WORLD ENVIRONMENT DAY

June 2009

On the Theme of

"Your Planet Needs You-Unite to Combat Climate Change"

Celebrated by :

PAKISTAN ENGINEERING CONGRESS

PAKISTAN ENGINEERING CONGRESS

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WORLD ENVIROMENT DAY – 6TH JUNE 2009

FOREWORD
By
Engr. Ch. Ghulam Hussain*

Eversince it occurred to the Man that his life could be comfortable and easier if he started making improvements in his primitive lifestyle, he undertook to invent tools and implements made of stone and subsequently of crude metals. With so improvised tools and implements he started raising houses better than caves to live in, took to turning soils for planting seeds for better edible crops and hunting animals, birds or aquatic creatures for food. Such petty disturbances of the development did not upset the exalted propensity of the equilibrium called the natural phenomenon of the universe created by Almighty Allah. It went well for myriads of years without in anyway affecting the health of the people. But in the 20th Century when the development took astronomical strides in all walks of life the natural phenomenon of equilibrium lost its balance horribly.

Disturbance of the natural equilibrium by the developmental activities of human beings started causing Global warming interalia other natural phenomenal imbalances. By the end of present century Global warming could result in melting away of the glaciers astoundingly generating unprecedented floods and raising sea level by about 7 metres with devastating consequences which are not hard to be conceived.

These efforts, to quote a few, enabled them, (i) construct canal systems and in its wake brought menace of water-logging and related problems of health hazards and drainage for reclaiming wetlands, (ii) introduce speedy transport for transporting men and materials and brought in traffic hazards with exorbitant mono-oxide gas emissions and (iii) generate emissions of high percentage of hazardous carbon dioxides.

Foreseeing the hazards looming large for the very existence of the life on earth the United Nations in its convention at Stockholm in 1972 urged upon the comity of Nations to launch Environment Protection and conservation programmes in their respective countries.

In Pakistan Environment Protection Ordinance was enacted in 1983 to start with, followed by National Conservation Strategy (NCS) in 1992. Its culmination came in 1997 with enactment of Pakistan Environment Protection Act specifying National Environment Quality Control Standards as a Bench Mark.

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

In 2001, the Government of Pakistan formulated the National Action plan to arrest the ever increasing degradation of Environment due to man-made unfriendly environment Projects. However, it is a pity that these objectives remained un-addressed both at institutional and individual levels.

Pakistan Engineering Congress, in pursuit of one of its cardinal objective of promoting Science and profession of Engineering, has taken upon itself to hold World Environment Day every June where technical papers are invited and presented. This year theme of the World Environment Day was proposed as "your planet needs you-unite to combat climate change" and the event was held on June 06, 2009 at the Mashhadi Hall of Pakistan Engineering Congress, Lahore.

Following 14 technical papers were presented and discussed on the occasion related to the topic:

1. Social and Economic Benefits of Weather, Climate and Water Services.
   By: Dr. Qamar-uz-Zaman Chaudhry.

2. Influence of Climate Change on Upper Indus River Flows.
   By: Danial Hashmi and Muhammad Siddique.

3. Vehicular Emissions and their Impacts on Human Health in Karachi – A Case Study.
   By: Mohammad Ashiq, Ambareen Kanwal and Said Rahman

4. Emission Inventory of Lahore Pakistan-2007.
   By: B.M. Ghauri, A. N. Khan.

5. Accountability of Chemical Industries Towards Sustainable Development
   By: S.E. Benjamin

6. Environmental Issues Related to Water Resources Development and Integrated Water Resource Management.
   By: Dr. Muhammad Nawaz Bhutta.

7. E-Waste: An Impending Challenge
   By: Muhammad Daniel Saeed Pirzada, Farkhanda Nahid Pirzada

8. Unsafe Drinking Water and Health Hazards
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9. Environmental Management for Menace of Water-Logging of Chashma Jhelum Link Canal inThal Desert Area – A Case Study.
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13. An Overview of Polyethylene Terephthalate Recycling in Pakistan
By: Dr. Zahiruddin Khan.

14. Poverty Alleviation: A Challenge for Pakistan.
By: Shahida Saleem.

All the proceedings of the World Environment Day 2009, from the address of welcome by the President, Pakistan Engineering Congress, Engr. Husnain Ahmad and address by the Chief Guest Mian Amer Mahmood form part of the volume.

PAKISTAN ENGINEERING CONGRESS
SEMINAR
ON
WORLD ENVIRONMENT DAY – 6TH JUNE 2009

ADDRESS OF WELCOME
BY
ENGR. HUSNAIN AHMAD

PRESIDENT
PAKISTAN ENGINEERING CONGRESS

The Honourable Chief Guest Mian Amer Mahmood Sahib, Respected Scholars, Executive Council Members, Distinguished Guests, Fellow Engineers, Ladies and Gentlemen

Assalam-o-Alaikum

I am glad to deliberate and interact with the galaxy of Engineers and Scientists on the event of World Environment Day 2009 with its specific theme:

"Your Planet Needs You – Unite To Combat Climate Change"

The Planet Earth is presently the habitat of more than 6.5-billion people, living in villages, towns, Cities, mega cities. Mountains, islands etc., are now citizens of a Global village and are dependent on each other, and this number is expected to rise to 8.5 billion people by 2050.

The conditions and circumstances in the political boundaries have far reaching and instant effects on the life of mankind. It is therefore, more than ever before that the Planet Earth needs joint efforts of all the nations/countries to save it from degradation.

Each country irrespective of whether, it is an industrially advanced one, or an emerging economy, all have to work for better living conditions and save the land and the environment from degradation. In particular this calls for unity to combat climate change. This noble and painstaking effort requires dedicated and planned activities, and I would like to avail this opportunity to briefly point-out and mention the broad areas requiring such dedicated and planned activities.

Greenhouse Gas Emissions Reduction is the most discussed issue on majority of the forums. We must be aware of the fact that America, China and

India are the foremost contributors of greenhouse gas emitters. The emission in New York alone is more than emitted by 52-countries. The major sources of Greenhouse gas emissions include burning of Fossil Fuels, Motor Vehicles, Rickshaws, Garbage Dumps, Coal and Gas powered Power Houses, production of CFC's (Chlorofluorocarbons) deforestation (un-checked in our country).

The Kyoto declaration was an attempt to check greenhouse Gas emissions. However, it failed because it made mandatory for the signatories of the accord to limit the emissions by a specified percentage within a time frame. The scheme was unworkable from its very inception. The Montreal accord was, however, an improvement because:

- Limits of production of HFC's were specified. So was the consumption (production plus imports minus exports).
- Industrialized countries were required not only to curtail production consumption of HCFC's but were charged with the responsibility to help emerging economies in-containing the emissions through financial assistance and transfer of technology.

The controlling of greenhouse gas emissions requires transformations of Technology (R & D). Some authorities have suggested a 20-20-20 package.

- 20% Reduction in greenhouse gas emissions.
- 20% saving in energy consumption.
- 20% of total generation should at least be from alternate energy sources (Wind, Solar energy etc.)

Similarly, **Arresting Climate Change** is another area requiring focused approach. The abnormal increase in temperatures the world over is adversely affecting the Afro-Asian countries enormously not due to their doings but due to un-warranted human blunders.

A Harvard university icon has characterised the destruction of 50-Million acres of tropical rain forests annually to the extinction of the age of dinosaurs. Indonesia and Brazil are doing havoc in deforestation by logging and ground clearance for growing Palm Trees / Edible Oil Plants. In Brazil, dunes are advancing by 82 feet every year due to deforestation.

In a recent article a famous Brazilian environmentalist, Stuart Grudging has stated that they are seeing the warming and experiencing condition in many parts of their country that appear to be associated.

A study in government planning estimates that the Amazon area will heat-up by as much as 6-8 degrees Celsius (10.8 to 14.4 Fahrenheit) by 2100 resulting in a 20 percent reduction in rain-fall.

In Pakistan unchecked deforestation is costing approximately Rs. 300 million annually, whereas, the country is already deficient in this resource. Even some of the land allotted by government for Mangrove Forests has been surreptiously handed over to housing tycoons.

We also need to specifically address the area pertaining to **Observed Changes in Climate.** The hydrological cycle is linked with changes in atmosphere. Warming of the climate system in recent decade is unequal, as is now evident from observations, of increases in global average air, ocean temperature, widespread melting of snow and ice and rising of global sea level.

The best estimate linear trend in global surface temperature from 1906 to 2005 is a warming of 0.74° C (range 0.56 to 0.92° C) with a more rapid warming trend over the past 50 years.

Recent analysis and research show warming rate in the lower and mid troposphere are similar to the rate at surface. Climate warming observed over the past several decades is consistently associated with changes in a number of components of the hydrological cycle and hydrological systems such as changing precipitation patterns, intensity and extremes, widespread melting of snow and ice, increasing atmospheric water vapour.

Increasing evaporations and change in soil moisture and run off. There is significant natural variability. Similar changes were observed in Pakistan.

Recent Trends in Climate Change in Pakistan are as follows:

- Rise in mean temp of 0.6-1.0° C in arid coastal areas, arid mountains and hyper arid plains.
- 10-15% decrease in both winter and summer rainfall in coastal belt and hyper arid plains.
- 18-32% increase in rainfall in monsoon zone especially the sub-humid and humid areas.
- 5% decrease in relative humidity in Balochistan.
- 0.5 to 0.7% increase in solar radiation over southern half of the country.
- 3-5% decrease in cloud cover in central Pakistan with increase in sunshine hours.
- 3-5% increase in ETO due to 0.9° C temp increase.
- 5% increase in net irrigation water requirement with no change in rainfall.

- Expanding aridity in Northern parts outside monsoon range and arid regions.
- During last 100 years, 7 strong, 10 moderate and 7 weak EL Nino events.
- 17-64% departure of rainfall from normal during strong events.
- Frequency of depressions and cyclones increased over Bay of Bengal and Arabian Sea during last 50-years.
- The intensity of systems also increased during last quarter of the 20th century.
- Gross per capita water availability in Pakistan will decline from 1350 m^3 /yr in 2001 to as low as 858 m^3 /yr in 2025.

Water Availability / Water Quality is another key area that can not be ignored. The declining availability of drinking water supplies is one of the most important environmental issues faced by various countries at the present time.
It has been estimated that nearly two-thirds of nations worldwide will experience water stress by 2025.

Protected source water and modern, well-maintained drinking water treatment plants can provide water adequate for human consumption. However, consumption of tap water may be associated with health risks for susceptible individuals due to deterioration of microbiological water quality in the distribution system even when effluent water at the treatment plant may meet all existing water quality standards.

This deterioration in water quality occurs either because of regrowth of microorganisms in biofilm, which are formed on interior surface of water pipes, or because of back siphoning of contaminated water.

In developing countries, many existing systems are operating intermittently and at a fraction of their capacity and deficiencies are mainly caused by the failure to disinfect water or maintain a proper disinfection residual; low pipeline water pressure; excessive network leakages; corrosion of parts; inadequate sewage disposal; and inequitable pricing and usage of water.

Similarly in Pakistan, this issue has not been fully recognized or solved especially as far as water networks are concerned.

According to a survey conducted by Pakistan Council of Research in Water Resources (PCRWR) water resources of Pakistan are facing the four major water quality tribulations such as bacteriological contamination (28-100%), arsenic (0-100%), nitrate (0-50%) and fluoride (0-55%).

Drinking water in most urban cities such as Karachi, Lahore, Hyderabad, Peshawar, Multan and even Abbotabad and Islamabad has been found to be laced with biological and chemical pollutants.

The lacuna can be solved through improved research, monitoring and surveillance, increased understanding of distribution system deficiencies and focusing limited resources on key areas thereby ensuring improved quality in water supplies.

The country is suffering an annual loss of Rs. 120 million annually on account of water borne diseases alone. However, laudable work has been done on "Southern Punjab Basic Urban Services Project" as will be seen from under mentioned position:

Sr. No.	Description	Work Completed (Nos)	Work - in-Progress (Nos)	Work to be Undertaken Later on (Nos)	Total Numbers
1	Water Supply Schemes	5	2	-	7
2	Sewerage System / Disposal Station and Sewerage Lines	10	9	-	19
3	WWTP (Waste Water Treatment Plants)	-	13	1	14
4	Road Lines	9	-	2	11
5	Slaughter Houses	6	2	2	10
6	Solid Waste Management i. Machinery and Equipment ii. Sanitary Load Fill Stations iii. Solid Waste enclosures	-	21	-	21
7	Incremental Land Development (Mian Channu)	1	-	-	1
		31	47	5	83

Ladies and Gentlemen

How can we ignore, the issues associated with **Urbanization and Problem of Solid Waste Management.** Present Population of our beloved country is 170-million and is expected to rise to the staggering figure of 221-million by 2025. This is bound to result in accelerated urbanization and emergence of big towns and mega cities due to migration of rural population to the cities in pursuit of employment opportunities, better living conditions and higher living standards. The example of Karachi is a case in point. Its present population of 15-million is visualised to touch figure of approximately 27-28 million by 2020 a shuddering scenario. Already 40 percent of its population i-e- 6-Million people live in squatter settlements i-e- Katchi-Abadies. Leaving the issues of housing (9000 housing back-log per year) transportation, accessibility to clean water, clear air, the problem of disposal of solid waste generated daily alone is in itself a gigantic problem contributing to urban pollution. Here given below are the statistics of generation of solid waste of a few cities:

City	Generation of Solid Waste per Day	Numbers of Landfill sites
Karachi	9000	2
Lahore	6000	3
Rawalpindi	700	1
Peshawar	675	2

It has been revealed that not more than 50-60 % of the generated solid waste is transferred to the landfill sites (and even that appears exaggerated). The position of small cities / towns is no better where people are living in areas strewn with waste materials. The re-cycling systems are extinct. Whatever scavenging is undertaken is done by poor people. They sell scrap metal to foundries, discarded bread to live stock farmers, broken glass to bangle manufactures and used paper to vendors of bags and wrapping materials.

Resultantly there is degradation of land and environment, air pollution, diseases and what not. Lesson! departmental collection and disposal of solid waste ought to be discarded. The work should be entrusted to private enterprise and latest techniques of collection, disposal and recycling of waste materials may be adopted.

The Position of Lahore with a population of over 7.5 Million is no better where there are 145 Katchi abadies.

The Position of Roads / Water supply and Sewerage facilities in these Katchi abadies is to say the least dismal.

Recommendations

- Environmental degradation is costing the country 6% of GDP. It is high time that an integrated Environmental plan is put in force.
- Smoke spitting Rickshaws / Vehicles ought not be allowed on the Roads.
- Strenuous efforts should be made to implement emission free energy generation schemes i.e. Wind / Solar / Hydel Projects.
- All open drains (these are numerous even in Lahore) need to be covered to save the degradation of Environment and the hazards to Public health.
- Stone crushers are eating up the scenic Hills of Margallas. This is outrageous and need to be stopped forthwith.
- Conversion of wood in charcoal (involving incomplete combustion) needs to be regulated as it produces carbon monoxide.
- In a recent workshop organized by SAPI (Sustainable Development Policy Institute) and CANSA (Climate Action Network South-Asia) emphasis was laid on technology transfer / adaptation vis-à-vis mitigation techniques which step is in the right direction
- South Korea has committed GBP 23 billion on projects to slash emissions and to produce low carbon appliances and we are losing $6-billion annually due to environment degradation. The stake for us is too high and needs action on war footing.
- Marble cutting workshops are operating in urban areas of Lahore posing a serious environmental and health problem. Such activities should be curbed sternly.
- No mercy need be given to those violating the Environment protection Laws in vogue.
- 50,000 Tons of E-Waste is being dumped in Pakistan in violation of international law creating Environmental and health hazards. It needs to be checked by EPA authorities.

Glimpses of the Event



From Left : Engr. Husnain Ahmad President Pakistan Engineering Congress, Mian Amer Mahmood District Nazim & Engr. Ch. Ghulam Hussain Vice President / Secretary Pakistan Engineering Congress on World Environment Day 2009



Engr. Husnain Ahmad President Pakistan Engineering Congress giving shield to Engr. S. M. A. Zaidi Vice President Pakistan Engineering Congress on World Environment Day 2009. Engr. Ch. Ghulam Hussain Vice President / Secretary Pakistan Engineering Congress is in centre



Engr. Husnain Ahmad, President, PEC
presenting Welcome Address on World Environment Day 2009



Engr. Husnain Ahmad, President Pakistan Engineering Congress and
Chief Guest Mian Amer Mahmood



The Audience of the World Environment Day 2009



The Audience of the World Environment Day 2009

PAKISTAN ENGINEERING CONGRESS
SEMINOR
ON
WORLD ENVIRONMENT DAY – 6TH JUNE 2009

ADDRESS
BY
MIAN AMER MAHMOOD
DISTRICT NAZIM, LAHORE

President Pakistan Engineering Congress Engr. Husnain Ahmad, Distinguished Scholars, Ladies and Gentlemen

Assalam-o-Alaikum

I feel immensely grateful to Pakistan Engineering Congress for giving me the opportunity to listen to the scholarly presentations by eminent environmentalists, climatologists, experts on water supply and its quality, management of solid waste, electronic waste, vehicular emissions and above all on the theme of today's event:

"Your Planet Needs You: Unite to Combat Climate Change"

The rising temperatures all over the world aptly called "Global Warming" is a vital issue facing the humanity. It is an established fact that the temperature of the world was increasing continuously due to emissions from Industries, automobiles and other sources. It has wide spread Domestic as well as Global ramifications. The phenomenon of global warming is not a natural clamity but a product of own human blunders that have and continue to have dire socio-economic effects nay, the very survival of humanity is at stake. The global warming has disturbed the eco-system and is due to multifarious factors.

- Use of Fossil Fuel for generation of electric power and other industrial / commercial uses and the consequent emissions of greenhouse gases in the atmosphere. The main contributors are America, China, Russia and India.
- Smoke emitting vehicular traffic. There has been enormous increase in the number of vehicles plying on the roads in Pakistan.
- Deforestation is taking place on an alarming scale in the tropical rain forests. 50-million acres are lost annually as pointed by Engr. Husnain Ahamd in his address. Brazil and Indonesia are a case in point where

forests are fast disappearing for human settlements, raising of palm trees and raising of edible oil Plants.

- Due to global warming deserts are advancing at an alarming rate in Mongolia, Brazil and other countries.

Pakistan is extremely deficient in forest resources whereas approximately 25% of the land mass should be covered with trees. The forests are being denuded for use as fuel wood as well as are being cut down by the "Timber Mafia" and "Housing Barons" even the land given by the Government for mangrove forests are being stolen and handed over to the housing barons as pointed out by President PEC which is most unfortunate. Depletion of mangrove forests which provide cheap fuel wood to the common man, fruits and habitat for the birds etc is also taking place at an alarming rate. After Kyoto and Montreal Accord the signatories are heading towards Copenhagen in coming December. The problem of global warming is going to be discussed there in-depth for appropriate policies to curtail the production and consumption of HFC's / HCF's. Emphasis is expected to be on transfer technology for curtailing greenhouse emissions from advanced countries to the emerging economies as well as financial assistance. The solution to stop the abnormal melt of glaciers, sea-warming, floods, droughts due to global warming is to go for "Green Energy" i.e. alternate sources of energy such as wind solar energy etc

Pakistan is lucky in having huge wind / solar resources. The need is to get going at a fast speed on the generation of energy from these resources. In this connection technical and financial assistance may be obtained from advanced countries for clean energy. Also we should fully harness our abundant hydel energy potential of 20,000 to 25,000 Mega Watt. For this purpose mega reservoirs, may be constructed as well as run of the rivers energy potential may be exploited to the maximum extent.

The need of the hour is to create awareness about Environmental Pollution and Environmental Scientists can play an important role in creating awareness among the society

In the end I once again extend my congratulations to Pakistan Engineering Congress for assembling a galaxy of water resources experts and economists to apprise us on the burning issues of global warming, collection / disposal and recycling of solid waste etc.

"PAKISTAN PAINDABAD"