Live Storage	6.4 Million Acre Feet (MAF)	Project Site 
Installed capacity	4,500 MW	
Annual Generation	18,027 GWh	
Dam Part Cost	Rs 474 Billion (US\$4,501 Million)	
Power Part Cost	Rs 505 Billion (US\$4,795 Million)	
Land Acquisition and Resettlement	Rs 160 Billion (US\$1,519 Million)	
IDC Cost	Rs 307 Billion (US\$2,915 Million)	
Total Project Cost	Rs 1,446 Billion (US\$13,731 Million)	
Construction Period	09 Years	
Completion Year	FY 2028	

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SALIENT FEATURES OF DBD FINANCING STRATEGY

- The financial profile of the project is as under:

<p><u>Dam Part</u> (Procurement process commenced)</p> <p>Rs 474 Billion</p> <p>PSDP Grant = Rs 232 Billion WAPDA Equity = Rs 98 Billion Commercial Financing = Rs 144 Billion</p>	<p><u>Power Generation</u> (would be initiated after 2 years)</p> <p>Rs 505 Billion (w/o IDC)</p> <p>WAPDA Equity = Rs 76 Billion Local Comm. Financing = Rs 111 Billion Syndicated Loan/Bond = Rs 96 Billion Export Credit Agencies = Rs 223 Billion</p>
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The Federal Government to provide Rs 30 Billion per annum as PSDP Grant for Dam

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Mohmand Dam is located on the Swat River with capacity to generate 800 megawatt electricity and it will not take more than 4.5 years for the completion. It has a storage capacity of more than 1.2 million acre feet water and predominantly it will mitigate the flood effects in entire regions of Khyber Pakhtunkhwa province such as, Charsadda, Mardan and Peshawar valley with about 17000 acre feet of land will become in the command of agriculture sector. It will also provide 13 cumics drinking water to Peshawar which will be good enough for next 500 years.

MOHMAND DAM (MDHP)

Live Storage	0.67 MAF
Installed capacity	800 MW
Annual Generation	2,864 GWh
Dam Part Cost	Rs 114 Billion (US\$1,088 Million)
Power Part Cost	Rs 145 Billion (US\$1,381 Million)
IDC Cost	Rs 50 Billion (US\$479 Million)
Total Project Cost	Rs 309 Billion (US\$2,948 Million)
Construction Period	06 Years
Completion Year	FY 2026

Project Site

The map illustrates the project site for the Mohmand Dam on the Swat River. Key features include the Mohmand Reservoir, the Mohmand Dam Site, and the Lower Swat Canal. Other labeled locations include Wazirak Dam, Wazirak IWW, Murgu Headworks, Charsadda, Utmanzai, Peshawar, and various other dams and canals in the region. An inset map shows the location of the project within the Khyber Pakhtunkhwa province of Pakistan.

FINANCING STRATEGY IN APPROVED PC-I

Component	Source	% age	Rs. Million
Dam Part	PSDP Grant	100	114,282 (Rs. 17 B /annum)
	WAPDA's Equity	20	29,998
Power Portion (Cost recoverable through tariff)	<u>Debt</u>		
	Foreign Comm. Financing	45	71,549
	Local Comm. Financing	35	44,442
		100	144,988
	Interest During Construction		50,288
Total Power Generation =			195,276

Total Project Cost: Rs 309,558 Million

To conclude, ladies and gentlemen, Pakistan have to devise a strategy to have very close interface between policies, technology and entrepreneur. We have technical solutions available with treasure of people around who are willing to work and with this together Pakistan will be able to cross the line sooner.

Speaker 3

Dr. Hassan Abbas – Chairman Forte, Integrated Water Resources Management



Dr. Hassan Abbas – Chairman Forte, Integrated Water Resources Management addressed the audience on the topic “Lack of Water Resources Management: A Myth or Reality”. His speech comprised of following remarks:

Dear Panelists, Excellences and Ladies and Gentlemen, Good Afternoon and Asalam o Alaikum, after listening to some very high profile people I don't think so I am that much qualifies to stand here and talking but nevertheless, I will share what I have today about the myth and reality of water resources management, I will start by giving an example of a donkey cart which can attain a maximum speed and that's all it can do but if you put allow rims on that it won't improve the performance and if you put the speedo meter it won't improve the performance, so you can't blame the person who is driving the cart that he cannot go faster, you give a person a vehicle which can go only that fast the vehicle will go only that fast and any fancy gadgetry won't help, that's the preamble how I see this particular topic.

Ladies and Gentlemen, Israel is the one of the best experts and managers in the water field. The science and physics they implement to manage their water resources is the same for Pakistan. The laws of physics and mathematics are same for Pakistan as they are for other parts of the world, we can adopt science and knowledge from everywhere.

Historical Perspective

Indus had been historically a navigable river;

- i. 326 BC – Alexander Macedon
- ii. 1638 AD – Henry Branford
- iii. 1727 AD – Alexander Hamilton
- iv. 1832 AD – Alexander Burnes
- v. 1836 AD – Wood, Carl, Leech, Huddle
- vi. Mid 1800s – Indus Flotilla

1948

Bhakra dam construction starts with the help of US Engineers. The dam would store 7 MAF and completely shut down Sutlej River.

1950 – 1954

Bhakra dam was a large project and would take time. So in order to pinch Pakistan as early as possible, a smaller dam at Nangal, 13 kilometers downstream of Bhakra Dam was completed along with a 165 kilometer long diversion canal with a capacity of 12,500 cusec.

1952 – 1953

Ferozepur Feeder off-taking from Harike Headworks was constructed. This feeder canal, with a capacity of 11192 cusec, runs 51 kilometer and diverted Ravi-Beas waters to Sirhind Feeder, Eastern Canal systems of Indian Punjab and Bikaner Canal of Rajasthan.

1952 – 1954

Roper Headwork and Sirhind Canal System were remodeled to divert more waters from Sutlej.

1954 – 1955

Hussainiwala Headworks, which regulated water for Dipalpur Canal feeding Lahore and Sahiwal and Eastern Canal to Bahawalpur, were replaced with Harike Headworks to facilitate diversion of Sutlej and Beas waters away from Pakistan. Dipalpur Canal went dry after this.

1955

Geological and hydrological studies were carried out to put a dam on Beas river at Pong site which would store more than 6.9 MAF, enabling India to have full control over the river.

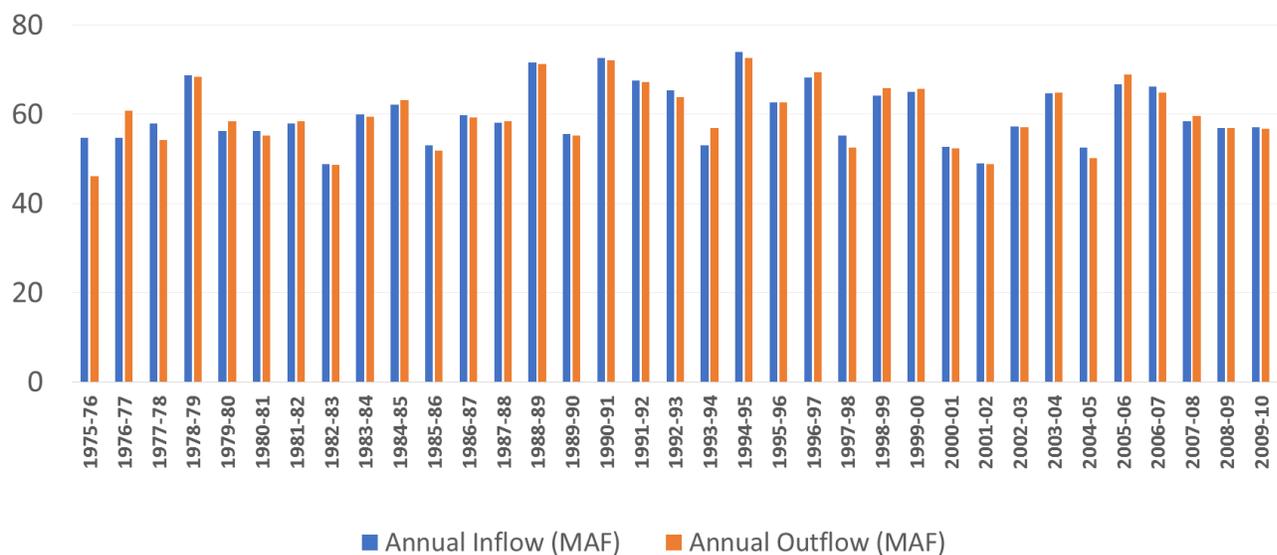
1958 – 1960

Off taking from Harike Headwork, Rajasthan Canal was almost complete with a capacity of 18,500 cusec to divert waters of Ravi, Beas and Sutlej into Rajasthan.

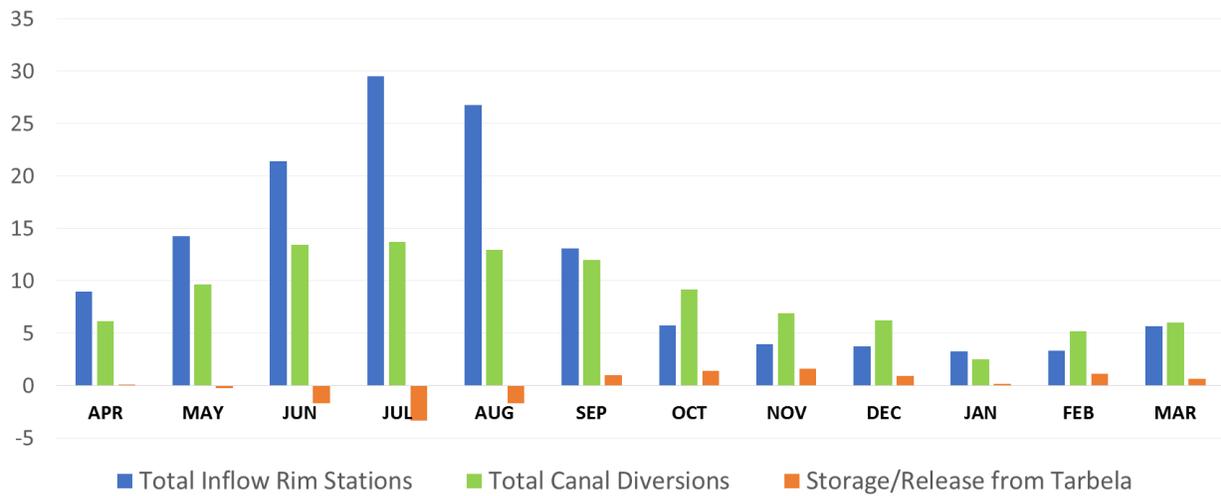
1960

Indus Water Treaty was signed on 19 September 1960.

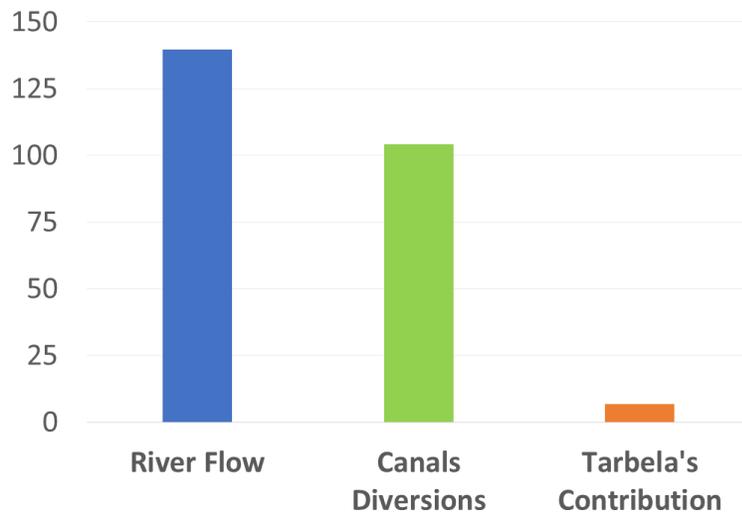
Largest Structural Intervention:



Annual Transfer Capacity – Tarbela Dam



Seasonal Transfers (MAF) - Tarbela Dam



Mean Annual Contribution of Tarbela Dam in Irrigation Canals (MAF)

We would not go with an idea of a misconception that if we build a new dam our agriculture will be revitalized and we will reach the moon or something but factually it will just help the actual numbers in increase of just 5 percent. Then coming to the cost

benefit analysis, spending 10 billion dollars and get out of it just 5 percent increase, is it worth the price. Technically everything is possible but the question is arises is it financially feasible, is it socially acceptable and is it environmentally sustainable. So these three factors are always there to be on the realistic ground because doing a project is not a problem, you can find the models, engineers, solutions and you can erect the structures to stand their but financial, social and environmental sustainability is the matter of concern, we are signatories of sustainability development goals and the whole world is now thinking about sustainability.

Externalities of Mega Projects

Today the average rate of erosion of Indus Delta, which is happening today from 19584 and today the average area going permanently under the sea is 24 acres / per day because of choking of silt supply and 67 acres / per day is coming under the tidal action and once the tides start going you can't do much on that area. Today there are swats of lands in Southern Punjab and Sindh which are under the water logging and salinity. The water logging is not only restricted to the agricultural area but it is also impacting the urban area as well.

Eroding Indus Delta



Analysis: Asghar Hussain

Changing Global Minds and Future Discourse

Basic Principles of Contemporary IWRM;

- i. Free Flow – the contemporary school of thought
 - Water belongs to no one but to the river where it flows; and as it flows
- ii. The connection and inter-linkages between land, river, ecology and climate are poorly understood
 - Go with the flow – free flow means water for all

Invoking the Engines of Water Economy

- Navigation
- Irrigation
- Power generation
- Industrial use
- Municipal use
- Water sports
- Forestry
- Bottling
- Ecotourism
- Riverine well-fields water supply
- Intrinsic value real estate
- Fisheries
- Aquaculture
- Bottling
- Ecotourism
- Riverine well-fields water supply
- Intrinsic value real estate
- Fisheries
- Aquaculture

We have about 7000 km of water front in Pakistan and we have not invoked that economy in our system, these are the solutions that people developing on their water fronts. We have 7000 km and still no project of intrinsic value. In sanatoria Texas they are doing

projects of intrinsic value on their rivers for 15 miles and on each mile they are earning 145 million dollars per year. Now if we do it on 7000 instead of 15 it is a trillion dollar economy but our management is not even thinking of invoking this economic engine in our discourse. We are still doing the flood irrigations, wara bandi, more water and more canals, etc. if our management can invoke these economic engines on our flowing rivers, it will earn us more money than Middle East can earn from the oil. This is the hidden potential of River Indus.

In conclusion, I will stress upon that in the absence of a holistic, integrated and contemporary vision of water economy the lack of resource management is a myth. We do not need another mega structure, we only need to have a mega vision and a strong will to act upon it.

Speaker 4

Vice Admiral Ahmed Tasnim, HI (M), SJ & Bar, SBT, (Retd) – Former Chairman of Karachi Port Trust



Vice Admiral Ahmed Tasnim, HI (M), SJ & Bar, SBT, (Retd) – Former Chairman of Karachi Port Trust addressed the audience on the topic “Water a key factor for Pakistan’s strategic relations in the region”. His speech is comprised of following remarks:

Excellences, Ladies and Gentlemen,

My short talk would be in two parts first about the domestic and the second about the regional. When I joined the Pakistan Navy in 1954, we could in Karachi harbor at night and show the light to attract the fish, catch it, fry it and eat it. Today, you will be lucky if you see a fish in Karachi harbor. You have to go at least 40 miles outside to have a healthy fish and if you catch one on Karachi harbor you will have food poisoning. In 1991 the Karachi harbor was polluted with about 4000 ton of garbage was dumped. On my application the Chief Justice of Pakistan took the sumo notice and after that nothing has happened. I checked yesterday, and It was about 10,000 plus garbage is been dumped in

Karachi, where the outgoing tides goes and dumps into the sea outside the territorial boundary of water. So in my view, if we don't do anything about this the regional countries will go to the court that you are polluting the sea and with Gwadar commissioning I am afraid this will happen again. According to authorities they say the people who are polluting the sea are in two categories, either they are poor and our voters so we can't do anything or they are influential like developers who dump every garbage and sewerage into the sea. With what face you go and claim the resources at the sea bed up to 250 miles or 300 miles, well what is above sea bed you are polluting. Absolutely nothing has been done, Karachi nothing has been doing all the societies are fault and up north it dump all the sewerage in to the rivers, no legislation nothing has happened. The quantum of water a speaker said



that we have 145 MAF available out of that half goes in agricultural use. The 80 percent of this water comes from the glaciers and 20 percent from the rain. Now being belong to an agricultural family the Agriculture is wasting half of this water, 50

million MAF by leaking canals and by this old unworkable flood irrigation mechanism. I was in Canada last year they have about 20 of the fresh water of the whole world, they are also farming, I took ten trips to their farmhouses all is sprinkle or drip system that means a country with having worlds 20 percent fresh water adopted modern technical systems to water their crops and we as a water stressed country is still have flood irrigation and still going on which also causes salinity and water logging.

My next point that there is a myth, in the seminar there was a government representative said that government must impose legislation whosoever, oppose the dam but in my opinion I say, so many of million acre water going in to the sea as wasting must be charged under the law due to ignorance. It needs minimum quantum of water to flow in to the sea to control the encroachment that is happening. For the mangrove growth where the fish lays its eggs and many other which are debatable. Since legislation it will be easy to

appoint a technical committee to calculate with historical data and using new modern technologies to calculate the exact minimum fresh water flows in to the sea. I have done some of my calculations which says it is 15 million acre feet and to assure the technically exact flow of water to avoid any further tensions and disagreements.

I am a retired submarine officer and I commanded a submarine of 50 to 52 crew members to go into the sea for 30 days with 350 liters water quota per day, we managed and here you spent 400 liters per day on a car wash. Historically, if we look back we have examples of the wisdom of our elders who advised and checked us properly not to waste a single drop of water and today our educated generation is wasting so much of water and even our media is ignorant on this issue with not focused on water to economy. When I was graduating from U.S. War College, I came across a report that mentioned the triangle area bordering Afghanistan, Pakistan and Iran will go dessert by the year 2025 with a big given reason was due to deforestation. Today, water scarcity is present in other countries as well but they effectively protect their forests to protect their environment. We have an example of Dubai, in 1977 we flew over the old capital of Dubai where small trees were planted with tickle irrigation and today if you see that area it is all green and in comparison today Dubai is getting more rain then Karachi because we are not looking after our forests.

In the regional context there are four water disputes in which India is involved;

- i. India – Pakistan
- ii. India – Nepal
- iii. India – Bangladesh
- iv. India – China

There are seven rivers that feed the Kabul River and benefits both sides. Due to salinity issue Warsak dam has no reservoir capacity but it makes electricity around 300 megawatts in summer and 1/10 of that in winters. So my suggestion will be that why we are waiting for more serious stress, since India is the common divider we should go to other regional countries and put diplomatic pressure on India. The people talk a lot about the Indus Basin Treaty without understanding the fact that what if we didn't had the this treaty today and what if India blocked your water today then what you could do, let's not

criticize with the sake of criticism, this treaty gives you the leverage and a legal strength, moral strength to go for the advantages but it is our own negligence that we didn't utilize it properly. Similarly, when we go to courts we didn't had full preparation, it is the time to prepare ourselves way better than the past for the coming future. In the end I will conclude it that it is the time to focus on the potential areas with proper and effective summarized executive information rather than attaining the knowledge and information by old style of research and development, so that it could be easier for the stakeholders to understand and implement.

Speaker 5

Dr. Azhar Ahmed – Head of Department, Department of Humanities and Social Sciences, Bahria University, Islamabad



Dr. Azhar Ahmed – Head of Department, Department of Humanities and Social Sciences, Bahria University, Islamabad addressed the audience on the topic “War on the water crisis between India and Pakistan”. His speech was comprised of following remarks:

Dear Panelists, honorable guests, ladies and gentlemen, It's an honor to listen to the previous speakers it was very well balanced and informatory according to the conference topic. As you all know water probably after a year will be the most crucial element for the human sustenance in fact the sustenance for the entire planet itself. Off the all available water only the fraction that is .0007 percent is available for human consumption to understand the importance of fresh water. It is deplete-able unlike air and only be preserved while it cannot be generated and on top of it the increase in the population and the industrial growth has put pressure on it. It has said that about 25 million people are migrating annually around the world due to water scarcity, much higher than from those who are migrating for any other reason including violence and terrorism. The demand of fresh water continuously grow with the inhuman population with approximately 90 million people born each year, it is said that 95 percent of

population increase will take place in the developing countries. Increase in population will also increase the demand for food and other commodities which places additional strain on water for users like agriculture industry and household work. According to UNESCO almost a billion people in the developing countries have inadequate access to water and 2.4 billion lack proper sanitation. A child born in the underdeveloped world will consume 30 to 50 times less water than the one born in the developed world. Global water consumption has risen six fold in the last hundred years at more than the double the rate of population growth therefore, water tables are dropping severally in the food producing regions as ground water is being pumped out at a rate faster than the rate which nature can recharge it. The organization for economic cooperation and development calculates that by the year 2030 some 3.9 billion people that is 47 percent of the global population will be living in the areas with high water stress and mostly in developing world. Insufficient water supplies can impair agricultural production and danger public health, strain established at settlement patterns and jeopardize the livelihoods and social wellbeing's. All this leads to the competition for water resources and consequently friction and antagonism between the states. Historically, water disputes has not been violent however, the depletion of fresh water touching alarming rates has caused some analysts to predict that future wars will be fought over the water rather than over oil and energy. South Asia is one of the porous region with plethora of problems, it has high population growth rate which is taxing all its resources and water is no exception. According to a World Bank report there are some 20 major river basin across the region of which the four Indus, the Brahmaputra and Meghna shared between the countries of South Asia and as well as China. Climatic changes, rapid population growth, industrialization, expanding urbanization and fast growing water needs for irrigation and power generation are putting ever increasing strains on these rivers and to make matter worse there is a lack of trust and perpetuity between the countries of the region particularly with India which shares river water with four countries of South Asia. Being a student of peace I am optimistic that there is a solution to every problem provided that

there is a will and in my opinion the prime responsibility of scholars and specially the peace scholars is not to contribute to war historia but rather to provide solutions for hope and peace, the situation is not such dismal as it is sometimes painted in media. In my opinion war is possible but not probable. The history of water resolution in contrast to



that of conflict is much more impressive. The United Nations has identified more than 3600 treaties relating to international water resources dating back to the 9th century to 20th century. Accounts of conflict related to water indicate that

only seven minor skirmishes have occurred in last one century over water. In contrast 145 water related treaties were signed in the same period and we have examples of Europe of water cooperation rather than citing for war. War over water is not to be strategically rational, hydrographically effective or economically feasible, shared interests along with water ways seems consistently out ways water conflict characteristics and once water cooperative regimes are established through treaties they turn out impressively to be resilient over time even between hostile riparian states and even as conflict is waged over other issues and IWT is a case in point. These patterns suggests that the most valuable lessons to be learned from the history of international water disputes is that this is a resource whose characteristics induce cooperation and citing violence only as exception. Over the period of almost 58 years the Indus Water Treat (IWT) has served both the countries well despite the fact that both sides have their reservations on this but efforts to undermine the treaty by particular interest groups need to be discouraged by the both sides and media should create awareness in the general masses of the rationality of the

treaty and about the importance of the cooperation and utilizing the water resources. This is perhaps the only instrument among both the countries that has stood the test of time even in the full fledged wars between India and Pakistan the treaty remained effective. Suggestions to improve the treaty is always be welcomed but these should be left for better days when the two countries have achieved the certain element of the taunt. We can't live in the past the two countries has suffered a lot because of the hostilities and the mistrust and need to move on for the sake of better future of their citizens. IWT has provided the platform for the cooperation, it was brokered after the considerable efforts of the World Bank and perhaps the sincerity of the leadership from both sides and not only the treaty has effectively used as a basis for cooperation. The treaty provides the opportunity for the future cooperation and the joint management of the waters and it is disappointing to note that since the signing of the treaty no projects have been undertaken since the provision of the treaty for future cooperation. We need to do what we have to benefit from the opportunity or the environment that is provided by the IWT, we owe our green revolutions in the 60's and 70's to this treaty besides other reasons. To end on a hopeful note, the awareness is now there we seems to be moving in the right direction and I see the light at the end of the tunnel but remember raising dams is a far more safer strategy then raising guns.

Session 2

Speaker 6

Admiral (Dr.) Jayanath Colombage, RSP, VSV, USP, (Retd) – Former Commander of Sri Lankan Navy



Admiral (Dr.) Jayanath Colombage, RSP, VSV, USP, (Retd) – Former Commander of Sri Lankan Navy addressed the audience on the topic “Maritime Security Governance in Indian Ocean Region”. His speech comprised of the following remarks:

Ladies and Gentlemen, General Zahir ul Islam, President CGSS, His Excellency the High Commissioner of Sri Lanka in Pakistan and all distinguished participants present here today. Good afternoon. It is an honor for me to be back in Islamabad and being part of Center for Global and Strategic Studies.

Dear ladies and gentlemen, the fact that 72 percent of our planet earth compose of water and out of that 97 percent comprises of oceans, it is highly unlikely to not talk about the ocean while having a conference on water and future prospects. Today, Indian Ocean is an ocean of strategic competition, strategic convergence and strategic dilemma. Pakistan and Sri Lanka fall in to the third category facing strategic dilemma as a result of the strategic competition in the region. For smaller states in Indian Ocean it is all about development, economic prosperity, acquiring technology and for the larger states it is a contest to gain strategic relevance and influence. Therefore, Indian Ocean is no longer a benign region and it is increasingly becoming a contested region. The world need unfettered supply of oil and the ability to carry cargo without having any hindrance. Currently, the Indian Ocean is accounting for 50 percent of world shipping containers, 70 percent of world oil, and 35 percent of bulk cargo which is of high economic value and hence economic relevance and an area of security concerns. Indian Ocean is divided into two halves, the western part which is also known as the Arabian Sea and other is the Bay of Bengal. Unfortunately, Pakistan falls in to the Indian Ocean which is not the most peaceful ocean. The Bay of Bengal on the other hand is relatively peaceful in this 21st century. One can observe that in the Indian Ocean, the unipolar world is changing into a

multipolar world but the question is are we ready for the change? Are we ready for multilateral security arrangements? What we are witnessing right now in the Indian Ocean is insecurity of one or some countries leading to insecurities of many other countries and we have to be engaged in an unnecessary arms race in the Indian Ocean.

It is emphasized that the Indian Ocean is a region of strategic mistrust and hence a region of strategic deficit. There is a need for confidence building measures in diplomatic and strategic areas.. However, it must be mentioned that the maritime order or law of the sea is generally been respected and best abided by in the Indian Ocean. Therefore, it is the best time to talk about it and take actions rather than being late. Before going ahead, there are prerequisite to consider which are of major strategic concerns. Instability of Gulf Petroleum Exporting Countries is a major security concern for Indian ocean, religious fault lines, the increased militarization possibly leading to nuclearization is a major concern and also two of the key choke points for oil flow at Bab-el-Mandeb and Strait of Hormuz are located in that area. Unfortunately, it is most not the most peaceful region because there are armed groups operating with anti-ship missiles and remotely controlled high speed suicide boats. The mistrust between India – Pakistan relation is a major strategic concern with respect to Indian Ocean. Both the countries are nuclear powers and have large military forces and are in the process of modernizing their military capabilities. Both these countries have e 71 years long unresolved conflict at Kashmir and accuse each other of cross border terrorism. This bilateral conflict having nuclear capabilities can spill over into a regional conflict that is major worry. Another major issue is the struggle for influence between China and the United States, where china has emerged as the major economic power in Asian region and second largest in the world. President Xi addressing the ninetieth congress stated that China wishes to be a modernized military by 2035 and a great power in 2050. Rise of china, development of people liberation has not gone well with other players in the Indian Ocean. According to the United States they present themselves as a non-resident power in to the Indian Ocean but the major stakeholder China is a resident and rising military power. United States is at a relative decline but trying to keep the status-quo through alliances and partnerships, which is a depiction that they are not willing to give up the predominant position which they enjoy in the Indian Ocean. It is clear that states are trying to out-maneuver, out-partner and out-innovate

each other which ultimately could lead to conflict in the deep sea. Another strategic concern is conflict of India and China, where both have unhealed wounds of 1962 war, still undisputed land borders. Pakistan's partnership with China is an area of concern for India. China is the most powerful economy of Asia and they are engaged in development projects all around such as Myanmar, Bangladesh, Sri Lanka, Maldives and Pakistan. India is concerned by the strangulation theory of China's belt and road initiative, that is the biggest infrastructure and connectivity project in today's world but the problem is that its initiator is China which is regarded as a developing country itself. Considering the volume of this project is one trillion USD and many perceive this initiative as an opportunity to enhance maritime related infrastructure and regional connectivity. According to the World Bank, only 5 percent of SAARC's GDP is interconnected which indicates the insufficiency of infrastructure. On the other hand, India initiated a port related project named Sagar Mala and SAGAR, which is Security and Growth for All in the Region. Then there is Asia Africa growth corridor with association of India and Japan.



However, these initiatives have not gone well ahead in comparison with Belt and Road initiative. The leadership of between China and India have met 15 times in last four years which is a sign of good will. Terrorism is another major issue in Indian Ocean, Sri Lanka suffered 3 decades from maritime terrorism, terrorist exploiting shipping lanes and ports engaged in

international maritime commerce across the Indian Ocean. The transnational crime of human trafficking is also an area of grave concern with regards of Indian Ocean. Sri Lanka was considered as hub of such activities till about year 2012 but it is no longer in that category. Other concerns are illegal and unregulated and unreported fishing which, to the UN estimate that 40 % of total fishing is illegal and destroying the maritime environment.

Another concern arising in the Indian Ocean is about the rise of Quadrilateral Security Dialogue between India, America–Australia and Japan. This is also known as Quad; an

alliance of like-minded democracies to ensure a rule based maritime order and freedom of navigation is maintained in the Indo-Pacific regions.. Then there is Quad Plus, meaning England and France stating that they are residential countries of the Indian Ocean would like to join Quad Question arises that do we need a Quad in the Indian Ocean? Is Quad going to be a military alliance and will it officialize the unofficial cold war in Indian Ocean because when you have an alliance to contain China in the Indian Ocean which is clearly a cold war scenario. The Presence of China in Indian Ocean has raised concern of major and middle powers. What is best for the region would be not to try to push China out but to work with China in an inclusive manner. According to the World Banks estimates from 2016 to 2030 South and East Asia need 459 billion for infrastructure development but it is unsure that from where such huge finance will be furnished. China being a major economic power in 18th century and history is repeating itself and we all are witnessing it. The China Pakistan Economic Corridor (CPEC) is an ambitious regional connectivity project and its name is controversial for India that is why it is rejecting to be a part of the corridor and also citing sovereignty issues. Lately, another agreement named 'trilateral partnership for infrastructure investment in Indo-pacific' by japan, Australia and United States were signed and this is seen as an arrangement for communication and merging public as well as private investments in Indian Ocean. Basically, it is to enhance digital connectivity, energy infrastructure and achievement of mutual development goals.

The Indian Ocean is highly militarized and there are about 100 to 120 warships at any given time. , Although piracy is at a near zero the international navies are pretty much in the Indian Ocean. Briefly, from the period of 2008 to 2018 almost 450 warships have visited Sri Lankan port belonging to 28 different countries and it is economically beneficial for the country but it is a depiction that ocean is highly militarized. India is topping this list with japan in second position and China way down at the third position In such a situation, we need a rule based maritime order, we need respect for international conventions, freedom of navigation and over flight, freedom of commerce, and we want maritime risks to be countered in order to ensure maritime freedom. We need mutually beneficial security, deepening interoperability and security cooperation among all of the players in the Indian Ocean, so that no one can dominate the ocean and imposes their sovereignty on others. In such a need, we need to develop our capacity and capabilities

for knowing what is happening at sea. refereeing to maritime domain awareness. The IMO stated that 57 percent of merchant ships do not report their position accurately and these ships do not operate the automatic identification system at all the times as stipulated by ISPS Code.

Another drawback in this ocean is that we don't have our own strategy for Indian Ocean like Japan's Indo-pacific policy, America rebalancing to Indo-pacific. We definitely lacks a maritime strategy for SAARC region. As long as we don't have our own tune, we have to dance at other's strategies. It may not be possible to develop a comprehensive strategy for Indian Ocean but we can devise policies for western part or the SAARC portion of it.

In the conclusion, it is reemphasized that the Indian Ocean region is economically and strategically most important region in the 21st century. There is a huge trust deficit and mistrust in the area. What we need is a collective capacity and capability to move from cooperation to collaboration with inclusive partnerships and an integrated strategy and good governance at sea to maintain a rule based maritime order. Finally, I believe that as a key player, Pakistan should be the member of the Indian Ocean Rim Association (IORA) along Indian Ocean naval symposium. Security of Indian Ocean is very important not only for the Indian Ocean littorals but for the sake of the whole world. We need to be ready for a maritime security architecture that we are prepared and not the other way around.

Speaker 7

Professor Dr. Audil Rashid – Professor, Department of Environmental Sciences, Pir Mehr Ali Shah, Arid Agriculture University, Rawalpindi



Professor Dr. Audil Rashid – Professor, Department of Environmental Sciences, Pir Mehr Ali Shah, Arid Agriculture University, Rawalpindi addressed the audience on the topic “Water Resources Management: Climate Change Acceptance”. His speech comprised of following remarks:

Respected guests, ladies and gentlemen, we have 35 million-acre feet being wasted in sea-water then what justification we have for criticizing India for stopping the flow of water because we are giving them an argument that Pakistan is wasting water that can be utilized for some useful purpose. Currently, we are highly vulnerable to climate change and our status of vulnerability has increased over the last few years, considering the fact that we are the fifth most populous country in the world, so for Pakistan, a paradigm shift from Water Conservation to Water Resource Management is needed and we need to address this right now. The idea of climate change revolves primarily around changes in temperature and precipitation and logically the concept which emerges from these two metrological factors is the availability of water. We often forget that the 95 percent of the potential water which can help to harvest vital resource is not saved. Other than that, Pakistan is now among the top ten countries with respect to Climate risk. In 2009, Pakistan stood at number 16 and now our position is among the top ten. From our perspective, the crucial factors contributing to the climate change are deforestation and overpopulation and still we are wasting majority of our water. It is because of the lack of awareness and similarly, the water is not being properly managed leading to water scarcity situation in Pakistan and hence water management occurs as a challenge that continues to haunt us in future. This is linked with the extreme weather conditions in Pakistan like droughts, flood and delayed winters. The frequency of these extreme weather conditions is high which means that they are going to occur in the future as well. So, are we ready for that? Are we prepared? The answer is No and that is the reason, we are vulnerable to Climate Change. Pakistan is most vulnerable to climate

change because our economy is agriculture based and for that water is not properly utilized. The Temperature Variation which we are predicting are for more than the global average as far as Pakistan is concerned there are almost 60 percent of the areas which are receiving less than 250 millimeter of rainfall so they are going to fall from semi-arid to arid regions in future.

He talked about the lack of institutional capacity to adopt. Much of our research work is about other issues other than the water management and that is the reason for relying heavily on irrigation water which is 90 percent and the rest of the water used for Pakistan is 5 percent domestically and 2 percent for industrial purposes. With respect to France, Egypt and Saudi Arabia our productivity is 2.2 tons per hectare and that is for land but when it comes to water our productivity is 0.13 kilogram per meter cube so with this low productivity and huge land available don't you think the water management is the key issue to be focused?

It is the time that we should enhance our water-based productivity. We need to apply certain field application systems like surface irrigation, sub-surface irrigation, sprinkle water system and Drip irrigation system. So that the water-based productivity can be increased in Pakistan. The major focus of Arid Agriculture University and its vision is to enhance the climate adaptability and water use efficiency of the arid regions of Pakistan in particular the Potohar area which specifically falls in the arid region. Suggestively the rain-fed agriculture is the best way to increase the Water productivity. The concept behind using rain water is how much land you have and how rationally you can use that rain water to increase the productivity. This can also enhance the livelihood of people who are directly connected with water-based living. In 1915, we had five thousand three hundred cubic feet water available per person but now it is reduced to two thousand and is likely to reduce further in future. Unregulated groundwater exploitation has substantially decreased overall groundwater resources. Deforestation is one reason, the higher cost and shortage of electric power is another reason. Irrigation system has so many benefits but we cannot rule out the potential of rain water. The rational use of irrigation water along with the wise use of rain harvest can have double edge benefit. The mechanism to store rain water can be the new method for irrigation which can increase the productivity 30 times as compared to the traditional system. This technique can be used in areas which

are totally dependent on rain water. So, water management is an indicator which can help us to minimize the risk of climate change. To conclude the suggestive measures can improve the effective water management system;

- i. To install the Innovative systems that can have promising results
- ii. The existing unutilized resources can be used to get the promising results and can be used in avenues that are still unexplored
- iii. Management of water resources to get maximum production per unit area should be the main focus
- iv. Improving institutional set-up for better governance and better water resource institution and infrastructure should be the aim
- v. There should be more water experts
- vi. The aim should be that the feasibility analysis for all those areas of Pakistan where the agricultural activity is possible and non-arable areas can be converted into arable areas

Speaker 8

His Excellency Mr. Sherali Jononov – Ambassador of the Republic of Tajikistan to the Islamic Republic of Pakistan



His Excellency Mr. Sherali Jononov – Ambassador of the Republic of Tajikistan to the Islamic Republic of Pakistan addressed the audience on the topic “Water Resource Management: Implications for Future Directions”. His speech comprised of the following remarks:

Dear General Zahir ul Islam, President CGSS, ladies and gentlemen good afternoon and Asalam o Alikum, now we are from Indian Ocean to some kind back to Central Asia and let me to start this water issue is also very important for all the regions regardless to where we are living or which region we belongs to is now became a global issue and for all humanity where they are living is facing water issues and problems and we also need to put our common efforts and cooperation’s to manage this issue.

The Aral Sea Disaster in 1960, we had in Central Asia one of the beautiful sea it called and



had around in a number of cities where we developed fishing industries and many ports but unfortunately has now gone forever. The development of irrigated agriculture and water resources in the Aral Sea has resulted in the death of the Aral Sea, once

the fourth largest inland lake-sea in the world. In the early 60-s in the Aral Sea in two main rivers of the region - the Amu Darya and Syr Darya fell to 60km³ of water, which, taking into account precipitation and evaporation maintained a certain balance in sea level. However, due to increased irrigated area almost doubled twice and increased withdrawal of water from these rivers, led to the drying of the Aral Sea. The Significant contribution to the desiccation of the Aral Sea is made and a great number of reservoirs constructed and built in the vast expanses of the downstream countries. Their total volume reached to about 140km³. Which exceeds the current volume of the Aral Sea by more than 1.5 times.

The climate change have drastic impacts on the glaciers, from the period 1956 to 1990 the glacial resources of Central Asia reduced more than three times and continue reducing with an average intensity of about 6 to 0.8 percent a year on glaciation area and about 0.1 percent on ice volume. The climate change also had impacts on the glaciers of Tajikistan, according to the impact assessment during the whole period of instrumental observations since 1930s, the glaciation area of Tajikistan decreased by around 30 percent. In the findings of glaciological surveys of 2006 revealed that the average rate of the retreat comprised 16 m/year. In overall, from the whole observation period from 1933 to 2006

the Fedchenko Glacier retreated by 1 km and lost more than 15 cub Km or 1/10 of its overall mass balance. Further, His Excellency shared brief presentation on the role of Tajikistan in the water initiatives nationally and internationally;

Water Resources of Tajikistan

- Glaciers of 845 km³ of volume, 11,146 km² surface area
Surface water resources – 64 km³/year (55.4% of the Aral Sea Basin river flow)
- Lakes - 46 km³ (volume), 705 km² (surface area), 1300 (number)
- Reservoirs – 15.34 km³ (volume), 664 km² (surface area), 1300 (number)
Underground water resources – 18,7 км³ (2,8 км³ – useful resources)

International Development of Assistance "Following Future Development" from 2018 to 2028

- i. High level action on the start of the International Decade for Action "Water for Sustainable Development, 2018-2028"
- ii. At the 72nd session of the UN General Assembly on the occasion of the International Decade of Action "Water for Sustainable Development, in 2018-2028", the President of the Republic of Tajikistan Emomali Rahmon addressed the main initiator of the International Decade for Reconciliation
- iii. President of the country Emomali Rakhmon officially launched the United Nations High Level and with the presence of his International Decade for Action "Water for Sustainable Development, 2018-2028". So from this day the implementation of another initiative of Tajikistan has started in the whole world

Global Water Initiatives of Tajikistan

- i. International Year of Freshwater, 2003
- ii. The International Decade for Action "Water for Life", 2005-2015
- iii. International Year of Water cooperation, 2013
- iv. International Decade for Action "Water for Sustainable Development", 2018-2028

Major Initiatives

- i. Tajikistan has great water resources and hydropower potential. Water is a strategic resource of Tajikistan and is based on the basis of social and economic development and even national security
- ii. Notify the world community about opportunities for Tajikistan in the field of water and hydropower, as well as the country's policies and practices in addressing water issues
- iii. Regardless of large water resources, Tajikistan is faced with a wide range of issues related to hydroelectricity in hydropower, irrigation, water supply, natural disasters, which has limited the difficulty of economic imbalances;
- iv. Attracting the attention of the international community and investors in addressing this problem, including through attracting foreign investments into the water sector
- v. Find a good position on the international scene in addressing one of the key issues of the Global Warming

Water: A Global Situation

- i. About 900 million people do not have access to safe drinking water
- ii. Nearly three billion people do not have access to modern sewerage systems
- iii. About 1.4 billion people continue to live in extreme poverty
- iv. One sixth of the world's population does not receive enough nutrients
- v. By 2030, about 47% of the world's population will live in regions with a severe water deficit
- vi. By 2050, the world's population will reach 9 billion people

Global Water Initiatives

- i. United Nations Environmental Protection Conference, Rio de Janeiro, 1992
- ii. The UN General Assembly "Rio + 5", 1997
- iii. Millennium Summit, 2000
- iv. World Summit on Sustainable Development "Rio + 10", Johannesburg, 2002
- v. UN Conference on Sustainable Development Rio + 20, Rio de Janeiro, 2012

- vi. UN Summary on adoption of new global development agenda for the period until 2030, New York, September 2015
- vii. Conference on Climate Change, Paris, 2015
- viii. Third Conference of the World Conference on Disaster Risk, Sendai, 2015

Result of International Decade 'Water for Life' 2005 to 2015

- i. The creation of the UN water mechanism
- ii. The creation of the two programs of the International Decade in Bonn and Zaragoza on the implementation of the main objectives of the International Decade for Action "Water for Life"
- iii. Establishment of a political platform for discussing water issues on the global agenda through international conferences in Dushanbe
- iv. Better and greater understanding of the international community about the growing water problems and awareness of the need for urgent and long-term measures to address it
- v. Better and greater understanding of the international community on the need to strengthen cooperation and partnership in addressing water problems, especially at the trans-boundary level
- vi. Significant contribution to the achievement of the MDGs in terms of water supply

The new water initiative of Tajikistan

Considering the importance of water supply for the population of the planet, in the course of the 7th World Water Forum, which was held in the Republic of Tajikistan in April of 2015 in the Republic of Tajikistan, the President of the Republic of Tajikistan Emomali Rahmon expressed the issue of announcing the Decade of International Decade under the title "Water for Sustainable Development" to do. This initiative has been fully supported by the participants of the International Conference on the International Conference on Water Resources in Dushanbe. The President of the country stated that "The challenges and threats of the modern world, including the financial and economic crisis, the population growth, and climate change, the frequency of the extreme weather, water shortages and the rise of poverty, infectious diseases, maternal and infant mortality is still required to mobilize our efforts and to adopt appropriate measures in this area".

Targets of the New International Decade

- i. Ensuring sustainable development and water resource management for achieving socio-economic and ecological goals;
- ii. Implementation and promotion of relevant programs and projects
- iii. Expanding cooperation and partnerships at all levels
- iv. Promoting effective water use at all levels
- v. Perfection of knowledge, exchange of information and best practices
- vi. Establishment of networks and assistance in forming partnerships and activities of other stakeholders
- vii. Strengthening of communication activities at various levels

International Water Events in Dushanbe

- i. International Forum on Freshwater, August 29 to September 1, 2003
- ii. International Conference on Regional Cooperation in Trans-boundary River Basins, May 30 to June 1, 2005
- iii. International Conference on Disaster Reduction related to water, 27 to 29 June 2008
- iv. The High-level International Conference on the Mid-term Comprehensive Review of the Implementation of the International Decade for Action "Water for Life", 2005 – 2015, on 8 to 10 June 2010
- v. Preparatory Conference "Towards the United Nations Conference on Sustainable Development (Rio + 20): Issues of Cooperation on Water Resources", October 19-20, 2011
- vi. International High-Level Conference on Water Cooperation, 27-29 August 2013
- vii. International high-level conference on the implementation of the International Decade for Action "Water for Life", 2005-2015, June 9-11, 2015
- viii. August 9-11, 2016 - International Symposium on High Level "Sixth Sustainable Development Goal - Public Access to Water and Sanitation"
- ix. International High-Level Conference "Water for sustainable development", which will begin on March 22, 2018 and will end on March 22, 2028

Expectations of Tajikistan from the Decade:

1. Integrated Water Resources Management
 - Water and Food Security
 - Security and energy security
 - Water and ecology
 - Water and sanitation, health, education
 - Obese and Agriculture
 - Urbanization and industry
2. Water issues in the Global Fund for Development
 - Water Target Specific Purpose
 - On the Global Report (Sami, Conferences, Symposiums, Forums)
 - Development of partnership and partnership at all levels
 - Protection of water resources
3. Integrated Water Resources Management Water issues in the Global Fund for Development Share best practices
 - Regional Experience
 - The peaceful solution of water-related conflicts
 - Establish partnership
 - Water sector financing in developing countries
 - Supporting the needy population

Successful Policy of the President of the Republic Of Tajikistan in Promoting a Global Initiative in Water Sector

The Founder of Peace and National Reconciliation, the President of the Republic of Tajikistan, His Excellency, Emomali Rahmon, was presented to the World Leader on behalf of the Dialogue and diversity of multinational and multinational states to contribute to the solution of one of the common problems the water supply to every one of the world's population today. In this context, the Tajik people appreciated the status and perspectives of the Tajik people and the efforts of the international community to create a better life for the people of the planet, and in this regard, the book on the history of the author was recorded. The President of the Republic of Tajikistan, the Leading

Nationality, the Supreme Leader, The Emomali Rahmon, was the first to be invited to join the High Level Water Summit.

A New Decade: Preparation for Implementation

1. Decision of the GRT on the preparation and implementation of activities for the new decade
 - Establishment of the Organizing Committee under the leadership of the Prime Minister of the Republic of Tajikistan
 - Adoption of the Action Plan for the preparation and implementation of activities for the International Decade for Water for Sustainable Development, 2018-2028, including the holding of a high-level conference in the early decades

2. High-level international conference on the beginning of the decade
 - Creation of the conference secretariat
 - Establishment of the International Intelligence Committee
 - Join the largest number of conference participants
 - Conference held on June 20-21, 2018

Speaker 9

Mr. Imtiaz Ali Qazilbash – Former Chairman, Planning Commission Hydro Power and Alternative Energy Working Group



Mr. Imtiaz Ali Qazilbash – Former Chairman, Planning Commission Hydro Power and Alternative Energy Working Group addressed the audience on the topic “The Imperative hydroelectric development in Pakistan”. His speech comprised of the following remarks:

Ladies and Gentlemen, Asalam o Alaikum, the nationwide effort to make people conscious of the necessity of dams, you will have noticed on the media there is a campaign of dams and contributions for dams, now the question is are going to make dams by the contributions but the idea is that we will not make dams by the contributions, the financial strategy is explained earlier in the session but it mobilized the whole nation. A country with the 100,000 megawatt of hydroelectric potential should not have been suffering from power shortages and load shedding for decades. He expressed by giving detail of power sector in Pakistan and what is been happening since inception of WAPDA in 1958. There was very little power in Pakistan at that time the total country has a less than 100 megawatt. A 100 megawatt today one sector of Islamabad cannot be fed with. In Pakistan we knew the Indus Basin has tremendous water power potential and that is why the WAPDA act stated the comprehensive and multipurpose development of the water power resources of Pakistan should be set up. Unlike recently to build up power stations and new transmission systems it was started way back to build transmission system in 1958 the transmission lines connecting the North and South of the country culminating in to a national grit which connected Warsak with Karachi and Sialkot almost with Quetta. In 1954 we had completed the 240 megawatt Warsak hydroelectric power station. Soon the most important planning and investigation department of WAPDA started to identify hydroelectric projects and to start work on its feasibility studies. This was the period of beginning of hydroelectricity in Pakistan. WAPDA’s capabilities to striving to accelerate hydroelectric development as is well known hydroelectricity is the cheapest and cleanest and also indigenous form of energy damage provide essential water storage of which we

are so short, the important thing which I want to bring into your attention is that between 1968 and 1976 WAPDA the water and power development authority the country's biggest development organization completed three and a half billion dollars' worth of projects. These projects were on time and within budget and the mangla project was done before time and we paid because we were so keen to have mangla completed before its schedule time by paying the contractor a million dollar extra per day to bring forward its completion date. In 1975 there was very significant conference on the role of hydroelectric resources in the development of Pakistan where all concerned stakeholders were present, where something very significant happened that we should go two major dams on the Indus and a ranking strategy by a reputable foreign consulting company to prioritize our projects and start working on them but that didn't happened unfortunately when we moved to the era of late 70's.



The most damaging happened to Pakistan is the private independent power producer business.

Mr. Qazilbash presented the programme of 34 hydroelectric projects as Member Planning Commission's Energy Working Group at the 1991 – 92 Seminar on the Eighth Plan.

Later in the year 2000, this program was taken up by the WAPDA and expanded and made in to what is called WAPDA's vision 2025. WAPDA has been working on this program but the progress is slow in the last two to three decades, even with this slow progress today we have in hand almost about 87 hydroelectric projects out of which dozen are the mega projects consists of 2000 megawatt of each but unfortunately, in the last 40 years we didn't build a single dam due to the only controversy of Kalabagh dam. But now after the initiative of Chief Justice of Pakistan for the construction of Bhasha and

Mohmand dam the government is planning to construct 19 dams for the efficient water management to give you 30 million acre feet of water.

I explained to the Chief Justice in my presentation on 27 June 2018, when he asked me why the 87 hydroelectric projects were not built over four decades. I told him that there were two reasons: The Kalabagh Only lobby which insisted that no dam will be built unless Kalabagh is built. I told him that I pleaded with my engineer colleagues but unsuccessfully, when he asked me if I had done so. The other reason I said was Corruption. Not building hydroelectric projects gave an excuse to the corrupt Chairmen in WAPDA for 15 years from 1976 up to 1991, and afterwards to the corrupt governments up to recently, to build only thermal power stations because of kickbacks.

Question and Answer Session

Question 1

Singapore is threatened by Malaysia, similarly stance of Indian Prime Minister Modi is also intimidating. The question here is why our leadership is having a sheepish stance and why aren't we building dams?

Answered by Lieutenant General Muzammil Hussain, HI (M), (Retd) – Chairman WAPDA

We have to cut the corners and be on the right track and for that matter it is recommended that water management system is the way forward, where we should focus on advance systems and technology.

Question 2

Can CRIP technology can solve the problem of silting in Tarbela and Mangala Dam?

Answered by Lieutenant General Muzammil Hussain, HI (M), (Retd) – Chairman WAPDA

Firstly, there is an issue of magnitude and scale as we do not have such technologies available in country. Secondly, financial planning is essential for it and it takes time. Thirdly, there are some technique available but their efficiency is doubtful as they are successful up to 40 percent, however we can use this technique in other dams as well.

Question 3

Is there any solution regarding flood of Pakistan and what is planned by relevant authorities?

Answered by Lieutenant General Muzammil Hussain, HI (M), (Retd) – Chairman WAPDA

Yes, there are solutions to this tragic problem but unfortunately fault prevails in the planning process. As we know that western part of Sindh gets flooded but eastern part

remains dry and even do not have a drop of water in summers. This predicament could be solved by management and planning. Secondly, it is a matter of priorities, financial and technological issues.

Question 4

What is the financial framework for new dams?

Answered by Lieutenant General Muzammil Hussain, HI (M), (Retd) – Chairman WAPDA

Diamer – Bhasha Dam development was delayed due to financial issues as we require hefty amount of 500 billion to start off; therefore, we divided dam in portions for funds gathering in year 2016. And all hydro-power projects are financially viable, such as our operational projects get 30 billion rupees from government for maintenance, whereas rest from WAPDA along with commercial finances for power and technical requirements.

Question 5

Are there any risks associated with construction of Dams in mountain valleys?

Answered by Lieutenant General Muzammil Hussain, HI (M), (Retd) – Chairman WAPDA

There is a risk to construct dam anywhere and we have to mitigate those risks in planning phase otherwise all dams can have their negative impacts and hazards.



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