

MESSAGE FROM THE PRESIDENT, ICID



We were deeply moved with the calamitous disastrous major floods in 2010 in Indus system in Pakistan. As I reflected in my message for the ICID News (2010/3) prior to Yogyakarta meetings, ICID pledged to work with the National Committees in their efforts to rebuild their countries, in all flood ravaged countries like Pakistan, China, etc.

I recall the decision in Yogyakarta during our last Council meetings that ICID Working Group on Comprehensive Approaches to Flood Management (WG-CAFM) should convene an exclusive workshop in Pakistan soonest and consider all technical and other managerial issues including restoring the damaged irrigation systems to restore livelihood of the Pakistani people.

I am pleased to note the hard efforts of our colleagues in PANCID as well as members of the WG-CAFM in proceeding as per IEC's decision and plan a Workshop in Lahore on 12 March 2011. I am sure that this will provide a great opportunity to take on board many facts that emerged out of unusual floods of 2010 in Indus and bring out some feasible options to restore the impressive Indus irrigation systems besides effective flood management in the future.

I wish the Workshop all success.

Prof. Dr. Chandra A. Madramootoo
President, ICID

WELCOME ADDRESS

By

ENGR. HUSNAIN AHMAD

President

Pakistan Engineering Congress

PAKISTAN ENGINEERING CONGRESS

Address of Welcome

by

Engr. Husnain Ahmad

at the event of

International Workshop on Floods in Pakistan – 2010

(Lessons Learnt & Way Forward)

held on March 12, 2011

Honorable Syed Naveed Qamar Sahib, Federal Minister for Water & Power

Dr. Kamran Emami Chairman Working Group on Comprehensive Flood Management of ICID

Mr. Asjad Imtiaz Ali, Chairman PANCID

Distinguished Delegates

Eminent Scholars

Dear Colleagues

Ladies & Gentlemen !

Asslam-o-Alaikum !

It is indeed a matter of great honor for me to welcome you all here for attending this workshop on behalf of Pakistan Engineering Congress as well as on behalf of ICID.

Pakistan experienced floods of biblical proportions in 2010, in the Indus River System, which was unprecedented when compared with the last 80 years of the recorded history of floods in this region. Thereby, on one hand it set new records in terms of discharge that was experienced at various cross-sections, while it also created havoc, causing enormous losses throughout the country. At one point in time almost one fifth of Pakistan was submerged. The unprecedented rainfall for extended duration kept on adding to the passing floods, which resulted in the incomparable losses. The detail of damages caused by 2010 floods is far worse than the destruction caused by 2005 earthquake in Pakistan. The losses of flood 2010 included; 20 million homeless people needing food and shelter, around 2 million houses got damaged 17 million acre of most fertile land submerged, several 100 bridges and hundreds of kilometers of roads got damaged, more than 1300 schools and more than 600 health facilities were destroyed, more than 1.2 million large and small animals and over 6 million poultry was lost, apart from massive loss of infrastructure more than 3.6 million job loss resulted in a decrease of over 3% GDP.

Ladies and Gentlemen !

This is not something ordinary, many theories starting from Russian fires, Greenhouse effect of emissions and to laser experimentation in space are presented as a possibility, in a

quest to find reason(s) resulting in unusual collusion of Easterlies and Westerlies over Afghanistan causing flashy floods through western rivers in Pakistan.

In October 2010, in Yogyakarta, Indonesia, during the annual moot of ICID, the Pakistan delegation headed by myself drew the attention of international experts, towards the suffering of people of Pakistan as a consequence of the unprecedented floods.

Ladies and Gentlemen !

I am grateful to the entire fraternity of ICID, comprising of 108 member countries, who not only expressed their solidarity with Pakistan in fighting out the problems related to relief and revival of life through rehabilitation but also accepted our request for lending their technical support and expertise in formulation of future policy to avert such losses by sharing of experiences and getting engaged in this process by way of holding this workshop in Pakistan. The support is even evident in the message of the President ICID Prof Dr. Chandra Madramotoo and read by Dr. Kamran Emami.

Therefore, It is important that while I place on record my tributes for ICID, PANCID, WWF and my colleagues at Pakistan Engineering Congress for supporting this workshop, I extend my special gratitude to all foreign delegates for joining us here in Pakistan, despite their hectic schedules.

Ladies and Gentlemen !

Here it would not be out of place to mention that no expense, including travel cost of any delegate including foreign guests has been borne by Government of Pakistan or even by the Pakistan Engineering Congress; as they are voluntarily participating in this workshop and, therefore, deserve a special approbation.

Ladies and Gentlemen !

In our region, especially in Pakistan, since its creation, floods of varying intensity have been experienced. These floods have also differed in terms of resulting losses. Although, predicting intensity of very next flood at any one point in time is difficult but this does not diminish the need to evolve a mechanism and strategy to mitigate possible losses due to a high flood in future at any time. The urgency to act in this direction gets manifold especially after experiencing such a high flood of unprecedented proportions because, the disastrous events, such as, high floods of biblical proportions not only impedes national growth in terms of GDP but also poses threat in terms of food, health and shelter.

Any comprehensive flood management may not result in aversion of future floods but it certainly enables us to combat any eventuality through better planning and address the resulting adversities, which take place in absence of proper planning, such as insecurity to life and property in addition to problems such as food insecurity, disease and shelter. It is high time that we may reconsider a way to create national consensus over issues such as construction of dams, in the prime national interest, for not only the safety of our national assets during floods but also for survival of our future generations to meet their food demands.

Ladies and Gentlemen !

Creation of an effective and efficient flood management system is not a simple recipe; rather it involves a large number of controllable and uncontrollable parameters, chiefly depending on topography of the area. Pakistan has great variations in its topography, which accordingly, poses greater challenges to flood managers involving both structural as well as non-structural measures.

However, the primary objective is to focus on the reduction of flood losses in an economically sound manner; Prioritizing of areas of greater economic hazards; Protecting the cities and vital infrastructural installations; Exploring the possible use of existing flood control facilities; Promoting appropriate land use in flood hazard areas; Minimizing adverse effects on national ecosystem and environment; and creating flood awareness and adaptability in the riverine areas.

Therefore, we may.

Firstly, review existing Flood Forecasting and Early Warning Systems and thereby suggesting improvements, including identification of additional locations for installation of additional weather radars.

- I. Establishment of Regional as well as in the areas of hill torrents Flood Forecasting & Warning Centers
- II. Assess the need for installation of Telemetry System and HF Radio Network to cover upper catchments of Kabul and Indus Rivers, as well as secondary/tertiary rivers;
- III. Examine option of trans-boundary data sharing using WMO and UNESCO networks.
- IV. Mapping and modeling snow and ice cover;
- V. Real time flood inundation modeling;
- VI. Assess the need for capacity building and training of professionals involved in flood forecasting at PMD / FFD.

Secondly, carry out a detailed review of the issues and options in flood management;

- I. Review the existing traditional flood management practices in vogue viz-a-viz the modern concept of integrated flood management;
- II. Identification of future reservoirs that would have high flood mitigation role in addition to their agriculture and hydropower benefits;
- III. Review of existing Standard Operating Procedures (SOPs) of Tarbela and Mangla Dams, as well as barrages and develop new SOPs to mitigate high magnitude floods with considerations to avoid superimposition of floods peaks at tributary confluences of Indus River System for management of floods;
- IV. Identification of floods escape channels to desert areas/off channel storages that would provide major reductions in flood peak discharge in Indus Basin, Also identify possible sites for underground reservoirs, retarding basins, etc.

Thirdly, reviewing design of hydraulic structures and flood protection infrastructure in all provinces/agencies is needed

- I. Review and revise design return period of barrages on the Indus River system to enhance their safe flood discharging capacities.
- II. Review and revise the design criteria for the design of bridges / communication infrastructure and flood protection bunds keeping in view the likely damages to the populated areas, agriculture and vital installations ;

- III. Upgrading the flood protection facilities/ bunds that provide protection to the cities and towns and important installations such as power stations, oil refineries, industries etc ;
- IV. Review of breaching sections and areas inundated as a consequence of breaches ;
- V. Hill Torrent Management (flood dispersion structures) ;
- VI. Mutual Support Insurance System on country-wide basis to support recovery for infrastructure and effectees.

Fourthly, flood plain mapping / zoning ;

- I. Flood Plain Mapping / Zoning along all the Indus river and its tributaries for restricting/prohibiting by law permanent settlements in high and medium flood risk areas (provinces to enact laws) ;
- II. Submergence plans for critical reaches along flood embankments ;
- III. Identification, resettlement and relocation of villages in flood plains to safe areas outside the flood bunds ;
- IV. Identification of low flood risk areas for future cities, towns and villages, industrial areas etc ;
- V. Urban planning for flood resilient communities ;
- VI. Community participation and awareness campaigns.

Ladies and Gentlemen !

I am confident that as a result of this workshop by way of sharing of experience and expertise by world known experts, different aspects of the flood related issues and their solutions shall evidently emerge that shall help in reaching some unified stance and shared vision for a comprehensive plan. The recommendations as a result of this workshop are expected to form the basis of broad parameters to cater for economic aspects as well, and to define some guidelines, not limited to design alone but also to cover other aspects, such as, changing demographic patterns. This is imperative to respond to ever changing conditions in real times and to achieve sustainable results.

Ladies and Gentlemen !

I would like to conclude by once again thanking you all for being with us !

May God bless you !

Pakistan Zindabad

ADDRESS

By

Honourable SYED NAVEED QAMAR

Federal Minister for Water & Power

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By

SYED NAVEED QAMAR

Federal Minister for Water & Power

Engr. Husnain Sahab, President Pakistan Engineering Congress,

Mr. Kamran Emami, Representative for ICID,

Participants of this most appropriately timed seminar,

Ladies and Gentlemen!

This morning when I woke up and turned on the news and saw the Tsunami and the Earthquake wreck devastation of the world's most technologically advanced country and how helpless man was in front of nature. It was an eye-opener reminder once again to us that while we may think that we have achieved heights of excellence, nature is far bigger, far more powerful and able to bring in forces, which we have not even conceived of. But, at the same time, God has given us the ability to think, conceive, to organize and manage and to be able to withstand any kind of challenge that may come in front of us. And definitely my mind went back to last year when, obviously, the scale of the disaster that all of us saw, either from a distance or up front, was beyond eye-imagination and expectations. I remember the sleepless nights that I personally had to spend alongwith the rest of my constituents, being myself representative of a riverine area which was going through this relentless increase in the size of the river, mighty River Indus, and every sleepless night, one had to not only mobilize people, personally supervise the blocking of every Rat hole in the bunds but also make a media outrage reach, re-assure the mothers that their children were safe and pre-vigilant and thus we were able to atleast save that stretch of land, that was under my watch but unfortunately we were not that lucky in a lot of other areas. And definitely it makes one thing that we still have a lot of weaknesses, a lot of rethinking, a lot of re-prioritization which we require and I was glad to see that a lot of those issues were highlighted in the presentation of the Irrigation Secretary, the Chief Engineer from Punjab, that until and unless we don't find answers to those questions, these nightmares will keep on coming to haunt us and this time around, we'll have no excuses!

Obviously there's a need to look at these things dispassionately, there's a need to go away from the camera glare and objectively start looking at each one of our weaknesses. Yes, we are a country that is water scarce, we are a country which has a psychology of scarcity of water and, therefore, when we get the abundance, we are not even mentally prepared to deal with it. Yet alone physically be prepared through years and years of neglect, expecting that such thing will never occur.

So each question needs to be looked at separately. What are SOP's (Standard Operating Procedures)? What are—as was said—the Plan-B? If your normal procedures don't work, quite clearly are irrigation departments, which was the first line of defense that we have, anywhere in this Country. It was beyond their capacity to cope with this kind of a disaster. So we should have been prepared or we should atleast have plans in hand, that, in that case what are the resources we need to put together. Yes, the automatic response is to call in the armed

forces. But beyond that, this was a particular type of an emergency, required Civil, Military, Para military, across both kinds as well as international coordination that was required.

So, do we have the plans now? The physical work that is required, the resources obviously in a country where as it is, we were short of resources and last year's flood has only excavated the economic difficulties of this country. So when we talk about putting in more resources in flood management in fortifying embankments and so on we should be aware of our own difficulties. So there's a need also to bring in a more realistic approach in all that we ask for and, therefore, I was really glad to hear, that such an opportunity exists when experts and people of experience not only within Pakistan but from abroad are going to sit together and put their minds to try and find answers, try and share experiences, try and give us solutions to some other questions, that beg answers. I think, ladies and gentlemen, this is a big challenge that you all face in a short time frame that you have set for yourself. If at the end of today, after all the papers have been read, all the discussions have taken place, all the questions raised and some potential solution is given, I'm hoping that I get a piece of paper, which will have atleast some of the answers. No miracles, no big answers, atleast some of the answers, some obvious, some not so obvious. That's what experts are here for and that's where we intend to take up from. No Government is a sole source of wisdom; no department can come-up with a solution on its own alone.

So, when I leave here, I hope that this challenge that I throw down to you, which you have set for yourself, I hope that you'll take up that challenge and in earnest look at how you can help us to prevent last year's disaster from hither in Pakistan in this year or in future years to come.

I thank you all Ladies and Gentlemen!

Pakistan Zindabad!

**A REPORT ON
INTERNATIONAL WORKSHOP ON FLOODS
IN PAKISTAN-2010 (LESSONS LEARNT AND WAY FORWARD)
HELD ON SATURDAY, THE 12TH MARCH 2011**

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After successfully participating in the 60th IEC Meeting of ICID and 5th Asian Regional Conference held from 5-11 December 2009 at New Delhi and coming-out of it with great Laurels/achievements, a two member delegation of Pakistan Engineering Congress comprising of the following participated in the 61st IEC meeting and 6th Asian Regional Conference of International Commission on Irrigation and Drainage (ICID) held in Yogyakarta, Indonesia from 10-16 October 2010.

Engr. Husnain Ahmad

President Pakistan Engineering Congress /

Member of Permanent Committee for Technical Activities (PCTA)

Engr. Syed Mansoob Ali Zaidi

Vice-President Pakistan Engineering Congress /

Former Secretary Irrigation and Power Department, Punjab

Pakistan achieved a great honor at the aforesaid meeting as Engr. Husnain Ahmad, President Pakistan Engineering Congress was elected as Vice-President ICID-2010-2013 (Asia Zone)

Mr. Husnain Ahmad took the opportunity of giving a presentation depicting the colossal destruction of precious lives, property, standing crops, food grains, infrastructure and above all displacement of 20-million souls by the un-precedented floods that occurred due to abnormal rainfall in the month of July and August 2010. The district / province wise statistics of the destruction presented at the Conference stunned the international delegates attending the Conference.

They resolved that it would be pertinent for Pakistan Engineering Congress along with the participation of Pakistan National Committee on Irrigation and Drainage (PANCID) / Federal Flood Commission of Pakistan and ICID to organize an International Workshop at which experts from member Countries of ICID and other Countries (WWF etc) and from Pakistan may probe, analyze the phenomena of floods in the national and international perspective and may formulate a strategy to fight-out the disastrous socio-economic fall-out.

In accordance with the above decision at the ICID Conference, an International Workshop on the topic of Floods in Pakistan-2010 (Lessons Learnt and Way Forward) was held at the auditorium of Pakistan Engineering Congress on March 12, 2011. Federal Minister for Water and Power, the Honorable Syed Naveed Qamar presided over the event as Chief Guest. Mr. Asjad Imtiaz Ali, Chief Engineering Advisor / Chairman Federal Flood Commission / Chairman PANCID and Deputy Chairman NDMA (National Disaster Management Authority) also graced the event with their presence.

The Conference was attended by a large number of delegates, and covered by print / electronic media, inaugural session telecast live by Pakistan Television Network.

The proceedings started with the recitation from the Holy Quran after which Engr. Husnain Ahmad, President Pakistan Engineering Congress presented his welcome address. The Conference was attended by foreign / domestic experts who presented their papers as detailed below;

Floods 2010, The Event, Issues and Way Out

By:

Engr. Asrar-UI-Haq and Engr. Syed Mansoob Ali Zaidi

The following strategic interventions need to be planned and implemented for improving flood management and mitigating the impacts of flood disasters:

- Build water storages to mitigate the impact of super floods
- Build back better and safer structures keeping in view the new benchmarks
- Invest in disaster preparedness and effective management of relief and early recovery when it happens
- Better regulation of riverine / khadir areas and a proper regulatory and enforcement mechanism

Policy Changes, Restoration Efforts and Socio-Economic-Environment Benefits:

Learning From 1998 Yangtze Flood Experience

By:

Dr. Lifeng Li

- Non-structural approach, such as restoration of Wetlands for flood retentions and room for river, should be paid special attentions, thus combined with structural approach for flood management.
- In water-scarce countries like Pakistan, flood management should be transited from disaster-oriented to water- resource –oriented management.

Adaptive Flood Management

By:

Dr. Kamran Emami, Chairman of ICID

Working Group on Comprehensive Approaches to Flood Management

Weather radar have proved to be effective and efficient means for measuring the real time participation in many countries especially Japan, France, considering the area of the basic main rivers affecting Pakistan. It is proposed to buy and install at least two weather radars to the area. It should be mentioned that weather radar are problem shown but need expert operators and good maintenance. By using the weather radar, the accuracy of meteorological forecasting would also be enhanced.

The Tarbela dam has reduced the peak of last year flood by 35%. What we need is seasonal flow forecasting and flood forecasting and weaving system. Additional weather radar will help.

Due to considerable hydrological uncertainties, the risk of the failure of dam especially embankment Dam exist, which need to be recognized and mitigated, thus enhancing the safety

with a relatively low cost. This strategy was applied to more than 100 dams in the U.S.A., and it has proved to be very successful.

Floods of 2010-A Probe, A Quest

By:

Engr. Usman-e-Ghani

- Yangtze Forum like body for construction of dams in Pakistan so as to get agreement of all the stakeholders.
- Study of climatic change impacts for all 10 zones of Pakistan so as to redefine the water resource management concepts.

Experiences in Flood Emergency Action Plan

By:

Dr. Mohammad Ali Banihashemi

- Emergency management is a very complicated task. It needs a lot of cooperation and coordination. Usually countries of Middle East are weak in team work. It is very urgent for Water and Power Authority of Pakistan and Disasters Management Organization (NDMD) to sit together and try to work together. You need a flood committee within NDO, because their job is quite comprehensive and wide, dealing with all types of disasters. Floods need specific attention paid by relevant organization.
- Document in more detail, all your experiences from last year's flood. It should count for all successes and more importantly your failures. Reporting the extent of damages is not enough.

Provision of Safe Drinking Water for Flood Affected Areas

By:

Dr. Muhammad Anwar Baig and Mr. Irfan Ahmad Qureshi

- Provision of safe water-Prefabricated plants be made available.
- Demand be calculated based, on remote sense/GIS during floods for provision of water to community.
- Small bucket size plants be made available at camps.

Pakistan Flood 2010: An Opportunity for Building Back Better

By:

Dr. Syed Shabih-ul-Hassan Zaidi

Rehabilitation and Reconstruction of homes, public facilities, utility services and human settlements should be done using Town planning principles and planning codes in the form of model villages and planned neighborhoods in the urban areas. Settlements located in the flood prone areas must be relocated.

FLOODS in Pakistan 2010 (Lesson Learned and Way Forward) in Agriculture Sector (A Success Story)

By:

Dr. Muhammad Ashfaq (T.I.)

There is a dire need to survey and reidentify the path way of rivers and canal network in the light of current floods.

- Improve and extend the Flood Forecasting System to include upper Indus above Tarbela and Kabul River above Nowshera (Telemetry System on Tributaries and additional weather radars).
- Development of flood management guidelines for Tarbela and Mangla reservoirs so as to enhance their flood mitigation role.

Engr. Dr. Izhar-ul-Haq

- Build Storages/ Dams
- Review and strengthen flood embankments.

Flood 2010 - Losses and future scope of the KP Dairy sector

By:

Prof Dr. M. Subhan Qureshi

- To develop an extension network based upon efficient data recording system for the purpose of continuously assessing the nutritional, reproductive and health management practices and economic feasibility of the dairy enterprises
- To introduce the concept of entrepreneurship in the low-input haphazard peri-urban dairy farming in the province and the country. Also to provide an effective and sustainable genetic improvement backup for the peri-urban dairy farms.

Flood 2010 in Pakistan and its Damages

By:

Engr. Ch. Ghulam Qadir

- Regular probing about the health of barrages and marginal bunds should be carried out.
- Avoidance of partial implementation of flood works as well as restoration of stone apron must not be less than 50% of the designed quantity of the flood works. Moreover, availability of stone stacks at marginal bunds must be ensured.
- Topographic and Hydrographic surveys of sufficient river reach upstream and downstream of the barrage after every flood season must be a regular feature for recording morphological conditions in the vicinity of the barrage.

Re-examining Flood Management Measures for Sindh

By:
Engr.Iqtidar H. Siddiqui

Indus discharge above Tarbela is mostly due to snowmelt, whereas, flood discharges in Indus below Tarbela are mainly due to monsoon rains in the catchments. Reservoirs above Tarbela would, therefore, not create the desired flood control affect. In view of several options available for flood protection, it is proposed that all the options should be examined. Most viable option of flood fighting is construction of multi purpose reservoirs; bypassing the flood flows from the upper Sindh and thence ensuring safe passage of water to the sea through bunds.

- There are a number of reservoir sites which can be developed as multi purpose reservoirs. They can be operated singly or in combination with off channel storage reservoirs.
- Bypass through Raineer River is also a very viable option. Through this bypass a large flood discharge can be diverted to lands in Sindh which can be developed as irrigated areas.

The delegates were given souvenirs. Towards closure of the workshop, the speakers assembled for discussion and formulation of a set of recommendations.

RECOMMENDATIONS TO FEDERAL GOVERNMENT FOR IMPROVING FLOOD MANAGEMENT IN PAKISTAN

1. The flood management in Pakistan needs an integrated system catering for all pre-flood, during the flood, and post-flood requirements.
2. Water storages, both on-channel and off-channel, have to be built to attenuate the flood peaks.
3. The flood warning and forecasting systems all over the country need extension and improvement. The capacity building both in terms of equipment (weather radars), softwares, and human resources need immediate attention.
4. All river works; especially flood protection works and barrages should be given due importance and priority in resource allocation; irrespective of flood frequency. All the flood bunds in the country should be redesigned to meet the latest requirements.
5. New bund systems should be planned on holistic requirements.
6. The riverine / khadir (active flood plain) areas need better regulation and a proper enforcement mechanism for planned use in due consideration of flooding risks.
7. Regular updating of the Standard Operating Procedures (SOPs), drills for disaster management, capacity building, and training of managers for flood protection, barrage management, and relief works, need immediate positive attention.
8. All the known flood routes and drainage systems should be kept in good order and new ones identified.
9. The general public must be kept duly informed on all aspects of floods and their risks along with managing positive role of the media.
10. Only properly qualified, well trained and dedicated staff should be entrusted with the charge of barrages and flood works.

11. Better inter provincial coordination is needed for embankments and channels which serve more than one province.
12. The Federal Flood Commission (FFC) presently has a limited role. This role needs to be enhanced along with expansion of the organization. The idea of conversion of the FFC into a Federal Flood Control Authority (FFCA) needs serious consideration. This authority if created should have proper in-depth coordination with provincial flood and barrage management organizations.