

WORLD WATER-DAY

MARCH-2010

On the Theme of
"Communicating Water Quality
Challenges and Opportunities"

Celebrated by
PAKISTAN ENGINEERING CONGRESS



PAKISTAN ENGINEERING CONGRESS

(4th Floor) Pakistan Engineering Congress Building,
97-A/D-1, Liberty Market Gulberg-III, Lahore 54660
(Near Liberty Roundabout)

Phone : 35784238, 35784235 Fax : 35784236

Web-site : www.pecongress.org.pk

E.mail : info@pecongress.org.pk

ON BEHALF OF PAKISTAN ENGINEERING CONGRESS

Pakistan Engineering Congress as a body does not hold
itself responsible for the opinions expressed by different
authors in this Volume

Compiled and Edited
By

Engr. S. M. A. Zaidi

Vice President / Convener Publication Committee

**Price Rs. 100/-
Members Free**

Can be had at

PAKISTAN ENGINEERING CONGRESS

(4th Floor) Pakistan Engineering Congress Building,
97-A/D-1, Liberty Market Gulberg-III, Lahore 54660
(Near Liberty Roundabout)

Phone : 35784238, 35784235 Fax : 35784236

Web-site : www.pecongress.org.pk

E.mail : info@pecongress.org.pk

PAKISTAN ENGINEERING CONGRESS
THE EXECUTIVE COUNCIL FOR THE 71ST SESSION

PRESIDENT
Engr. Husnain Ahmad

VICE PRESIDENTS

1	Engr. R. K. Anver	8	Engr. Ch. Muhammad Rashid Khan
2	Engr. Dr. Bagh Ali Shahid	9	Engr. Pir Muhammad Jamil Shah
3	Engr. Ch. Muhammad Arif	10	Engr. Shehzad Jamil Sheikh
4	Engr. Shaukat Ali Shaheen	11	Engr. S. M. A. Zaidi
5	Prof. Dr. Ing. Syed Ali Rizwan	12	Engr. Akhtar Abbas Khawaja
6	Engr. Ch. Ghulam Hussain	13	Engr. Faqir Ahmad Paracha
7	Engr. Dr. Izhar ul Haq		

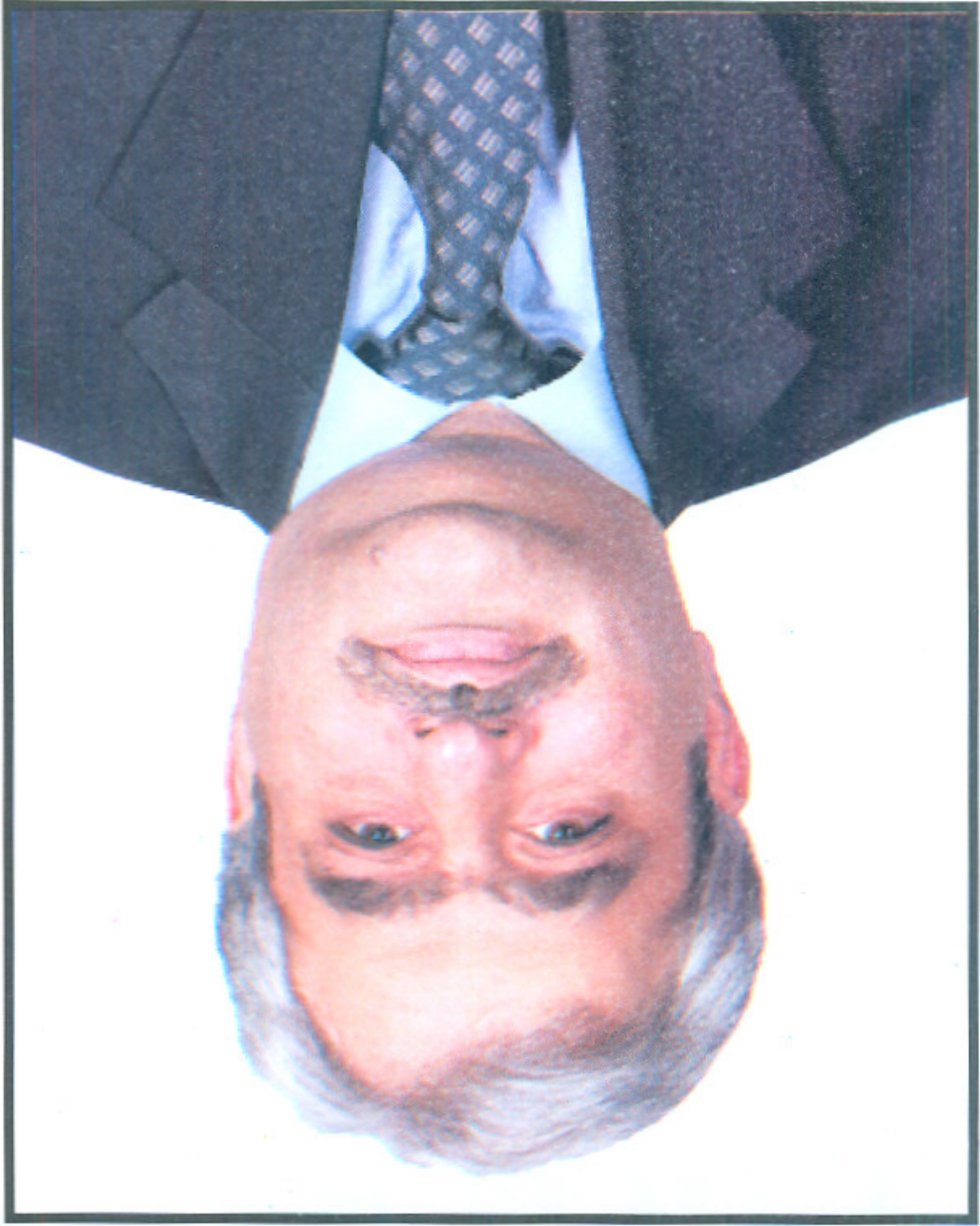
OFFICE BEARERS

1	Engr. Ch. Ghulam Hussain	...	<i>Secretary</i>
2	Engr. Iftikhar Ahmad	...	<i>Treasurer</i>
3	Engr. S. M. A. Zaidi	...	<i>Business Manager</i>
4	Engr. Ahmad Nadeem	...	<i>Joint Secretary</i>
5	Engr. Muhammad Sarfraz Butt	...	<i>Publicity Secretary</i>

EXECUTIVE COUNCIL MEMBERS

1	Engr. Abdul Sattar Khan Lillah	18	Engr. Prof. Zia ud Din Mian
2	Engr. Ahmad Nadeem	19	Engr. Rana M. Aslam Chohan
3	Engr. Anwar Ahmad	20	Engr. Rana M. Saeed Ahmad Khan
4	Engr. Atiq ur Rehman	21	Engr. Sajjad Hussain Nasim
5	Engr. Capt. (R) M. Qadir Khan	22	Engr. Shabbir Ahmad Qureshi
6	Engr. Ch. Aftab Ahmad Khan	23	Engr. Syed Anwar ul Hassan
7	Engr. Ch. Foad Hussain	24	Engr. Syed Saleem Akhtar
8	Engr. Ch. Iftikhar ul Haq	25	Engr. Tahir Anjum Qureshi
9	Engr. Ijaz Ahmad Cheema	26	Engr. Zaffar Ullah Khan
10	Engr. Khalid Javed	27	Engr. Syed Abdul Qadir Shah
11	Engr. Liaqat Hussain	28	Engr. Shahid Ahmad
12	Engr. Muhammad Ibrahim Malik	29	Engr. Tariq Iqbal Mian
13	Engr. Muhammad Saeed	30	Engr. Faisal Shehzad
14	Engr. Muhammad Sarfraz Butt	31	Engr. Iftikhar Ahmad
15	Engr. Najam Waheed	32	Engr. Malik Ata ur Rehman
16	Engr. Naveed Alam	33	Engr. Taufique Ahmad
17	Engr. Nayyar Saeed		

Engr. Husnain Ahmad
President
Pakistan Engineering Congress



WORLD WATER-DAY MARCH-2010

TABLE OF CONTENTS

Sr. No.	Title of Paper	Author	Page No.
1.	Foreword	<i>Engr. Ch. Ghulam Hussain Secretary Pakistan Engineering Congress</i>	1
2.	Address of Welcome on World Water-Day March-2010	<i>Engr. Husnain Ahmad President Pakistan Engineering Congress</i>	5
3	Inaugural Address by the Chief Guest	<i>Mr. Shakil Durrani Chairman, WAPDA</i>	15
4.	Prevalence of <i>ESCHERICHIA COLI</i> within Public Drinking Water Supply in 1-8 Sector, Islamabad	<i>Sajida Rasheed, Imran Hashmi and Sara Qaiser</i>	19
5.	Safe Drinking Water and Sanitation in Punjab	<i>Salman Yusuf</i>	32
6.	Chemical Quality Assessment of Major Brands of Bottled Water in Lahore	<i>Asma Saeed, Shabana Kauser, Imran Kalim and Muhammad Iqbal</i>	51
7.	Shallow Groundwater Quality of Un-Commanded Areas of Punjab Doabs	<i>Abdul Hameed and Abdul Majeed</i>	62
8.	Managing Water Scarcity and Quality Deterioration in Pakistan : Challenges and Options	<i>Dr. Allah Bakhsh Sufi, Talib Hussan and Khalid Javed</i>	72
9.	Sustaining Irrigated Agriculture in the 21st Century : Options for Pakistan	<i>Asad Sarwar Qureshi, and Khalid Mohtadullah</i>	89
10.	Rainwater Harvesting Potentials for Rawalpindi and Islamabad	<i>Muhammad Ali and Zahiruddin Khan</i>	98

11.	Application of Fiscal Measures for Securing Access to Safe Drinking Water – An Analysis of Community Perceptions in Abbottabad District	<i>Saadullah Ayaz and Mahmood Akhtar Cheema</i>	108
12.	Groundwater Management and Recharge Potential as an Alternate to Mega Surface Storages	<i>Muhammad Basharat and Danial Hashmi</i>	114
13.	Role of Brackish Water in the Reclamation of Salt Affected Soils	<i>Munawar Ali and Muhammad Rafiq</i>	132

FOREWORD
By
Engr. Ch. Ghulam Hussain*
ON
WORLD WATER DAY MARCH 22, 2010

The earth, we live on, was created by Almighty Allah around 4.54 Billion years ago according to Wikipedia and every living thing on it was made from water. And what an undeniable testament that all life whether human, aquatic, avian or botanic can be seen humming and throbbing only there where is water otherwise it is nonexistent.

Since its creation with sparse population, availability of water posed no problem to the life and all went well. Little wonder the savants and the selfsame think-tanks could hardly be expected to foresee catastrophic development of water shortage poised to threaten the existence of life on earth.

Now that the population on earth has grown to astronomic proportions, the water availability, which could not keep up with the genuine demand, is rapidly becoming scarce. It is over 1430 years now that Almighty Allah revealed in the Holy Quran that He made all living things from water (SURA Al-anmbia verse 30). Accordingly, there would be no life when there is little or no water. Struggle for existence of life would invoke wars between nations and such an eventuality foreseen in immediate future between Pakistan and India is fraught with heavy human and infrastructure losses.

However, the Nations of the world discussed this acute and frightening issue in the year 1992 as to how best tap, conserve and manage the usage of available water resources in an orderly and viable manner for the living creatures.

As a result, in 1992 during the "United Nations Conference on Environment and Development (UNCED)" in Rio de Janerio the comity of nations took the initiative for observance of World Water Day starting on 22nd March of every year as of 1993.

Further, UNO during its 58th Session declared the period from 2005-2015 as the international decade for Action "Water for Life". Starting on World Water Day – 22nd March 2005 it marked the start of it. The water for life decade 2005-2015 is expected to boost the chances of achieving international water goals including

*Secretary, Pakistan Engineering Congress & Managing Partner, National Development Consultants (NDC).

those in UN millennium declaration. The aspects of available water resources, their conservation and usage are manifold. Every Nation is engaged in addressing the issue in the perspective of its respective requirements. Seminars / Symposia on the topic proposed by UNCED are held every year on this Day where technical papers on various aspects of the issue are presented and discussed to enlighten and educate the engineers, scientists and the public at large. Such topics are manifold and can be on various aspects of water usage.

The symposium on World Water Day for the year 2005 was held on 22nd March by Pakistan Engineering Congress in collaboration with Water and Power Development Authority (WAPDA). Six technical papers by eminent engineers and experts were then presented on the diverse fields from Large Dams to drinking water and related public hygienic care.

At the World Water Day on March 22, 2006 eight technical papers were presented which included "Water as Instrument of peace, the vision of Indus Waters Treaty 1960". In this paper Engr. Jamaat Ali Shah, Pakistan Commissioner for Indus Waters dwelt at length on the pros and cons of the historical treaty where three Eastern Rivers of the system i.e. the Sutlej, the Beas and the Ravi were apportioned to India and the remaining three western, the Chenab, the Jhelum and the Indus fell to the lot of Pakistan with the proviso that India could use run of the river water at these rivers for generation of Hydropower. Quite arbitrarily and in sheer disregard of the aforesaid proviso, India has constructed 62 Dams for water conservation and diversion or exploitation of releases to meet its own ends and to cause huge devastation of irrigated lands of Pakistan.

At World Water Day 2007, the Secretary Pakistan Engineering Congress in his key note address drew the attention of the audience about the unpleasant yet undeniable staggering figure of the shortage of water availability the world over. Two out of three people in the world, he said, would face water shortages by 2025. But the burden of water related problems would fall most heavily on the poor, living in the rural areas.

In the context of Pakistan, he said, development of water resources is essentially required for the sustained economic development. He went on to say, that storage capacity of reservoirs constructed on the Indus and its tributaries provided overall increase of about 22 percent in the canal supplies as compared to the pre-dams scenario. However, due to progressive sedimentation of these reservoirs reduction in the storage capacities of these dams was anticipated to be over 6.03 MAF by the end of this year which is equivalent to the capacity of one mega reservoir.

On the other side the current population of about 150 million was projected to become 220 million in 2025. Hence, without building another major storage dam by the year 2015, it would not be possible to feed the growing population. Accordingly, immediate measures, he said, would be required to start construction of Kalabagh, Basha and Akhori dams. Kalabagh Dam has unluckily been shelved by the Government of Pakistan under anti-nationalist Political Exploiters ; others Dams are no where in sight as yet.

Eight technical papers on the topic of combating water scarcity were presented and discussed. Most important was the one presented by Usmane Ghani Joint Commissioner (Pakistan Commissioner for Indus waters) on coping with water scarcity and Indus waters treaty vision. He dwelt at length on the signing of the treaty and highlighted major issues that have cropped up between Pakistan and India which are bringing to bear serious repercussions due to arbitrary misappropriation of waters of three western rivers by India.

In the year 2008, nine technical papers were presented and discussed on the subject of waste water and solid waste treatment and recycling for combating environmental and public health hazards etc.

In the year 2009 World Water Day was observed on March 28, 2009. The theme of the Seminar was 'Transboundary Waters' which incidentally was considered most relevant of all the Seminars held thus far in the context of Indo-PAK conflict on arbitrary and irrational hold-up of the Chenab and the Jhelum waters by India. Six very convincing and logical papers on the subject were presented and deliberated.

In the year 2010, the World Water Day was convened on March 22, 2010 at Mashhadi's Hall of Pakistan Engineering Congress. The theme for the Seminar was "Communicating Water Quality Challenges and Opportunities". Ten Technical Papers were presented by learned speakers on the related subject at the event. In his address of Welcome, the President of the Engineering Congress discussed about the rising Global temperature which by the end of 21st Century would increase from 3 to 3.2 degree Celsius and melt the great Himalayan glaciers and cause catastrophic consequences in the shape of:

- Flooding.
- Drastic reduction in river in-flows resulting in food shortages, famines, starvation.

- Prolonged electricity outages and the consequent over dwindling living standards.
- Drastic reduction of Agricultural yields and consequent food shortage, starvation and throwing millions of people much below poverty lines. Besides, the oceans would rise unimaginably engulfing vast areas of the earth. This is another aspect of water losses which calls for immediate and sustained preventive measures to check greenhouse gases emissions the world over.

Papers published in this volume are open for written discussion where Engineers and Scientists are invited to take part. This is an important issue which merits continuous attention of the professionals as well as decision makers to absolve themselves of their obligation towards posterity. Depending upon the volume of discussion on papers received, the congress would also like to publish a discussion Volume in the intervening period 3 months before the next "World Water Day" on March 22, 2011.

To meet with the increasing demand from the Engineering Congress Members and Scientists, this Volume is being published in a befitting and decently bound booklet for distribution amongst them.