DAM ENGINEERING, ITS PRACTICE AND POTENTIAL IN PAKISTAN

By

Amjad Agha[1]

ABSTRACT

Most rivers in the World have seasonal flow pattern. There is more water in these rivers during rainy or snow melting season. In other parts of the year the flow in the rivers reduces and sometime becomes very small. The crop water requirement is however also important in low river flow season. Therefore the need to store water in the water surplus months to be used in the water deficient period has led to construction of dams and reservoirs. Another important use of the dams is the production of hydroelectric energy. The head of water created by the dam is used for creating water falls which run the turbines and generate electric power.

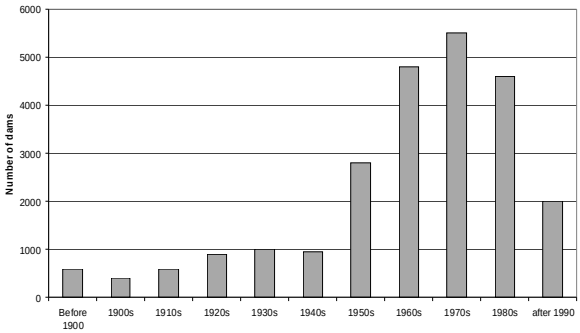
The importance of creating reservoirs is becoming more critical, because the availability of water per capita is constantly decreasing due to increasing population and it is extremely important that the seasonal surplus water is stored, instead of letting it go to the sea. With global warming in the horizon, the river flows are likely to be more erratic and unpredictable, therefore, the need for storages would become even more important in the future. For all the above reasons the need of dams and storages in Pakistan is highly critical for its economy and sustainable agriculture.

In this Paper, History of Dams, Modern trends in the Dam Engineering, and the experience in the modern dam engineering in Pakistan will be discussed. The Pakistani engineers are waiting to apply their knowledge & experience in the future large Dams needed in the Country. The hurdles in this respect and their remedies are also briefly discussed.

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1. HISTORY OF DAMS

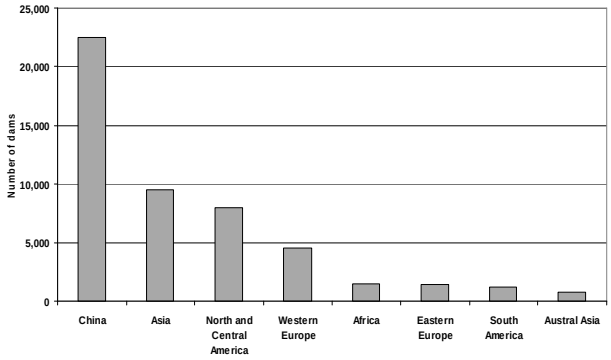
The river basins are renowned as cradles of civilization and cultural heritage. The earliest evidence of river engineering is ruins of irrigation canals over eight thousand years old in Mesopotamia. Remains of water storage dams found in Jordan, Egypt, Yemen and other parts of Middle East date back to 3000 BC. The primary objective of serving as water storages, but also for controlling floods and allowing or improving navigation. With the advent of industrial revolution and technology for generating power from water movement, humans started to construct large dams to obtain energy. The first dams to incorporate an electric power station were built at the end of nineteenth century in Western Europe and the United States. During the middle of twentieth century there was great impetus in dam building which continued till 1980. The boom in dam construction came with start of 21st century, particularly in China. The construction of large dams by decades and worldwide regional distribution of large dams is shown in chart as follows:



Construction of World Dams by Decade (1900-2000)

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1. President Associated Consulting Engineers – ACE (Pvt) Ltd. President Pakistan Geotechnical Engineering Society.



Regional distribution of world large dams at the end of the 20th century

In all about 800,000 dams have been built worldwide out of which about 50,000 are large (higher than 15 meter). These dams generate altogether about 19% of the world's electricity and supplying water for 30 – 40% of the irrigated crop lands. The dams and diversion system (barrages and canals) are thus meeting 35 percent of world cereal requirements.

Until recently large dams were considered a milestone on the development plans of nation and they were often viewed as a symbol of modernity and economic progress. However effects derived from their building on the environment and the society did somewhat changed this vision. As a consequence some developed countries such as France and United States have interrupted dam construction and even started some demolition. Since the primary effect of dams is modifying river flow, this can result in several changes on natural habitats. Social consequences are linked with forced human resettlement.

These effects were significant, but were highly publicized and a great anti-large-dam lobby was created. The result was that funding agencies almost totally stopped providing funds for large dam construction to the developing countries. The developing countries needed the dams since they were vital for the agriculture sustainability and for cheaper electric power. Therefore the environment effect mitigation and resettlement issues have now become a part of the planning of such projects. Better ways of resettlement and land acquisition are being adopted. Out of area resettlement is avoided as far as possible, land and dwelling compensation is becoming generous. Similarly mitigation of environment effects on the infrastructure and aquatic life are given due attention. With this change of attitude the World Bank etc. are coming back to funding the large dams. Recently completed (2004) Ghazi Barotha Hydroelectric Project in Pakistan (1450 MW) is being sited as a "good illustration of the usefulness of dams and water resource projects in the 21st century" (HRW Dec. 2005) primarily because particular attention was paid to minimize environmental and social effects.

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Now once again large scale dam construction is taking place. According to ICOLD information at present some 1700 large dams are under construction.

The distribution of water runoff (river and stream flow) is very uneven from the point of view of continents. Asia which supports 60 percent of global population has only 36 percent of runoff, while South America with 6 percent population receives 26 percent of world runoff. Higher temperature prevailing in major parts of Asia and Africa and highly skewed rainfall, places Asia and Africa at a tremendous disadvantage due to greater evapotranspiration losses. In Asia with the high population growth, it is vital that water resource is harnessed and preserved as building of new dams and reservoirs is absolutely essential to sustain the cereal needed for its growing population.

2. MODERN TRENDS IN DAM ENGINEERING

The knowledge of Geotechnical Engineering plays a very important role in the Dam Engineering. The advancement in this specialty particularly with respect to computer-aided

analysis tools and the quantum jump in Seismo-tectonic approach have brought important changes in the State of the Art of Dam Engineering in the modern times and the confidence level on design is substantially improved. In this context the approach to seismic-resistant design of dams have been completely modified and requires proper understanding. The availability of fast running finite element computer modules and various non-linear models for concrete and particulate materials have allowed simulation of deformation behaviour of dam body and foundation under seismic loadings. Consequently, confident decisions are now made with respect to seismic design of dam structures. Development of automated and remote performance monitoring instrumentation systems have enabled to understand the behaviour of dam in terms of pore water pressures and deformations during events of short-lived incidents of seismic shaking and passing of flash floods. The use of satellite images and GIS maps have enhanced the hydrological analysis and evaluation of reasonable and accurate assessment of design floods and risks associated with them. In Pakistan, we have had good experience in using these modern concepts while designing projects like Kalabagh Dam, Basha Dam and Ghazi Barotha Project.

3. WATER STORAGES AND DAMS IN PAKISTAN

Pakistan has three big rivers i.e. Indus, Chenab and Jehlum and these and other rivers generate of 145 Million Acre feet (MAF), or 179 billion cubic meters of total flow. In 1950s per capita availability of water per year was about 5000 cubic meter, at that time Pakistan was water affluent country. However with the passage of time our population kept increasing, which is now reaching about 170 million, and the per capita annual availability of water has come down to only 1000 cubic meter. It is well known that countries with less than 1000 cubic water of per capita are water deficient countries and we have reached that level; situation will further deteriorate as the population growth is continuing.

There is another serious problem of water availability in Pakistan and that is due to two distinct water flow seasons, i.e. Kharif and Rabi season. In Kharif season about 83% of the flows occur, while in Rabi season bring only 17% of annual flows. The crop water requirements are however 60% in the Kharif season and 40% in Rabi. There is thus a great disparity between the water availability and requirement in the Rabi season. For getting optimum production from the crops it is essential that water is available when it is needed. In view of shortage of water in the Rabi season, it is not possible to have the required water available at the required time. In Punjab the farmers who can afford tubewells can obtain the water at critical times through the groundwater, but in most of Sind where groundwater is saline, the situation of water availability in Rabi season is worse.

The direct effect of the disparity is in our cereal production which is very poor as compared to the rest of the world. The cereal production in Pakistan is only 0.13 kg/cubic meter of irrigation water. In China it is 0.8 kg, in USA it is 1.66 kg and in India 0.39kg of cereal is produced with the same quantity of water. Obviously if water can be made available on time our cereal production can considerably improve.

The obvious remedy is that surplus water in the Kharif season be stored and released in the Rabi season to meet the shortfall. Pakistan is highly deficient as far storage is concerned. Out of 145 MAF of available water the current storage capacity is about 13 MAF, which is less than 9% of the total annual flows. As compared to that in India a total available storage is 245 MAF which is 32.6% of their annual flows. At present India is constructing additional 970 dams, on completion of these dams their storage capacity will be enhanced to 450 MAF, which will be 60% of their annual flows. The average worldwide storage capacity is about 40%. In the last five decades we have constructed only 2 major dams i.e. Mangla (1967) on River Jehlum and Tarbela (1976) on Indus River. There are no other big storage sites on River Jelum, and Chenab River, but the Indus has tremendous potential of storages. The storages at Tarbela and Mangla are silting up and the existing storages are thus diminishing. A dam at Kalabagh will store about 6 MAF, which is almost equal to what we have lost in Tarbela and Mangla due to siltation, therefore Kalabagh Dam will be just a replacement dam. Pakistan needs for its

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survival lot more storage dams. We have been wasting average of 35 MAF of water by allowing it to go to the sea. Construction of both Kalabagh and Basha Dams need to be started forthwith. This is absolutely necessary to sustain our agriculture needs, and also to save our economy.

Dam Engineering is quite well advanced in the country, since we have been designing, but not building, big projects like Kalabagh, Basha, Dassu etc. on the Indus River. A number of medium size dams have been designed and also constructed by the local expertise, these include Rawal, Khanpur, Hub, Simly, which supply drinking water to the cities of Islamabad and Karachi. There are number of other small dams also built. However the real need of the country is large dams with substantial size reservoir, which will not only provide the necessary irrigation water particularly in the Rabi Season, but will also produce thousands of Megawatt of cheap hydropower. The Engineering profession in the country, especially the Geotechnical Engineers are well equipped to take up the challenge of designing and constructing these large dams, and these experts are waiting for the will of the Government to get them started.

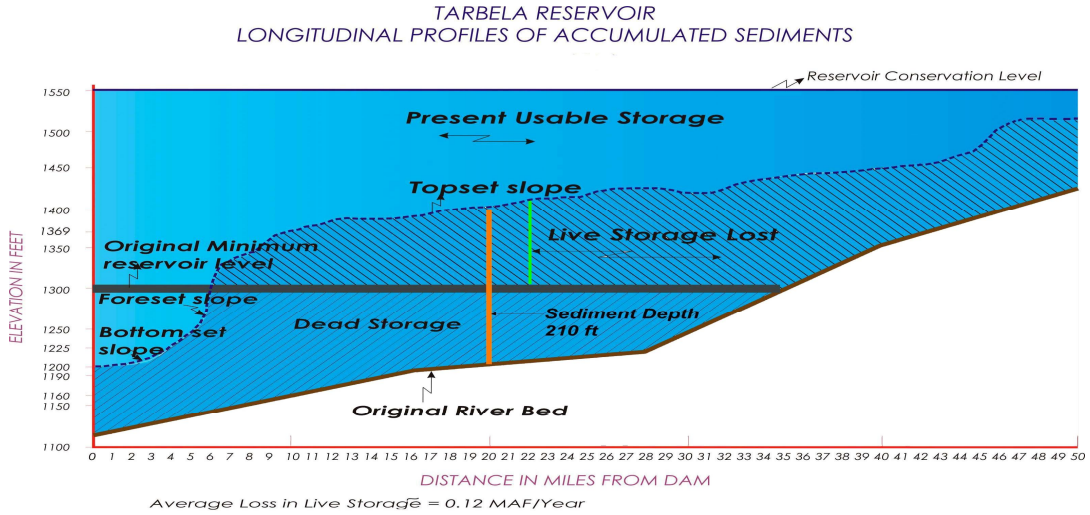
There are apprehensions in some Provinces, that construction of Kalabagh or other big dams will cause environment damages, which will be harmful for their economy. The NWFP fears that part of Nowshera area will be drowned or be prone to high flooding, they also feel that irrigated land in Swabi will be water logged. Another objection is that NWFP will not be able to use its share of water from Kalabagh, since it will require pumping which will be too expensive. The fears and objection of the NWFP have merit, therefore, these should be addressed and remedied. Construction of Munda Dam on the Swat River (which is in active stage of planning) will mostly eliminate the high flood peaks in the Kabul River, thus the fears of flooding in Nowshera valley will be mitigated through a positive action. Availability of Water from Kalabagh to NWFP by gravity flow can be arranged through a high level outlet from the dam. In fact the only project which can provide this gravity flow facility to NWFP is the Kalabagh Dam. This high level outlet should be built as part of Kalabagh Dam. Therefore, with construction of Munda Dam and this high level outlet, NWFP requirements will be more than adequately satisfied.

The most vocal objections are from Sind. They apprehend that with construction of Kalabagh Dam the Province of Sind will be starved of water and particularly area downstream of Kotri Barrage will become saline due to ingress of sea water. Some experts from Sind feel that Indus River has no surplus water which can be stored. At present average of 35 MAF of water flows downstream of Kotri, and goes to the Sea. In some draught years the situation will be different. Various studies have been done in this regard, which show that at least 5 – 6 MAF of water must flow downstream of Kotri every year to safeguard the area against salinity. With proper planning this can be assured. In any case a dam at Kalabagh will store only 6 MAF, which is equivalent to what storage has been lost due to siltation of Tarbela and Mangla reservoirs. Therefore, one dam of Indus is essential to at least replenish the lost storage. The main apprehension in Sind is that with time shortages will increase and that the upper reparians will steal from the Sind share of water. If Pakistan has to consolidate its position as a Nation, it must adopt procedures and checks that such fears are totally eliminated. IRSA should be strengthened to control water releases from the dams as per agreed share of each province, particularly during draught years.

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Apart from few large storage reservoir sites, the topography and terrain in Pakistan offers numerous sites where run of the river type hydroelectric projects can be constructed. Steep river gradients can be harnessed by construction of tunnels and creating large head to generate hydropower. For the last several years the Government has invited private sector to invest in such projects, which initially generated a lot of interest and a number of potential projects were identified. The private sector parties were given Letters of Interest to carry out feasibility studies, on the basis of which tariff etc. will be agreed and the selected companies would be commissioned to build and operate these projects. A number of feasibility studies have been prepared, but somehow uptil now none of the private sector projects have been built. Efforts are going on, considering the very high prices of furnace oil, the tariff now offered for hydro projects has been made more attractive. Hopefully better results will be seen in the coming future. In the

meantime WAPDA has also started developing large size hydro projects, the 960 MW Neelum Jehlum Project is now under construction and arrangement are underway to start another large such project at Kohala. on the Jehlum River Hydroelectric projects take relatively long time to build, therefore a number of them should be started together to overcome the time lost.



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COVER PHOTO

Pakistan Engineering Congress Headquarter Building

A View of Islam Barrage

A View of Shershah Barrage

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OBITUARIES

May their souls rest in Peace

1. Engr. Muhammad Saadat Ali Former Secretary I&P (Punjab), Member Punjab Public Service Commission & Former Chairman Indus River System Authority (IRSA), passed away on 16th November, 2009.

2. Engr. Ch. Muhammad Akhtar Project Director Punjab Barrages, passed away on 5th November, 2009.

3. Engr. Muhammad Younas Shami.

4. Engr. Inamdar Abdul Khalique Chief Engineer (R) Irrigation Punjab, passed away on 27th November, 2009.

5. Mrs. Khawaja Saleem ud Din S. E. Irrigation, (R) passed away on 29th August 2009.

From the Editor's Desk

At last we have succeeded in presenting to you another issue of your journal. Apparently it will look like the previous ones. While going through, you will feel a bit of difference. Unlike the previous issues which have always had in contents the papers pertaining to diversified fields of engineering, here you will find papers relating to environment alone. These papers are as matter of fact the ones presented on the World Environment Day Symposium that had been held on June, 2008 but we had not yet been able to publish as proceedings of the same. You will find the papers full of useful information & some of them quite thought provoking, calling upon us, the engineers to impress upon all in responsible positions not to ignore the all important issue of environment but rather pay attention to this hitherto badly neglected aspect.

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May their souls rest in Peace

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1. Mother of Engr. Muhammad Ibrahim Malik Member Executive Council passed away on 9th December 2008.

2. Engr. Izhar-ul-Hassan Siddiqui Chairman Engineering Associates Karachi passed away on 25th November 2008.

3. Engr. Abdul Hamid Arif Chief Engineer Irrigation Department Government of Punjab.

4. Engr. Nisar Ahmad Malik S.E. Upper Chenab Circle I & P Department Punjab died in a sad accident.

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Engr. Azhar-ul-Hassan Siddiqui, Chairman Engineering Associates, Karachi passed away on 25th November, 2008.

Editorially Speaking !

Awareness about environmental degradation is of course need of the hour & we also seem to have realized that to some extent. Establishment of Environment Protection Departments & Authorities, introduction of courses or degree programs in the universities & holding of seminars on the subject does indicate that we are seized of the issue. Industrial & non industrial projects in both public as well as private sectors are now analyzed by these agencies & their likely impact on environment assessed before they are launched. But many a time one is forced to think that perhaps we are going too far & in the process leaving behind some very basic issues related to environment at our own level. Like elsewhere in the world, use of heavy weight terms like global warming, ecological cycle, green house, ozone layer, biodiversity & many more of the type is quite common with our environment experts also & their repeated mention has almost become a fashion. No doubt the problems related to these aspects are enormous & could prove to be disastrous in the long run. But while thinking of future long term damages to the environment we seem to be neglecting our present day to day environment related problems that are every moment harming all of us. As an example, in view of being a potential hazard to environment objections are quite often raised on some big industry proposed to be set up somewhere or even construction of an otherwise much needed dam. This might be done of course in right earnest, but what about so many mini industries that are flourishing in the thickly populated areas, manufacturing various items & materials. These so called factories give out pungent odor & produce noise of many decibels making the life of the neighbors miserable. Filth containers full of rotten waste of all kinds with the contents spilling over on the streets are a common sight in our towns. Particles of this waste get mixed up with the air that we are forced to inhale. Storm Water channels have been transformed into sewage drains, oozing out nauseating smell & dangerous gases. Not long ago it was reported in the press that the gases emanating from one such drain passing through erstwhile a posh locality badly damaged the rubber linings of the air conditioners installed on the buildings close to the drain. One just shudders to imagine what havoc these effluent gases would be playing with the health of the residents & passers by of the area. Don't these issues relate to environment?

One can go on counting & counting such issues, but the point to ponder is that shall we keep our eyes closed to these problems? Is it not the duty of all of us, engineers & environment experts to look into this aspect and pay more attention to this than what we are presently doing?

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News

MEET THE NEW PRESIDENT

Engr. Husnain Ahmad the newly elected President was born at Pasrur, district Sialkot in 1963. He was primarily schooled at Lahore till his graduation from the University of Engineering & Technology (UET), Lahore. From UET Lahore, he acquired Bachelor and Master Degrees in Civil Engineering. During his stay at UET, he also held University Colour for representing the University in Rifle Shooting Competitions and remained student's representative throughout his tenure.

After graduation, he started his professional career by joining Communication and Works Department, Government of the Punjab in 1989 as Assistant Executive Engineer / Assistant Project Manager, yet, he continued improving his educational qualifications and earned many distinctions. He was also awarded the Britannia Chevening Scholarship. During his stay in UK he earned Master Degree in Business Administration from Cardiff Business School, University of Wales and acquired the fellowship of Institute of Professional Financial Managers, London. His continued endeavour for improving his academic excellence inspired him to have Master Degree in Computer Sciences. His research aptitude made him author of more than eight technical refereed publications. He has also been awarded the Congress medal for co-authoring a paper on the topic : "USE OF ENVIRONMENTAL FRIENDLY FINELY DIVIDED MATERIALS IN BRITTLE MATRIX COMPOSITES".

Besides rich scholastic credentials, he has a remarkable diversified experience of serving in various organizations. He supervised construction of various prestigious buildings such as Pediatric Hospital Lahore and highways projects, such as Saggian Ravi Bridge and construction of over 400 kilometers of roads. He also headed Information Technology Department (ITD) of City District Government Lahore (CDGL) where he remained instrumental in planning and developing a vision for IT department and contributed significantly in getting Lahore declared as one of the first e-districts of Pakistan. He was also the first Project Director of the University of Veterinary and Animal Sciences, Lahore where he helped in envisaging the developmental needs and initiating practical execution of construction activities for developing the needed facilities.

Apart from his brilliance in academics and professional persuits, he not only participated in social activities but also possess a unique honour of representing his equals as well as community at all levels. During his stay at University of Wales, his efforts for the promotion of multi racial culture and image building of Pakistan were widely acknowledged. He also had the honour of getting elected as President Pakistani Students Society, National Union of Students UK. He has a large number of features in his cap, such as Member Chartered Institute of Marketing, UK. Life member Pakistan Engineering Council, Member of Executive Council, Institute of Engineers, Pakistan. Elected Vice President Britannia Alumni Association of Pakistan (BAAP) and life Member Old Uetians Association.

Ever since Mr. Ahmad came into the fold of Congress in 1991, he actively participated and made untiring efforts in uplifting of and promotion of the Congress. He served Congress as Treasurer, Business Manager and contributed in its various committees, such as, Public Relations, Welfare of Engineers, Symposium Professional Activities, Library and Publications, Constitution and Bye-laws, Building and Fund Raising, apart from convening Membership, Administration and Finance Committees. He was also elected as Vice President of the Congress during the 70th Session. Last but not the least, Mr. Husnain Ahmad is the ever youngest President of the Congress during 94 years history since its creation.

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WELFARE OF ENGINEERS

In keeping with the objective of the Pakistan Engineering Congress of promoting science, profession and practice of engineering, the executive Council of this August Body has Instituted 60 Nos. Scholarships for Graduate Level Engineering studies and 16 Nos. for Post-Graduate studies at Rs. 2,000/- per month each for the whole study period as under. The unique feature is that the numbers of scholarships tabled below are being increased appreciably from year-to-year.

GRADUATE LEVEL

Sr. No.	Name of University / Institute	Number of Scholarships
1	University of Engineering and Technology, Lahore	9
2	University of Engineering and Technology, Taxila	9
3	Baha-ud-Din Zakria University Multan College of Engineering and Technology	3
4	**Punjab University** Institution of Chemical Engineering and Technology, Punjab University New Campus, Lahore	3
5	National University of Sciences and Technology (NUST) Military College of Signals, Rawalpindi	3
6	NED University of Engineering and Technology, Karachi	6
7	Mehran University of Engineering and Technology, Karachi	6
8	Sir Syed University of Engineering and Technology, Karachi	3
9	Quaid-e-Awam University of Engineering and Technology, Nawabshah	3
10	NWFP University of Engineering and Technology, Peshawar	6
11	GIK Institute of Science and Technology Topi (Swat)	3
12	Balochistan University of Engineering and Technology, Khuzdar	3
13	Ali Ahmad Shah University of Engineering and Technology, (Mirpur) AJK	3
	Grand Total	**60**

POST-GRADUATE LEVEL

Sr. No.	Name of University / Institute	Number of Scholarships
14	University of Engineering and Technology, Lahore	5
15	NWFP University of Engineering and Technology, Peshawar	2
16	University of Engineering and Technology, Taxila	4
17	NED University of Engineering and Technology, Karachi	2
18	Mehran University of Engineering and Technology, (Jamshoro)	2
19	Balochistan University of Engineering and Technology, Khuzdar	1
	Grand Total	**16**

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- The Congress is also awarding Scholarships for the Education of the Children of deceased Engineers facing financial hardships. The amount of scholarship is Rs. 2,000/- per child capped at Rs. 5,000/- per month depending upon the pecuniary conditions of the families of departed Engineers.

- The Congress has given a donation of Rs. 5 Lac towards the fund for Liver Transplant in China of Engr. Capt (R) Latafat Qaseem Executive Engineer, of Irrigation and Power Department Govt. of the Punjab. He is suffering from Liver Cancer and Transplant Facility available in China is by far most economical.

- The Multi-purposes Mashhadi Hall (i.e. Auditorium) of the Congress located at 4th Floor of its Building named after Past President Engr. Syed Nazar Hussain Mashhadi in recognition of his services to the Engineering Congress is undergoing renovation / alternation to be able to cater for all its activities in it. It is being propely carpeted, Air Conditioned and equipped with multi-Media / LDC etc.

- The Congress has extensive Programme for holding Lectures on current issues concerning Engineers / Engineering Profession.

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NATIONAL TRADE CORRIDOR IN THE REGIONAL AND GLOBAL CONTEXT

Dr. Engr. Asad Ali Shah, Member Infrastructure and Energy Planning Commission, Govt. of Pakistan delivered lecture on "National Trade Corridor in the Regional and Global Context" at Pakistan Engineering Congress Headquarter on February 17, 2007. The lecture was largely attended in the jam packed Multi-purpose Hall of the Congress.

The learned speaker eloquently spoke on the concept of National Trade Corridor / its objectives.

He said that performance of the transport system in Pakistan has not been up to the mark with economic losses from congestion and poor quality roads and mismatch between supply and demand for transport services and supporting infrastructure. The logistic constraints are impact competitiveness of the country's trade and industrial development. The conventional system, documentation clearance, movement facilitation and electronic data interchange has yet to be modernized to international levels. These inefficiencies are resulting in increasing the cost of business. Constraining economic growth, reducing export competitiveness, and hindering social development. It is estimated that these inefficiencies are imposing a cost to the economy in excess of Rs. 220 billion annually or 3.5% of the GDP.

He added that in order to cope with the situation, a major initiative namely the "National Trade Corridor (NTC)" has launched to address the entire logistics chain in a holistic manner and revamp transport sector including ports and shipping, roads, railway, trucking, aviation and trade facilitative measures. The NTC initiative is in line with Medium Term Development Framework (MTDF 2005) strategy, which includes establishment of a multi-modal transport system ; emphasis on as management with consolidation upgrading, rehabilitation and maintenance of the existing system enhanced private sector participation in sector development and institution capacity building research and development and use of modern technology, procedures and processes to increase efficiency. The strategy also incorporates measures for enhancing regional connectivity through road, aviation and shipping sub-sectors to improve North-South and East-West trade

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links with Central Asian States, Iran, Afghanistan, India and Europe and development of energy and industrial corridors with these countries.

Talking about the objectives of establishment of NTCMU and TTFU, he said that the objective of the Project is to provide overall technical leadership and coordination with line ministries and other organizations in undertaking measures / reforms project to improve the logistics system that would lead to reducing the cost to trade and business in the country. Focusing on improving the infrastructure sector, services and streamline procedures, the proposed NTC and TTF components will :

1. Enable institutions of the infrastructure sector conduct project and studies and project preparation activities in a timely manner and in line with international standards and best practices.

2. Ensure implementation readiness of the infrastructure projects.

3. Improve institutional capacities within the infrastructure agencies to meet business management and process changes as required by recent sector policies, reforms regulatory agencies.

4. Work with the private sector to improve in-house logistics.

He went on to say that the technical assistance will further enhance the internal capacity of infrastructure agencies develop a project program and implement identified projects successfully. The proposed steps will ultimately build intellectual leadership and also enhance the productivity of all those involved in Trade and Transport Facilitation.

He concluded that the crux of the talk was that with gigantic modernization of Ports, Roads, and Railway Net-Work Road and Freight Industry, State of Art Air-Terminals, Media and Communication expansion, under the "Trade and Transport Facilities Project" will usher in an economic revolution (in a period of 5 Years) in the country with "Gawadar" playing a pivotal Role. According to the speaker "Gawadar" will be one of the most advanced city of the World in a decade and a hub of economic development. A film on Gawadar was also shown.

The session was followed by questions from the audience which were elaborately answered by the speaker.

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TARGETS SET FOR ACHIEVEMENT IN THE 2ND MEETING OF THE 71TH SESSION OF THE EXECUTIVE COUNCIL

President PEC, informed the House, that he would greatly appreciate the In-Put of the members of Executive Council in respect the cardinal goals that ought to be achieved in 71th Session to make the Congress a progressive and vibrant organization. Engr. Iftikhar-ul-Haq suggested that all members of the Congress may be invited to convey their proposals in this respect.

Elaborating his vision for 71th Session, the President outlined some of the major objectives i.e.

- Membership Committee should embark on a well-planned programme to visit Chief Engineers / Administrative Heads of various engineering departments / organizations and Faculty Members of Engineering Universities with the twin purpose of (a) introducing the congress and (b) increasing the Congress Membership.

- Building Committee may prepare a "Short Term" and a "Long Term" plan of maintenance / construction activities i.e. construction of Additional Block Cum Parking Lot in the existing premises (if feasible) or alternatively acquire additional Space / Building etc. for future use.

HONORARIUM TO CONGRESS STAFF AS WELL AS OTHERS WHO WORKED DURING THE LAST ANNUAL SESSION WAS GRANTED AS UNDER IN RECOGNITION OF THEIR SERVICES TO THE PAKISTAN ENGINEERING CONGRESS

Congress Personnel	Rs. 69200
Computer College Personnel of PEC	Rs. 10000
Personnel of NDC (Regd.)	Rs. 22000
Others for Receiving Congress Subscription / Election Duty etc. during the Session	Rs. 23500

WELCOME TO NEW MEMBERS

The Executive Council of the Pakistan Engineering Congress approved Membership of the following new members in to the Congress fold. The Engineering News congratulates all of them and welcomes them to Pakistan Engineering Congress

Members admitted on 08-04-2006

1 Engr. Zia ul Hassan Khan
2 Engr. Muhammad Atif ur Rehman
3 Engr. Danish Rafique
4 Engr. Luqman Zaffar
5 Engr. Muhammad Shafqat Khalid
6 Engr. Mashood Ahmed
7 Engr Muhammad Riaz Zahid
8 Engr. Mian Nadir Qayyum
9 Engr. Hafiz Muhammad Ramzan
10 Engr. Intizar Ali
11 Engr. Irfan Ullah
12 Engr. Roshan Ali Bhatti
13 Engr. Khurshid Ahmad Mirza
14 Engr. Naveed Abbas

Members admitted on 20-05-2006

1 Engr. Muhammad Usman Rashid
2 Engr. Muhammad Shahzad
3 Engr. Shafiq Ahmad
4 Engr. Asif Hayat Bhatti
5 Engr. Zameer Hussain
6 Engr. Muhammad Tayyab Ahmad
7 Engr. Muhammad Akbar Nawaz
8 Engr. Muzaffar Abbas
9 Engr. Atiq Ullah
10 Engr. Ali Jawaid Ghuman
11 Engr. Najamuddin Sheikh

Members admitted on 29-07-2006

1 Engr. Arif Saeed
2 Engr. Mian Babar Qayum
3 Engr. Muhammad Saeed
4 Engr. Muhammad Hamid Mahmood
5 Engr. Shahzad Ahmad
6 Engr. Muhammad Asif
7 Engr. Naseer Ahmad Zia
8 Engr. Arshad Saeed Khan
9 Engr. Aamir Miandad
10 Engr. Nisar Ahmad
11 Engr. Muhammad Yasir Malik
12 Engr. Ch. Muhammad Nadeem
13 Engr. Muhammad Kashif Khan
14 Engr. Syed Abid Ali Abid
15 Engr. Qasim Haq
16 Engr. Muhammad Ashraf
17 Engr. Hafiz Waqas Haider Shah
18 Engr. Imran Ghani
19 Engr. Asrif Masood
20 Engr. Syed Fayyaz Hussain
21 Engr. Amir Nadeem
22 Engr. Muhammad Zaman Khan Dawer

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Members admitted on 21-10-2006

1 Engr. Hafiz Faisal Hassan Abid
2 Engr. Abdul Qayyum
3 Engr. Syed Muhammad Zaier Abbass Zaidi
4 Engr. Muhammad Farooq Azam
5 Engr. Zeeshan Ali
6 Engr. Usman Arif
7 Engr. Aataf Ahmed
8 Engr. Babar Saeed Sehole
9 Engr. Muhammad Hafeez Khan
10 Engr. Tanveer Afzal
11 Engr. Syed Farrukh Ali Shah
12 Engr. Muhammad Asjad Ajfan
13 Engr. Muhammad Shahbaz
14 Engr. Faiz-ul-Hassan Sipra
15 Engr. Hassan Mohy-ud-Din

Members admitted on 20-01-2007 (71st Session)

1 Engr. Asif Mahmood
2 Engr. Muhammad Afzal Mughal
3 Engr. Jahanzeb Afridi
4 Engr. Bilal Ahmed
5 Engr. Muhammad Imran
6 Engr. Muhammad Aamir Iftikhar
7 Engr. Sh. Saeed Ahmad
8 Engr. Nabil Haider
9 Engr. Anzar Hussain Shah
10 Engr. Aun Muhammad
11 Engr. Ch. Rashid Majeed
12 Engr. Muhammad Saleem Shahid
13 Engr. Muhammad Zubair Asghar
14 Engr. Imran Sadiq Afridi
15 Engr. Muhammad Mudassar Ali
16 Engr. Abdul Qayyum
17 Engr. Muhammad Imran Malik
18 Engr. Imran Rashid
19 Engr. Faisal Shoukat
20 Engr. Shahid Mahmood
21 Engr. Muhammad Arshad
22 Engr. Kashif Nadeem
23 Engr. Zahid Majeed
24 Engr. Ijaz Ahmad Bhatti
25 Engr. Mahmood Ahmad
26 Engr. Aqil Inam
27 Engr. Aftab Ahmad Chaudhry
28 Engr. Syed Salman Mazhar
29 Engr. Hafiz Haider Ali
30 Engr. Syed Muhammad Sajjad Hashmi
31 Engr. Muhammad Afzal
32 Engr. Arshad Chaudhry
33 Engr. Abdul Majeed Naveed
34 Engr. Atif Ameen Awan
35 Engr. Muhammad Abu Bakr Khan Sherwani
36 Engr. Muhammad Umar Farooq
37 Engr. Muhammad Zaka Ullah Khan
38 Engr. Muhammad Akram
39 Engr. Muhammad Bilal Ahmad
40 Engr. Umar Karim
41 Engr. Muhammad Shahbaz Rasheed
42 Engr. Shoaib Ahmed Awan
43 Engr. Ali Mukhtar

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CHANGE OF TELEPHONE NUMBERS OF PAKISTAN ENGINEERING CONGRESS

1. Telephone Numbers.

The New Telephone Numbers of the Pakistan Engineering Congress are (the previous one's stand withdrawn).

(a) Congress Office

President PEC	042-5784237
Secretary PEC	042-5784237
Director (Admin. and Finance)	042-5784238
Congress Office	042-5784235
Congress Office (Fax)	042-5784236

(b) Computer College

Manager PEC Computer College	042-5784240
Computer College (Fax)	042-5784239

The President and Secretary can also be contacted on following phones.

President PEC		042-5861123 (Residence)
		042-5861508 (Residence)
	Mobile #	0300-4340102
Secretary PEC		042-5843874 (Office)
	Mobile #	0303-7313891

2. Any change in the designation/address of the members.

You are also requested to kindly inform the Congress Office about any change in your office/residential address etc.

3. Membership Cards.

The Congress has decided that its members should be issued Membership Cards (Renewal Cards). In case, you do not posses it please inform us. Also please arrange to deposit the Membership Fee if in arrears.

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THE FOLLOWING INFORMATION IS REQUIRED FOR UPDATING "MEMBER'S DATA"

(Please fill up the followings)

M. No. (Congress) _____ M. No. (Council) _____

Name _____

Deptt./Org. _____

Telephone (Office) _____ Telephone (Residence) _____

Mobile No. _____ E-mail Address _____

Fax No. _____ Date of Birth _____

Discipline _____ District _____

Address Office _____

_____

_____

_____

Address Residence _____

_____

_____

_____

After completion of this Performa please return to Pakistan Engineering Congress Office 97-A/D-1, PEC Building, Liberty Market, Gulberg-III, Lahore-54660

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PAKISTAN ENGINEERING CONGRESS
THE EXECUTIVE COUNCIL FOR THE 71TH 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	. . .	*Secretary*
2	Engr. Iftikhar Ahmad	. . .	*Treasurer*
3	Engr. S. M. A. Zaidi	. . .	*Business Manager*
4	Engr. Ahmad Nadeem	. . .	*Joint Secretary*
5	Engr. Muhammad Sarfraz Butt	. . .	*Publicity Secretary*

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		

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COVER PHOTO

A View of Shershah Barrage

A View of Islam Barrage

A View of Shershah Barrage

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WELCOME TO NEW MEMBERS

The Executive Council of the Pakistan Engineering Congress approved Membership of the following new members into the Congress fold. The Engineering News congratulates all of them and welcomes them to Pakistan Engineering Congress

Members admitted on 04-07-2009

1 Engr. Muhammad Tousif Bhatti
2 Engr. Muhammad Atif Khan
3 Engr. Farakh Nadeem Butt
4 Engr. Zeeshan Majeed
5 Engr. Qamar Iqbal
6 Engr. Lt Col (R) Sadaqat Ali Khan
7 Engr. Maj (R) Tariq Mahmood
8 Engr. Brig (R) Masroor Ahmad Abbasi
9 Engr. Shahid Latif
10 Engr. Muhammad Hassan Tariq
11 Engr. Habibullah Bhutto
12 Engr. Muhammad Waqas Hussain
13 Engr. Shafqat Rasool Ch.

Members admitted on 12-09-2009

1 Engr. Shahnawaz Farhan
2 Engr. Faisal Shahzad Meer
3 Engr. Fahad Saleem
4 Engr. Mirza Muhammad
5 Engr. Nasir Maqbool
6 Engr. Wasif Amin Butt
7 Engr Muhammad Abdullah Madni
8 Engr. Shahid Ahmad
9 Engr. Sadia Masood
10 Engr. Muhammad Kashif Shamas
11 Engr. Navid Akhtar
12 Engr. Muhammad Ashfaq
13 Engr. Kashif Ali
14 Engr. Hafiz Muhammad Akhtar
15 Engr. Raja Mustensir Javaid
16 Engr. Nabeel Asghar
17 Engr. Muhammad Asad Yar
18 Engr. Danish Jamil
19 Engr. Asim Iqbal
20 Engr. Ali Raza

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OBITUARIES

May their souls rest in Peace

1. Engr. Mian Mazhar-ul-Haq, Director General (R) Multan Development Authority, passed away on 5th August, 2009.

2. Engr. Aman-ullah Khan Associate Partner, National Development Consultants (Pvt) Ltd. and a Former Secretary WAPDA, passed away on 5th September, 2009.

From the Editor's Desk

At last we have succeeded in presenting to you another issue of your journal. Apparently it will look like the previous ones. While going through, you will feel a bit of difference. Unlike the previous issues which have always had in contents the papers pertaining to diversified fields of engineering, here you will find papers relating to environment alone. These papers are as matter of fact the ones presented on the World Environment Day Symposium that had been held on June, 2008 but we had not yet been able to publish as proceedings of the same. You will find the papers full of useful information & some of them quite thought provoking, calling upon us, the engineers to impress upon all in responsible positions not to ignore the all important issue of environment but rather pay attention to this hitherto badly neglected aspect.

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WELCOME TO NEW MEMBERS

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Members admitted on 03-10-2008

1 Engr. Tariq Mahmood
2 Engr. Muhammad Junaid Shafique
3 Engr. Rana Haider Faruq

Members admitted on 08-11-2008

1 Engr. Abdul Majid
2 Engr. Rana Aftab Ahmad
3 Engr. Syed Muzammil Abbas Shah
4 Engr. Muhammad Abid Aleem
5 Engr. Zila-Tahawar Shahbaz
6 Engr. Muhammad Shahbaz
7 Engr. Shahid Iqbal
8 Engr. Abdul Waheed Sattar Shami
9 Engr. Tahir Jabbar
10 Engr. Muhammad Tariq Nazir
11. Engr. Humayun Murtaza
12 Engr. Hannan Hafeez
13 Engr. Syed Moeen Khurshid
14 Engr. Muhammad Irfan Anwar
15 Engr. Ch. Muhammad Waseem

Members admitted on 03-01-2009

1 Engr. Farhad Akhtar Chaudhry
2 Engr. Zargham Abbas
3 Engr. Ahmad Buksh
4 Engr. Shahid Abbas
5 Engr. Bilal Javed Iqbql
6 Engr. Hassan Iqbal
7 Engr. Muhammad Faisal Naveed
8 Engr. Noman Ashraf
9 Engr. Muhammad Haseeb Khan
10 Engr. Abdul Basit
11. Engr. Numan Afzal
12 Engr. Ahmad Abdullah
13 Engr. Mubasher Hussain
14 Engr. Muhammad Nasir
15 Engr. Ali Raza
16 Engr. Fateh Sher
17 Engr. Muhammad Atif Mian

Members admitted on 24-01-2009

1 Engr. Muhammad Adnan
2 Engr. Yousif Aftab
3 Engr. Muhammad Asif Iqbal
4 Engr. Mian Yaser Qayyum
5 Engr. Akhtar Rasul
6 Engr. Muhammad Siddique

Members admitted on 21-03-2009

1 Engr. Tauqir Ahmad Qureshi
2 Engr. Muhammad Naeem Iqbal
3 Engr. Muhammad Adil Zafar
4 Engr. Lt. Col. Islam-ul-Haq (Retd.)
5 Engr. Muhammad Zahid Islam
6 Engr. Muhammad Qasim Nasir Butt
7 Engr. Dr. Arshad Ali Amjad
8 Engr. Muhammad Tariq
9 Engr. Aftab Ahmad Soomro
10 Engr. Imran Aslam
11. Engr. Raja Ahmad Hassan
12 Engr. Haseeb Iftekhar
13 Engr. Zahid Sattar
14 Engr. Muhammad Bilal Zafran Qazi
15 Engr. Usman Ghani Jamil Ahmad
16 Engr. Atta Muhammad
17 Engr. Muhammad Imran Shahzad
18 Engr. Noman Ali Mumtaz
19 Engr. Sardar Ali sheikh
20 Engr. Waqqas Asif
21 Engr. Sadiq Hussain
22 Engr. Imran Ali Ahmad Shah

Members admitted on 03-10-2008

1 Engr. Muhammad Muneeb Khan
2 Engr. Zeeshan Mustafa Maan

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OBITUARY

May their souls rest in Peace

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1. Mother of Engr. Muhammad Ibrahim Malik Member Executive Council passed away on 9th December 2008.

2. Engr. Izhar-ul-Hassan Siddiqui Chairman Engineering Associates Karachi passed away on 25th November 2008.

3. Engr. Abdul Hamid Arif Chief Engineer Irrigation Department Government of Punjab.

4. Engr. Nisar Ahmad Malik S.E. Upper Chenab Circle I & P Department Punjab died in a sad accident.

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WELCOME TO NEW MEMBERS

The Executive Council of the Pakistan Engineering Congress approved Membership of the following new members into the Congress fold. The Engineering News congratulates all of them and welcomes them to Pakistan Engineering Congress

Members admitted on 03-07-2008

1 Engr. Imran Ali
2 Engr. Moeed Qadir
3 Engr. Muhammad Aslam Khokhar
4 Engr. Bilal Ahmad
5 Engr. Imran Shahid
6 Engr. Muhammad Imtiaz-ul-Haq
7 Engr Major Iftikhar Bin Niaz
8 Engr. Muhammad Zubair Asifi
9 Engr. Lt. Col. Anwar-ul-Haq
10 Engr. Maj. Khurshid Hussain
11 Engr. Anwar-ul-Haq Bloch

Members admitted on 26-08-2008

1 Engr. Aftab Ahmad
2 Engr. Asim Nasim
3 Engr. Khurram Aftab
4 Engr. Saad Nazir
5 Engr. Sehar Shahzad
6 Engr. Imran Tahir
7 Muddassar Mahmood
8 Engr. Awais Safder

Members admitted on 26-09-2008

1 Engr. Muhammad Khalid Shad
2 Engr. Muhammad Aurangzeb
3 Engr. Hesham Arshad Baig
4 Engr. Aamir Iqbal Khan
5 Engr. Usman Sajjad
6 Engr. Muhammad Adil Masroor
7 Engr Islam Mustafa

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WELCOME TO NEW MEMBERS

The Executive Council of the Pakistan Engineering Congress approved Membership of the following new members into the Congress fold. The Engineering News congratulates all of them and welcomes them to Pakistan Engineering Congress

Members admitted on 03-07-2008

1 Engr. Imran Ali
2 Engr. Moeed Qadir
3 Engr. Muhammad Aslam Khokhar
4 Engr. Bilal Ahmad
5 Engr. Imran Shahid
6 Engr. Muhammad Imtiaz-ul-Haq
7 Engr Major Iftikhar Bin Niaz
8 Engr. Muhammad Zubair Asifi
9 Engr. Lt. Col. Anwar-ul-Haq
10 Engr. Maj. Khurshid Hussain
11 Engr. Anwar-ul-Haq Bloch

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3 Engr. Khurram Aftab
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5 Engr. Sehar Shahzad
6 Engr. Imran Tahir
7 Muddassar Mahmood
8 Engr. Awais Safder

Members admitted on 26-09-2008

1 Engr. Muhammad Khalid Shad
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3 Engr. Hesham Arshad Baig
4 Engr. Aamir Iqbal Khan
5 Engr. Usman Sajjad
6 Engr. Muhammad Adil Masroor
7 Engr Islam Mustafa

Members admitted on 26-10-2008

1 Engr. Tariq Mahmood
2 Engr. Muhammad Junaid Shafique
3 Engr. Rana Haider Faruq

Members admitted on 08-11-2008

1 Engr. Abdul Majid
2 Engr. Rana Affah Ahmad
3 Engr. Syed Muzammil Abbas Shah
4 Engr. Muhammad Abid Aleem
5 Engr. Zila Tahawar Abbas
6 Engr. Muhammad Shahbaz
7 Engr. Shahid Iqbal
8 Engr. Abdul Waheed Sattar Shami
9 Engr. Tahir Jabbar
10 Engr. Muhammad Tariq Nazir
11 Engr. Hamayoun Murtaza
12 Engr. Hannan Hafeez
13 Engr. Syed Moeen Khurshid
14 Engr. Irfan Anwar
15 Engr. Ch. Muhammad Waseem

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OBITUARY

May his soul rest in Peace

Mother of Engr. Muhammad Ibrahim Malik, Member of Executive Council passes away on December 9, 2008.

Engr. Azhar-ul-Hassan Siddiqui, Chairman Engineering Associates, Karachi passed away on 25th November, 2008.

Editorially Speaking !

Awareness about environmental degradation is of course need of the hour & we also seem to have realized that to some extent. Establishment of Environment Protection Departments & Authorities, introduction of courses or degree programs in the universities & holding of seminars on the subject does indicate that we are seized of the issue. Industrial & non industrial projects in both public as well as private sectors are now analyzed by these agencies & their likely impact on environment assessed before they are launched. But many a time one is forced to think that perhaps we are going too far & in the process leaving behind some very basic issues related to environment at our own level. Like elsewhere in the world, use of heavy weight terms like global warming, ecological cycle, green house, ozone layer, biodiversity & many more of the type is quite common with our environment experts also & their repeated mention has almost become a fashion. No doubt the problems related to these aspects are enormous & could prove to be disastrous in the long run. But while thinking of future long term damages to the environment we seem to be neglecting our present day to day environment related problems that are every moment harming all of us. As an example, in view of being a potential hazard to environment objections are quite often raised on some big industry proposed to be set up somewhere or even construction of an otherwise much needed dam. This might be done of course in right earnest, but what about so many mini industries that are flourishing in the thickly populated areas, manufacturing various items & materials. These so called factories give out pungent odor & produce noise of many decibels making the life of the neighbors miserable. Filth containers full of rotten waste of all kinds with the contents spilling over on the streets are a common sight in our towns. Particles of this waste get mixed up with the air that we are forced to inhale. Storm Water channels have been transformed into sewage drains, oozing out nauseating smell & dangerous gases. Not long ago it was reported in the press that the gases emanating from one such drain passing through erstwhile a posh locality badly damaged the rubber linings of the air conditioners installed on the buildings close to the drain. One just shudders to imagine what havoc these effluent gases would be playing with the health of the residents & passers by of the area. Don't these issues relate to environment?

One can go on counting & counting such issues, but the point to ponder is that shall we keep our eyes closed to these problems? Is it not the duty of all of us, engineers & environment experts to look into this aspect and pay more attention to this than what we are presently doing?

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News

MEET THE NEW PRESIDENT

Engr. Husnain Ahmad the newly elected President was born at Pasrur, district Sialkot in 1963. He was primarily schooled at Lahore till his graduation from the University of Engineering & Technology (UET), Lahore. From UET Lahore, he acquired Bachelor and Master Degrees in Civil Engineering. During his stay at UET, he also held University Colour for representing the University in Rifle Shooting Competitions and remained student's representative throughout his tenure.

After graduation, he started his professional career by joining Communication and Works Department, Government of the Punjab in 1989 as Assistant Executive Engineer / Assistant Project Manager, yet, he continued improving his educational qualifications and earned many distinctions. He was also awarded the Britannia Chevening Scholarship. During his stay in UK he earned Master Degree in Business Administration from Cardiff Business School, University of Wales and acquired the fellowship of Institute of Professional Financial Managers, London. His continued endeavour for improving his academic excellence inspired him to have Master Degree in Computer Sciences. His research aptitude made him author of more than eight technical refereed publications. He has also been awarded the Congress medal for co-authoring a paper on the topic : "USE OF ENVIRONMENTAL FRIENDLY FINELY DIVIDED MATERIALS IN BRITTLE MATRIX COMPOSITES".

Besides rich scholastic credentials, he has a remarkable diversified experience of serving in various organizations. He supervised construction of various prestigious buildings such as Pediatric Hospital Lahore and highways projects, such as Saggian Ravi Bridge and construction of over 400 kilometers of roads. He also headed Information Technology Department (ITD) of City District Government Lahore (CDGL) where he remained instrumental in planning and developing a vision for IT department and contributed significantly in getting Lahore declared as one of the first e-districts of Pakistan. He was also the first Project Director of the University of Veterinary and Animal Sciences, Lahore where he helped in envisaging the developmental needs and initiating practical execution of construction activities for developing the needed facilities.

Apart from his brilliance in academics and professional persuits, he not only participated in social activities but also possess a unique honour of representing his equals as well as community at all levels. During his stay at University of Wales, his efforts for the promotion of multi racial culture and image building of Pakistan were widely acknowledged. He also had the honour of getting elected as President Pakistani Students Society, National Union of Students UK. He has a large number of features in his cap, such as Member Chartered Institute of Marketing, UK. Life member Pakistan Engineering Council, Member of Executive Council, Institute of Engineers, Pakistan. Elected Vice President Britannia Alumni Association of Pakistan (BAAP) and life Member Old Uetians Association.

Ever since Mr. Ahmad came into the fold of Congress in 1991, he actively participated and made untiring efforts in uplifting of and promotion of the Congress. He served Congress as Treasurer, Business Manager and contributed in its various committees, such as, Public Relations, Welfare of Engineers, Symposium Professional Activities, Library and Publications, Constitution and Bye-laws, Building and Fund Raising, apart from convening Membership, Administration and Finance Committees. He was also elected as Vice President of the Congress during the 70th Session. Last but not the least, Mr. Husnain Ahmad is the ever youngest President of the Congress during 94 years history since its creation.

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WELFARE OF ENGINEERS

In keeping with the objective of the Pakistan Engineering Congress of promoting science, profession and practice of engineering, the executive Council of this August Body has Instituted 60 Nos. Scholarships for Graduate Level Engineering studies and 16 Nos. for Post-Graduate studies at Rs. 2,000/- per month each for the whole study period as under. The unique feature is that the numbers of scholarships tabled below are being increased appreciably from year-to-year.

GRADUATE LEVEL

Sr. No.	Name of University / Institute	Number of Scholarships
1	University of Engineering and Technology, Lahore	9
2	University of Engineering and Technology, Taxila	9
3	Baha-ud-Din Zakria University Multan College of Engineering and Technology	3
4	**Punjab University** Institution of Chemical Engineering and Technology, Punjab University New Campus, Lahore	3
5	National University of Sciences and Technology (NUST) Military College of Signals, Rawalpindi	3
6	NED University of Engineering and Technology, Karachi	6
7	Mehran University of Engineering and Technology, Karachi	6
8	Sir Syed University of Engineering and Technology, Karachi	3
9	Quaid-e-Awam University of Engineering and Technology, Nawabshah	3
10	NWFP University of Engineering and Technology, Peshawar	6
11	GIK Institute of Science and Technology Topi (Swat)	3
12	Balochistan University of Engineering and Technology, Khuzdar	3
13	Ali Ahmad Shah University of Engineering and Technology, (Mirpur) AJK	3
	Grand Total	**60**

POST-GRADUATE LEVEL

Sr. No.	Name of University / Institute	Number of Scholarships
14	University of Engineering and Technology, Lahore	5
15	NWFP University of Engineering and Technology, Peshawar	2
16	University of Engineering and Technology, Taxila	4
17	NED University of Engineering and Technology, Karachi	2
18	Mehran University of Engineering and Technology, (Jamshoro)	2
19	Balochistan University of Engineering and Technology, Khuzdar	1
	Grand Total	**16**

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- The Congress is also awarding Scholarships for the Education of the Children of deceased Engineers facing financial hardships. The amount of scholarship is Rs. 2,000/- per child capped at Rs. 5,000/- per month depending upon the pecuniary conditions of the families of departed Engineers.

- The Congress has given a donation of Rs. 5 Lac towards the fund for Liver Transplant in China of Engr. Capt (R) Latafat Qaseem Executive Engineer, of Irrigation and Power Department Govt. of the Punjab. He is suffering from Liver Cancer and Transplant Facility available in China is by far most economical.

- The Multi-purposes Mashhadi Hall (i.e. Auditorium) of the Congress located at 4th Floor of its Building named after Past President Engr. Syed Nazar Hussain Mashhadi in recognition of his services to the Engineering Congress is undergoing renovation / alternation to be able to cater for all its activities in it. It is being propely carpeted, Air Conditioned and equipped with multi-Media / LDC etc.

- The Congress has extensive Programme for holding Lectures on current issues concerning Engineers / Engineering Profession.

"""""""""#

NATIONAL TRADE CORRIDOR IN THE REGIONAL AND GLOBAL CONTEXT

Dr. Engr. Asad Ali Shah, Member Infrastructure and Energy Planning Commission, Govt. of Pakistan delivered lecture on "National Trade Corridor in the Regional and Global Context" at Pakistan Engineering Congress Headquarter on February 17, 2007. The lecture was largely attended in the jam packed Multi-purpose Hall of the Congress.

The learned speaker eloquently spoke on the concept of National Trade Corridor / its objectives.

He said that performance of the transport system in Pakistan has not been up to the mark with economic losses from congestion and poor quality roads and mismatch between supply and demand for transport services and supporting infrastructure. The logistic constraints are impact competitiveness of the country's trade and industrial development. The conventional system, documentation clearance, movement facilitation and electronic data interchange has yet to be modernized to international levels. These inefficiencies are resulting in increasing the cost of business. Constraining economic growth, reducing export competitiveness, and hindering social development. It is estimated that these inefficiencies are imposing a cost to the economy in excess of Rs. 220 billion annually or 3.5% of the GDP.

He added that in order to cope with the situation, a major initiative namely the "National Trade Corridor (NTC)" has launched to address the entire logistics chain in a holistic manner and revamp transport sector including ports and shipping, roads, railway, trucking, aviation and trade facilitative measures. The NTC initiative is in line with Medium Term Development Framework (MTDF 2005) strategy, which includes establishment of a multi-modal transport system ; emphasis on as management with consolidation upgrading, rehabilitation and maintenance of the existing system enhanced private sector participation in sector development and institution capacity building research and development and use of modern technology, procedures and processes to increase efficiency. The strategy also incorporates measures for enhancing regional connectivity through road, aviation and shipping sub-sectors to improve North-South and East-West trade

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links with Central Asian States, Iran, Afghanistan, India and Europe and development of energy and industrial corridors with these countries.

Talking about the objectives of establishment of NTCMU and TTFU, he said that the objective of the Project is to provide overall technical leadership and coordination with line ministries and other organizations in undertaking measures / reforms project to improve the logistics system that would lead to reducing the cost to trade and business in the country. Focusing on improving the infrastructure sector, services and streamline procedures, the proposed NTC and TTF components will :

1. Enable institutions of the infrastructure sector conduct project and studies and project preparation activities in a timely manner and in line with international standards and best practices.

2. Ensure implementation readiness of the infrastructure projects.

3. Improve institutional capacities within the infrastructure agencies to meet business management and process changes as required by recent sector policies, reforms regulatory agencies.

4. Work with the private sector to improve in-house logistics.

He went on to say that the technical assistance will further enhance the internal capacity of infrastructure agencies develop a project program and implement identified projects successfully. The proposed steps will ultimately build intellectual leadership and also enhance the productivity of all those involved in Trade and Transport Facilitation.

He concluded that the crux of the talk was that with gigantic modernization of Ports, Roads, and Railway Net-Work Road and Freight Industry, State of Art Air-Terminals, Media and Communication expansion, under the "Trade and Transport Facilities Project" will usher in an economic revolution (in a period of 5 Years) in the country with "Gawadar" playing a pivotal Role. According to the speaker "Gawadar" will be one of the most advanced city of the World in a decade and a hub of economic development. A film on Gawadar was also shown.

The session was followed by questions from the audience which were elaborately answered by the speaker.

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TARGETS SET FOR ACHIEVEMENT IN THE 2ND MEETING OF THE 71TH SESSION OF THE EXECUTIVE COUNCIL

President PEC, informed the House, that he would greatly appreciate the In-Put of the members of Executive Council in respect the cardinal goals that ought to be achieved in 71th Session to make the Congress a progressive and vibrant organization. Engr. Iftikhar-ul-Haq suggested that all members of the Congress may be invited to convey their proposals in this respect.

Elaborating his vision for 71th Session, the President outlined some of the major objectives i.e.

- Membership Committee should embark on a well-planned programme to visit Chief Engineers / Administrative Heads of various engineering departments / organizations and Faculty Members of Engineering Universities with the twin purpose of (a) introducing the congress and (b) increasing the Congress Membership.

- Building Committee may prepare a "Short Term" and a "Long Term" plan of maintenance / construction activities i.e. construction of Additional Block Cum Parking Lot in the existing premises (if feasible) or alternatively acquire additional Space / Building etc. for future use.

HONORARIUM TO CONGRESS STAFF AS WELL AS OTHERS WHO WORKED DURING THE LAST ANNUAL SESSION WAS GRANTED AS UNDER IN RECOGNITION OF THEIR SERVICES TO THE PAKISTAN ENGINEERING CONGRESS

Congress Personnel	Rs. 69200
Computer College Personnel of PEC	Rs. 10000
Personnel of NDC (Regd.)	Rs. 22000
Others for Receiving Congress Subscription / Election Duty etc. during the Session	Rs. 23500

WELCOME TO NEW MEMBERS

The Executive Council of the Pakistan Engineering Congress approved Membership of the following new members in to the Congress fold. The Engineering News congratulates all of them and welcomes them to Pakistan Engineering Congress

Members admitted on 08-04-2006

1 Engr. Zia ul Hassan Khan
2 Engr. Muhammad Atif ur Rehman
3 Engr. Danish Rafique
4 Engr. Luqman Zaffar
5 Engr. Muhammad Shafqat Khalid
6 Engr. Mashood Ahmed
7 Engr Muhammad Riaz Zahid
8 Engr. Mian Nadir Qayyum
9 Engr. Hafiz Muhammad Ramzan
10 Engr. Intizar Ali
11 Engr. Irfan Ullah
12 Engr. Roshan Ali Bhatti
13 Engr. Khurshid Ahmad Mirza
14 Engr. Naveed Abbas

Members admitted on 20-05-2006

1 Engr. Muhammad Usman Rashid
2 Engr. Muhammad Shahzad
3 Engr. Shafiq Ahmad
4 Engr. Asif Hayat Bhatti
5 Engr. Zameer Hussain
6 Engr. Muhammad Tayyab Ahmad
7 Engr. Muhammad Akbar Nawaz
8 Engr. Muzaffar Abbas
9 Engr. Atiq Ullah
10 Engr. Ali Jawaid Ghuman
11 Engr. Najamuddin Sheikh

Members admitted on 29-07-2006

1 Engr. Arif Saeed
2 Engr. Mian Babar Qayum
3 Engr. Muhammad Saeed
4 Engr. Muhammad Hamid Mahmood
5 Engr. Shahzad Ahmad
6 Engr. Muhammad Asif
7 Engr. Naseer Ahmad Zia
8 Engr. Arshad Saeed Khan
9 Engr. Aamir Miandad
10 Engr. Nisar Ahmad
11 Engr. Muhammad Yasir Malik
12 Engr. Ch. Muhammad Nadeem
13 Engr. Muhammad Kashif Khan
14 Engr. Syed Abid Ali Abid
15 Engr. Qasim Haq
16 Engr. Muhammad Ashraf
17 Engr. Hafiz Waqas Haider Shah
18 Engr. Imran Ghani
19 Engr. Asrif Masood
20 Engr. Syed Fayyaz Hussain
21 Engr. Amir Nadeem
22 Engr. Muhammad Zaman Khan Dawer

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Members admitted on 21-10-2006

1 Engr. Hafiz Faisal Hassan Abid
2 Engr. Abdul Qayyum
3 Engr. Syed Muhammad Zaier Abbass Zaidi
4 Engr. Muhammad Farooq Azam
5 Engr. Zeeshan Ali
6 Engr. Usman Arif
7 Engr. Aataf Ahmed
8 Engr. Babar Saeed Sehole
9 Engr. Muhammad Hafeez Khan
10 Engr. Tanveer Afzal
11 Engr. Syed Farrukh Ali Shah
12 Engr. Muhammad Asjad Ajfan
13 Engr. Muhammad Shahbaz
14 Engr. Faiz-ul-Hassan Sipra
15 Engr. Hassan Mohy-ud-Din

Members admitted on 20-01-2007 (71st Session)

1 Engr. Asif Mahmood
2 Engr. Muhammad Afzal Mughal
3 Engr. Jahanzeb Afridi
4 Engr. Bilal Ahmed
5 Engr. Muhammad Imran
6 Engr. Muhammad Aamir Iftikhar
7 Engr. Sh. Saeed Ahmad
8 Engr. Nabil Haider
9 Engr. Anzar Hussain Shah
10 Engr. Aun Muhammad
11 Engr. Ch. Rashid Majeed
12 Engr. Muhammad Saleem Shahid
13 Engr. Muhammad Zubair Asghar
14 Engr. Imran Sadiq Afridi
15 Engr. Muhammad Mudassar Ali
16 Engr. Abdul Qayyum
17 Engr. Muhammad Imran Malik
18 Engr. Imran Rashid
19 Engr. Faisal Shoukat
20 Engr. Shahid Mahmood
21 Engr. Muhammad Arshad
22 Engr. Kashif Nadeem
23 Engr. Zahid Majeed
24 Engr. Ijaz Ahmad Bhatti
25 Engr. Mahmood Ahmad
26 Engr. Aqil Inam
27 Engr. Aftab Ahmad Chaudhry
28 Engr. Syed Salman Mazhar
29 Engr. Hafiz Haider Ali
30 Engr. Syed Muhammad Sajjad Hashmi
31 Engr. Muhammad Afzal
32 Engr. Arshad Chaudhry
33 Engr. Abdul Majeed Naveed
34 Engr. Atif Ameen Awan
35 Engr. Muhammad Abu Bakr Khan Sherwani
36 Engr. Muhammad Umar Farooq
37 Engr. Muhammad Zaka Ullah Khan
38 Engr. Muhammad Akram
39 Engr. Muhammad Bilal Ahmad
40 Engr. Umar Karim
41 Engr. Muhammad Shahbaz Rasheed
42 Engr. Shoaib Ahmed Awan
43 Engr. Ali Mukhtar

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CHANGE OF TELEPHONE NUMBERS OF PAKISTAN ENGINEERING CONGRESS

1. Telephone Numbers.

The New Telephone Numbers of the Pakistan Engineering Congress are (the previous one's stand withdrawn).

(a) Congress Office

President PEC	042-5784237
Secretary PEC	042-5784237
Director (Admin. and Finance)	042-5784238
Congress Office	042-5784235
Congress Office (Fax)	042-5784236

(b) Computer College

Manager PEC Computer College	042-5784240
Computer College (Fax)	042-5784239

The President and Secretary can also be contacted on following phones.

President PEC		042-5861123 (Residence)
		042-5861508 (Residence)
	Mobile #	0300-4340102
Secretary PEC		042-5843874 (Office)
	Mobile #	0303-7313891

2. Any change in the designation/address of the members.

You are also requested to kindly inform the Congress Office about any change in your office/residential address etc.

3. Membership Cards.

The Congress has decided that its members should be issued Membership Cards (Renewal Cards). In case, you do not posses it please inform us. Also please arrange to deposit the Membership Fee if in arrears.

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THE FOLLOWING INFORMATION IS REQUIRED FOR UPDATING "MEMBER'S DATA"

(Please fill up the followings)

M. No. (Congress) _____ M. No. (Council) _____

Name _____

Deptt./Org. _____

Telephone (Office) _____ Telephone (Residence) _____

Mobile No. _____ E-mail Address _____

Fax No. _____ Date of Birth _____

Discipline _____ District _____

Address Office _____

_____

_____

_____

Address Residence _____

_____

_____

_____

After completion of this Performa please return to Pakistan Engineering Congress Office 97-A/D-1, PEC Building, Liberty Market, Gulberg-III, Lahore-54660

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WORLD WATER-DAY

MARCH-2010

On the Theme of

"Communicating Water Quality Challenges and Opportunities"

Celebrated by

PAKISTAN ENGINEERING CONGRESS

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PAKISTAN ENGINEERING CONGRESS

(4th Floor) Pakistan Engineering Congress Building,
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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

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Vice President / Convener Publication Committee

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PAKISTAN ENGINEERING CONGRESS

THE EXECUTIVE COUNCIL FOR THE 71ST SESSION

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Engr. Husnain Ahmad

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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		

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2	Engr. Iftikhar Ahmad	. . .	*Treasurer*
3	Engr. S. M. A. Zaidi	. . .	*Business Manager*
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5	Engr. Muhammad Sarfraz Butt	. . .	*Publicity Secretary*

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14	Engr. Muhammad Sarfraz Butt	31	Engr. Iftikhar Ahmad
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17	Engr. Nayyar Saeed		

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Engr. Husnain Ahmad
President
Pakistan Engineering Congress

WORLD WATER-DAY
MARCH-2010

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CHEMICAL QUALITY ASSESSMENT OF MAJOR BRANDS OF BOTTLED WATER IN LAHORE

By

Asma Saeed*, Shabana Kauser, Imran Kalim and Muhammad Iqbal

ABSTRACT

Twenty five brands of commercially available bottled water were randomly collected from local markets to check the chemical quality for the confidence-building of the consumers. The suitability for human consumption was assessed according to WHO and EU guidelines/directives. Various water quality parameters along with anionic and cationic balance were analysed by standard APHA and AWWA methods. Forty percent of the samples had higher conductivity ranges as per EU directives while micronutrients (Cu^{+2}, Fe^{+2}, Mn^{+2}, Ni^{+2}, Zn^{+2}) were found entirely absent. Sodium was marginally higher in one sample as per WHO guidelines. Forty four percent of the samples had confirmed presence of arsenic (As) between the range of 1-11 ppb.

It is therefore, concluded that majority of the available bottled water brands conformed to the guidelines/directives of WHO/EU for the over all quality of drinking water.

Keywords: Bottled water, drinking water standards, maximum admissible concentration, atomic absorption spectrometer, ion chromatography

INTRODUCTION

Water is inevitable for life. It serves as the principal vehicle and mediator of physiological activities. It is a major source of all the essential minerals that play important role in human nutrition and proper functioning of various body systems (Versari *et al*., 2002; Buchanan *et al*., 2000). Calcium, magnesium, phosphate and fluoride, for instance, are needed for the proper teeth and bone development; calcium is also essential for activation of some enzymes that take part in blood clotting, and phosphate is an integral component of the energy transfer system (Buchanan *et al*., 2000). Manganese and zinc are needed for the activation of a number of enzymes that are essential for the proper metabolic functioning of human body (Buchanan *et al*., 2000). Copper is involved in the oxidative electron transport chain, while iron is the main constituent of haemoglobin and its deficiency causes anemia (Murray *et al*., 2000). Sodium is necessary for maintenance of osmotic and acid-base balance in the body, whereas potassium is involved in the rhythmic cardiac movements, and nerve and muscle irritability (Khan, 1998). Besides the essential need of minerals in human health, they become toxic when their intake exceeds the tolerance levels of the human body. Sodium, for example, is considered a contributory cause of dietary cancer (Jansson, 1996). The consumption of water with high fluoride and silica leads to multiple bone fracture (Fabiani *et al*., 1999). Several other chemical contaminants identified in the drinking water, such as chloride, nitrate, sulphite, arsenic, toxic elements, organic compounds, and radionuclides can lead to cancer, human body malfunctioning, and chronic illnesses (Nickson *et al*., 2005; Kuo *et al*., 1997; Parslow *et al*., 1997; Aral *et al*., 1996; Tsezou *et al*., 1996; Lester, 1995; Gabrielli and Gerofi, 1984).

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The chemical quality of drinking water during recent years has deteriorated considerably due to the presence of toxic elements, which even in traces are a serious cause of health hazard (Ikem

et al., 2002). Besides the geochemical strata of groundwater sources, the problem is mostly traceable to the undiscriminated discharge of industrial effluents, leading to the chemical contamination of natural water bodies (Nickson *et al.*, 2005). It is now known that fluoride and arsenic contamination in groundwater in the vicinity of Lahore, Pakistan is traceable to geological formations of the region (Nickson *et al.*, 2005), while contamination of water with chromium, lead, cadmium and nitrite is traceable to agro-industrial activities (Nickson *et al*., 2005). Because of the high risk and health hazards associated with intake of contaminated tap water, the consumption of bottled water is becoming popular worldwide, particularly due to ready availability at a reasonable cost, better taste, and the presence of fewer impurities. Bottled water not only serves the drinking purpose, it has also found wide usage in infant formula preparations, reconstitution of various food products, skincare formulations, and for filling humidifiers (Warburton, 1993). Since the availability of safe drinking water from the usual sources of supply in Pakistan has become a serious concern, a huge consumer demand for bottled water has been generated. This has led to the market flooding by a large number of commercial bottled water brands.

Various countries have enforced drinking water standards for the maximum permissible levels of different constituents, which may vary from country to country (Misund *et al*., 1999). The quality of bottled drinking water in Pakistan is regulated by Pakistan Standards and Quality Control Authority (PSQCA, 2004), under which compulsory certification and the printing of PSQCA mark on the brand label is mandatory. Manufacturers are using various technologies, such as filtration, deionization, reverse osmosis, and ozonation for the preparation of their bottled water products (Allen *et al*., 1989). Since these are non-selective procedures, while removing toxic chemicals, the essential micronutrients are also removed, thus creating a drinking water composition that may not have the desirable mineral balance as in the natural water. The present study, therefore, aims to conduct a survey of the chemical quality status of randomly collected 25 different bottled water brands vended in Lahore, Pakistan, inclusive of data on their physicochemical characteristics, essential minerals, micronutrients, and toxic elements.

MATERIALS AND METHODS

Sample Collection. Sets of three bottles each (volume: 0.5-1.5 liter) of commercially available bottled water brands vended in Lahore, Pakistan, were randomly purchased from stores and shops for assessment of their physicochemical quality. The chemical composition and expiry dates as printed on the brand labels were recorded. Details of the bottled water samples in terms of brand names, bottle volume capacity, container type and the code number allotted to each brand are given in Table 1.

Reagents. Reference standards for cations and anions used were from Merck (UK), while rest of the chemicals were of analytical reagent grade (Sigma-Aldrich, Germany).

Analytical Methodology and Quality Assurance. Bottled water samples were transported to the laboratory where most of the water quality parameters were analyzed within 1-6 h. The pH and conductivity were respectively measured with pH meter (Knick 646, Germany) and conductivity meter (DiST 3, Hanna Instruments, Singapore), which

Table 1. Brand information about the commercially available brands of bottled water studied*.

Brand code#	Brand name	Bottle capacity (liter)

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1	Ab-e-Hayat	1.5
2	Aqua Pak	1.5
3	Aqua Safe	0.5
4	Askari	0.5
5	Mitchell's Balane	0.5
6	Clear	0.6
7	Classic	0.5
8	Cool	1.5
9	Country	0.6
10	Empire	0.6
11	Everest	0.6
12	Ever Green	0.6
13	Fazal Din's Pharma Plus	0.5
14	Fresh	0.5
15	H_2O Plus	0.6
16	Maza	0.5
17	Minra	0.6
18	Mum	0.5
19	Naimat	1.5
20	Nation	0.6
21	Nestle Pure Life	0.5
22	Oas	0.5
23	Sparkletts	0.6
24	Springley	0.5
25	Sufi	0.625

*triplicate samples were analyzed; all brands used disposable plastic bottles as the container

were duly calibrated with standard pH buffers and conductivity standard solutions in accordance with standard procedures (PSQCA 2004; APHA 1998). Calcium carbonate alkalinity was measured by titration against standard 0.1N HCl, phosphate by colorimetric method, total dissolved solids (TDS) by evaporation, and total hardness (TH) by EDTA titration against calcium (Ca^{2+}) ions (PSQCA, 2004; APHA, 1998). Total nitrate, nitrite, chloride, fluoride and sulphate were analyzed by an ion exchange column chromatography (HIC-6A series, Shimadzu, Japan) on shim pack column (IC-A1) and shim pack guard column using mobile phase of Tris buffer (2.5 mM pthalic acid and 2.4 mM Tris (hydroxymethyl) amino methane, pH 4.0) at flow rate of 1.5 ml/min; a conductivity detector (CDD-6A series, Simadzu, Japan) was used with wavelength set at 195 nm (PSQCA, 2004; Shimadzu Operation Manual, 1999; APHA 1998). Atomic absorption spectrophotometer (Unicam 969, 2000, UK) was used to analyze metals, which included arsenic, cadmium, calcium, copper, iron, lead, manganese, magnesium, nickel, potassium, sodium and zinc (Unicam 969 Operation Manual Atomic Absorption Spectrophotometer, 2000).

Statistical Analysis. The data reported is the mean value of three separate analyses. Means were compared using Duncan's new multiple range tests at $p \leq 0.05$ (Steel *et al*., 1997). Standard deviation (±) was accordingly calculated from the triplicate values.

Guidelines for Quality Control of Drinking Water. The chemical quality of the bottled water brands was evaluated and compared with the World Health Organization (WHO) guidelines for drinking water (WHO, 1993; 1981), the European Union (EU) maximum permissible directive for

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drinking water (Ikem *et al*., 2002), and the Pakistan (PSQCA) standards specifications for bottled drinking water (PSQCA, 2004). A summary of WHO, EU and PSQCA values are given in Table 2.

Table 2. World Health Organization (WHO), European Union (EU) and Pakistan (PSQCA) drinking water standards.

Parameters	EU[a] (MAC)[c]	WHO[b] (MPL)[d]	Pakistan[e] (PS)[f]
pH	6.5-8.5GV*	6.5-8.5	-
Conductivity	400µS/cm	-	-
Total Dissolved Solids (TDS)	-	1000 ppm	500 ppm
Fluoride	-	1.5	-
Sulphates	250 ppm	250 ppm	250 ppm
Chlorides	-	250 ppm	250 ppm
Nitrate	-	50 ppm	-
Nitrite	-	0.5 ppm	1.0 ppm
Calcium	100 ppm GV	-	100 ppm
Magnesium	50 ppm	-	50 ppm
Sodium	150 ppm	200 ppm	-
Potassium	12 ppm	-	10 ppm
Iron	200 ppb	300 ppb	300 ppb
Copper	100 ppb GV	2000 ppb	-
Manganese	50 ppb	10 ppb	-
Zinc	100 ppb GV	3000 ppb	3000 ppb
Nickel	50 ppb	20 ppb	-
Phosphorous	5000 ppb as P_2O_5/l	-	-
Cadmium	5 ppb	3 ppb	3 ppb
Lead	50 ppb	10 ppb	-
Chromium	50 µg/l (Total)	50 ppb	50 ppb
Arsenic	50 ppb	10 ppb	10 ppb

[a]European Union (EU) directives for drinking water (source Ikem *et al*. 2002)
[b]World Health Organization (WHO) guidelines for drinking water (WHO 1993)
[c]MAC = maximum admissible concentration
[d]MPL = maximum permissible limit
[e]Pakistan standards specifications for bottled drinking water (PSQCA 2004)
[f]PS = Pakistan Standards PS: 4639-2004 (R) under compulsory certification marks scheme
*GV = guide value

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RESULTS AND DISCUSSION

pH, conductivity, total hardness, total dissolved solids, alkalinity as $CaCO_3$, carbonates, bicarbonates in all the brands are given Table 3. Most of the water quality constituents were within the acceptable limits of the respective guidelines, directives and the standard of WHO, EU and PSQCA. The only exception noted was in respect of conductivity, which in 10 brands (# 1, 2, 3, 8, 9, 10, 12, 15, 20, 24) was higher (411-946

µS/cm) than the maximum permissible limit of 400 µS/cm of EU directive. The conductivity was exceptionally high (946 µS/cm) in brand #2. The level of conductivity is a useful parameter for the assessment of chemicals quality of drinking water, as conductivity indicates the total inorganic contents in the drinking water. Only one brand (# 25) had pH value of 6.5 (slightly acidic), which is the lowest limit in the acceptable range of 6.5-8.5, while all others had the pH value range of 7.1-8.1. However, brand #s 2 and 21 had pH 8.1 and 8.0, respectively, which may be rated to be on the alkaline side. Phenolphthalein alkalinity was zero, which is an indication that hydroxide alkalinity was absent (Ahmed, 1998), and bicarbonate was the major form of alkalinity (Table 3). High alkalinity is associated with high pH, which in terms of contribution in water is due to, in the order of, hydroxide > carbonates > bicarbonates. High alkaline water is unpalatable. The low pH range of 7.1-8.1 further indicates that bicarbonates were the major contributors of alkalinity in the water brands analyzed

Table 3. Summary of some physicochemical parameters of the brands of bottled water studied.

Brand #	Parameters Studied						
	pH	TH* (ppm)	TDS* (ppm)	Alkalinity as $CaCO_3$ (meq/L)	Conductivity (µS/cm)	Total Carbonates as $CaCO_3$* (ppm)	Bicarbonate* (ppm)
1	7.62±0.011	224±2.00	316±7.9	2.98±0.017	504±5.04	149	182.21
2	8.14±0.021	196±1.15	545±11.44	2.61±0.020	946±11.35	130.5	159.40
3	7.87±0.015	94±1.00	282±5.34	1.25±0.021	450±5.85	62.5	76.25
4	7.84±0.017	102±1.53	206±4.74	1.36±0.011	274±4.66	68	82.96
5	7.8±0.010	120±1.52	192±4.22	1.61±0.015	350±4.90	80.5	98.21
6	7.1±0.118	101.6±0.81	229±4.81	1.35±0.010	338v4.40	67.5	82.35
7	7.64±0.021	104±1.52	276±7.45	1.38±0.017	276±3.04	69	84.18
8	7.57±0.026	140±1.00	224±5.82	1.86±0.021	411±7.40	93	113.46
9	7.88±0.015	96±2.08	246±5.66	1.28±0.017	456±5.93	64	78.08
10	7.85±0.012	98±1.73	288±7.20	1.31±0.006	499±4.99	65.5	79.91
11	7.83±0.025	88±1.00	188±4.89	1.17±0.021	365±6.93	58.5	71.37
12	7.6±0.015	112±1.53	238±5.71	1.49±0.005	572±9.15	74.5	90.89
13	7.78±0.010	102±1.52	214±6.21	1.36±0.015	294±5.88	68	82.96
14	7.7±0.014	124±3.10	250±6.00	1.67±0.019	314±4.39	83.5	100.65
15	7.86±0.030	232±1.52	348±9.40	3.09±0.061	500±7.50	154.5	188.5
16	7.32±0.038	64±1.15	156±2.96	1.15±0.031	185±1.85	57.5	70.15
17	7.27±0.01	168±1.16	276±5.52	2.24±0.022	343±6.52	112	136.64
18	7.89±0.020	84±1.73	132±2.77	1.12±0.006	182±3.64	56	68.32
19	7.81±0.015	62±0.58	188±4.70	1.23±0.023	290±4.93	61.5	75.3
20	7.84±0.021	148±1.15	366±9.51	2.0±0.020	544±8.16	100	120.35
21	8.01±0.006	132±1.00	258±5.42	1.76±0.011	387±7.35	88	107.36
22	7.86±0.032	112±1.68	180±4.68	1.50±0.012	249±2.49	75	91.07
23	7.64±0.043	174±1.74	228±5.47	2.32±0.015	344±3.44	116	141.52
24	7.3±0.264	200±1.16	328±7.21	2.67±0.017	460±6.9	133.5	162.87
25	6.52±0.031	128±1.92	300±6.30	1.71±0.015	366±6.95	85.5	104.31

TH* = total hardness; TDS* = total dissolved solids; Carbonates* = by calculations from the mean value of alkalinity; Bicarbonates* = by calculations from the mean values of alkalinity

The amounts of essential nutrients such as calcium, magnesium, phosphorous, sodium, and potassium are reported in Table 4. As seen from Table 4, the values of calcium, magnesium and potassium were found with the range of WHO guidelines and EU directives. However, notable deviations were observed with respect to sodium (211 ppm in brand # 15 respectively), was higher as per WHO guideline of 200 ppm and the EU directive of 150 ppm (157.5 and 211 ppm in brand # 5 and15 respectively). It may be

noted that sodium-rich water may be detrimental to the health of heart and blood pressure patients (US EPA, 1998a), which may contribute to the occurrence of hypertension (Garzon and Eisenberg, 1998). Low salt diet patients may be affected by high intake of sodium-rich water. It is significant to note that though the values of calcium, magnesium, phosphorous and potassium were within the maximum limits, these in comparison were extremely low (compare Table 2 and Table 4). It may be observed in this regard that epidemiological and chemical studies have suggested that drinking magnesium-rich water is good for human consumption, as it reduces the frequency of sudden death (Garzon and Eisenberg, 1998). Calcium and phosphorous impart positive effect on proper bone and teeth development, while potassium is useful for rhythmic cardiac movements, for preventing muscle cramps, and irritability of nerves (Khan, 1998).

Table 4. Status of some minerals/macronutrients (calcium, magnesium, sodium, potassium, phosphorus) in the brands of bottled water studies.

Brand #	Sodium (ppm)	Potassium (ppm)	Calcium (ppm)	Magnesium (ppm)	Phosphorus* (ppm)
1	37.5±0.562	2.2±0.055	35±0.700	14.3±0.286	1025±14.35
2	140±1.540	5.2±0.119	30±0.660	28.8±0.720	1025±16.40
3	54±0.972	1.7±0.036	16±0.384	11.1±0.299	450±5.85
4	8±0.096	2.4±0.065	20±0.380	10.94±0.252	725±12.32
5	157.5±2.362	4.6±0.087	24±0.624	15.28±0.412	600±9.60
6	8±0.152	5.7±0.154	36±0.756	4.95±0.319	175±3.15
7	13±0.169	2.26±0.054	28±0.588	9.08±0.218	650±11.70
8	30±0.480	4.31±0.099	25±0.550	14.34±0.373	825±16.50
9	74±1.110	2.12±0.053	20±0.460	4.95±0.144	550±5.51
10	83±1.411	2.3±0.051	20±0.480	12.6±0.3024	600±7.80
11	50±0.900	1.8±0.038	15±0.285	8.7±0.183	800±12.81
12	86±1.376	2.9±0.084	24±0.600	13.5±0.351	850±12.75
13	44±0.440	3.6±0.097	15±0.315	11.2±0.280	340±4.08
14	23.5±0.399	2.5±0.067	12±0.240	14.2±0.383	950±18.05
15	211±3.165	5.3±0.154	30±0.750	22.5±0.518	1200±15.6
16	48±0.864	8.87±0.204	15±0.420	6.67±0.160	50±0.70
17	47.5±0.617	3.34±0.080	20±0.540	13.01±0.286	700±11.2
18	14.86±0.178	2.56±0.059	25±0.650	5.4±0.146	300±5.10
19	40.1±0.642	2.87±0.057	14±0.350	11.5±0.276	800±14.40
20	72±1.080	3.5±0.094	28±0.756	16.8±0.437	1050±12.60
21	20.3±0.365	0.23±0.005	37.5±0.937	5±0.125	10±0.15
22	6.2±0.111	3.4±0.088	30±0.780	5.8±0.116	375±6.00
23	26.3±0.394	1.1±0.026	31±0.744	10.4±0.270	875±15.75
24	54.8±0.877	1.96±0.045	37±0.999	16.9±0.406	1050±17.85
25	14.4±0.274	1.09±0.031	54±1.188	8.74±0.183	25±0.30

* as P_2O_5/l

All the brands analyzed for nitrate, sulphate and chloride had levels below the maximum acceptable limits of these anions (Table 5). Fluoride and nitrite was not detected in any sample. The presence of nitrate and nitrite in drinking water at high levels causes shortness of breath, blue babies syndrome in infants, and haemorrhaging of spleen (US EPA, 1998b). Fluoride-rich water is a cause of bone fractures and teeth disorders (Fabiani *et al*., 1999).

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Table 5. Level of some anions (chloride, nitrate, sulphate, nitrite*, fluoride*) in the brands of bottled water studied.

Brand #	Chloride (ppm)	Sulphate (ppm)	Nitrate (ppm)
1	10.13±0.203	50±1.05	17.4±0.021
2	38.89±0.739	111.1±2.22	2.83±0.042
3	34.92±0.733	46.91±1.17	nd
4	7.94±0.183	12.34±0.296	6.25±0.006
5	14.88±0.372	37.04±0.778	3.12±0.018
6	60.14±1.683	25±0.500	nd
7	39.22±0.784	35.63±0.998	nd
8	22.55±0.519	27.5±0.715	nd
9	30.4±0.760	41.25±1.114	13.1±0.029
10	34.64±0.831	46.25±1.063	2.1±0.028
11	5.82±0.122	11.06±0.243	5.49±0.005
12	30.25±0.756	66.67±1.600	11.07±0.032
13	2.4±0.062	19±0.380	0.6±0.009
14	4.2±0.966	27.04±0.730	7.05±0.015
15	5.34±0.133	31.45±0.786	6.52±0.021
16	21.52±0.602	12.58±0.264	12.08±0.006
17	6.31±0.183	28.33±0.694	nd
18	2.59±0.057	25.8±0.671	nd
19	2.26±0.054	18.68±0.411	nd
20	17.45±0.366	51.85±1.192	nd
21	79.19±1.900	15.43±0.386	nd
22	2.44±0.066	31.86±0.860	nd
23	3.84±0.084	9.8±0.186	8.82±0.004
24	6.1±0.122	18.2±0.364	12.94±0.007
25	98.7±1.877	0.5±0.011	nd

* = fluoride and nitrite were not detected in any of the bottled water brand studied

The observations on the detection of some essential micronutrients and toxic metals are recorded in Table 6. Manganese, nickel, zinc, chromium, cadmium and lead were not detected in any sample. However, among the essential micronutrients, copper was not detected in 15 brands, while in the remaining 10 brands the micronutrient was present in minor quantities (3.2-13.1 ppb as compared to the maximum acceptable limits of WHO, EU, PSQCA, Table 2). Likewise, iron was not detected in 4 brands, while the value detected for this essential micronutrient was also extremely low. It is noteworthy that the presence of both copper and iron in drinking water is good for human consumption to overcome the problems associated with their deficiencies, such as anaemia (Murray *et*

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Table 6. Status of micronutrients and toxic metals (copper, iron, manganese, nickel, zinc, chromium, cadmium, lead)* in the brands of bottled water studied.

Brand #	Copper (ppb)	Iron (ppb)

1	Nd	152.7±3.054
2	5.3±0.106	106±2.226
3	Nd	22.5±0.562
4	Nd	10.38±0.249
5	Nd	41.5±0.871
6	13.2±0.251	76.7±1.764
7	Nd	65.1±1.627
8	Nd	5.5±0.121
9	Nd	nd
10	3.2±0.080	nd
11	7±0.154	52±1.040
12	Nd	3.8±0.072
13	Nd	33.4±0.835
14	4.6±0.092	1.3±0.025
15	Nd	8.3±0.174
16	Nd	21±0.525
17	Nd	17±0.391
18	Nd	nd
19	Nd	24±0.600
20	Nd	39±1.014
21	6±0.114	nd
22	4.8±0.110	28±0.588
23	4.7±0.117	29±0.638
24	13.1±0.249	28.1±0.759
25	10.7±0.257	18.1±0.416

nd* = manganese, nickel, zinc, chromium, cadmium, lead were not detected

al., 2000). The non-detection of cadmium and lead in any brand may be rated as a positive indicator, as both are extremely toxic and their ingestion causes nausea, vomiting, sensory disturbances, liver injury, shock and renal failure (US EPA, 1998c). From Fig. 1 arsenic, another toxic metal, was detected in 11 brands (44%). It may be noted, however, that except for brand # 5, the detected arsenic in all other brands was within the WHO, EU, PSQCA maximum acceptable limits for this toxic element (< 10 ppb). High concentration of arsenic in drinking water increases the ratio of still-births and spontaneous abortion, causes arsenism and black-foot disease, hyperpigmentation, cardiovascular diseases, and skin cancer (Jain and Ali 2000; WHO 1981).

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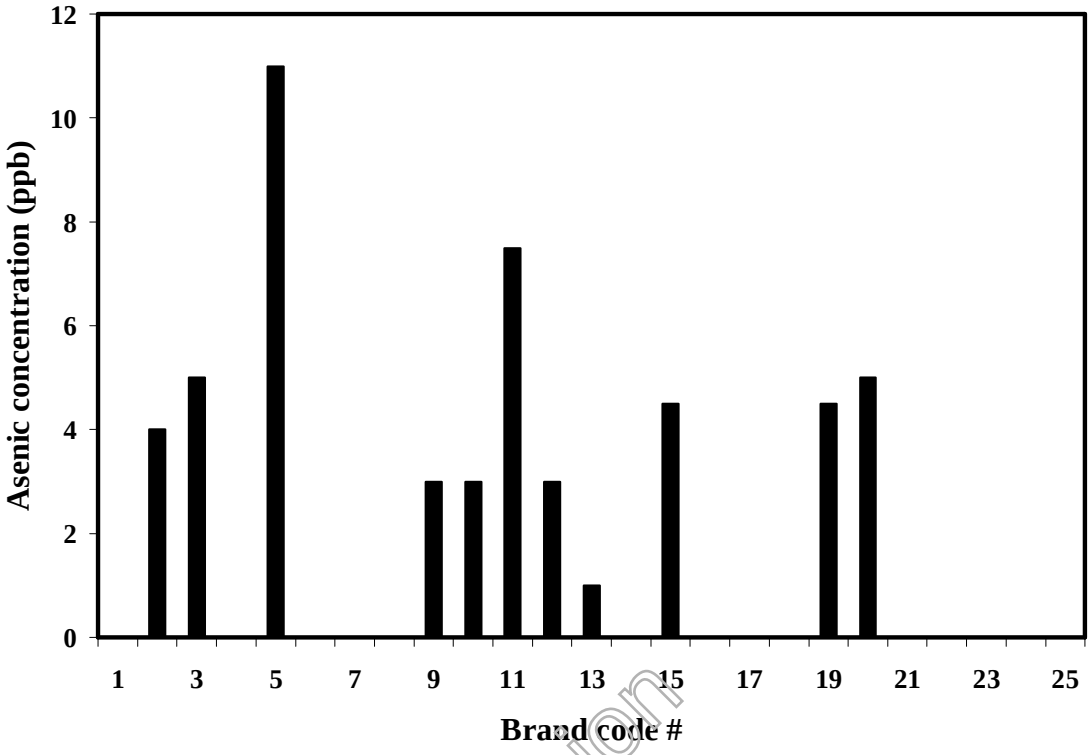


Fig. 1. Arsenic concentration detected in the bottled water brands studied.

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CONCLUSION

The chemical quality of bottled water depends on the source and chemical composition of the raw water. It also depends on the treatment technologies used by various manufacturers. Most of the samples investigated for their chemical quality had values within the acceptable limits of WHO, EU and PSQCA. However, some bottled water brands had higher conductivity. The detection of high sodium content in 10 brands may be rated as a negative attribute. Arsenic was detected in 11 brands, one of which exceeded the acceptable limit. The brands exceeding the limits of conductivity, sodium and arsenic may not be good for human consumption. The low values of essential minerals and micronutrients is a grey area, which merits critical review by nutritionists and manufacturers.

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The Executive Council of the Pakistan Engineering Congress approved Membership of the following new members into the Congress fold. The Engineering News congratulates all of them and welcomes them to Pakistan Engineering Congress

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2 Engr. Muhammad Junaid Shafique
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13 Engr. Syed Moeen Khurshid
14 Engr. Muhammad Irfan Anwar
15 Engr. Ch. Muhammad Waseem

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OBITUARY

May their souls rest in Peace

.

1. Engr. Izhar-ul-Hassan Siddiqui Chairman Engineering Associates Karachi passed away on 25th November 2008.

2. Mother of Engr. Muhammad Ibrahim Malik Member Executive Council passed away on 9th December 2008.

3. Engr. Abdul Hamid Arif Chief Engineer Irrigation Department Government of Punjab.

4. Engr. Nisar Ahmad Malik S.E. Upper Chenab Circle I & P Department Punjab died in a sad accident.

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15	Engr. Najam Waheed	32	Engr. Malik Ata ur Rehman
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12 Engr. Muhammad Imran Yousaf
13 Engr. Adil Sharif

OBITUARIES

May their souls rest in Peace

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1. Engr. Fayyaz Ali Shah of High-ways Department Punjab.

2. Engr. M. A. Lateef Vice-President NESPAK passed away on 13th May 2009.

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2 Engr. Muhammad Junaid Shafique
3 Engr. Rana Haider Faruq

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5 Engr. Zila-Tahawar Shahbaz
6 Engr. Muhammad Shahbaz
7 Engr. Shahid Iqbal
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10 Engr. Muhammad Tariq Nazir
11. Engr. Humayun Murtaza
12 Engr. Hannan Hafeez
13 Engr. Syed Moeen Khurshid
14 Engr. Muhammad Irfan Anwar
15 Engr. Ch. Muhammad Waseem

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4 Engr. Shahid Abbas
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6 Engr. Hassan Iqbal
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16 Engr. Fateh Sher
17 Engr. Muhammad Atif Mian

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7 Engr Major Iftikhar Bin Niaz
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10 Engr. Maj. Khurshid Hussain
11 Engr. Anwar-ul-Haq Bloch

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14 Engr. Irfan Anwar
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Mother of Engr. Muhammad Ibrahim Malik, Member of Executive Council passes away on December 9, 2008.

Engr. Azhar-ul-Hassan Siddiqui, Chairman Engineering Associates, Karachi passed away on 25th November, 2008.

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26 Engr. Asif Amin
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3 Engr. Asif Iqbal Khawaja
4 Engr. Muhammad Aslam Khokhar
5 Engr. Bilal Ahmad
6 Engr. Imran Shahid
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8 Engr. Major Iftikhar Bin Niaz
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Engr. Azhar-ul-Hassan Siddiqui, Chairman Engineering Associates, Karachi passed away on 25th November, 2008 .

Editorially Speaking !

Awareness about environmental degradation is of course need of the hour & we also seem to have realized that to some extent. Establishment of Environment Protection Departments & Authorities, introduction of courses or degree programs in the universities & holding of seminars on the subject does indicate that we are seized of the issue. Industrial & non industrial projects in both public as well as private sectors are now analyzed by these agencies & their likely impact on environment assessed before they are launched. But many a time one is forced to think that perhaps we are going too far & in the process leaving behind some very basic issues related to environment at our own level. Like elsewhere in the world, use of heavy weight terms like global warming, ecological cycle, green house, ozone layer, biodiversity & many more of the type is quite common with our environment experts also & their repeated mention has almost become a fashion. No doubt the problems related to these aspects are enormous & could prove to be disastrous in the long run. But while thinking of future long term damages to the environment we seem to be neglecting our present day to day environment related problems that are every moment harming all of us. As an example, in view of being a potential hazard to environment objections are quite often raised on some big industry proposed to be set up somewhere or even construction of an otherwise much needed dam. This might be done of course in right earnest, but what about so many mini industries that are flourishing in the thickly populated areas, manufacturing various items & materials. These so called factories give out pungent odor & produce noise of many decibels making the life of the neighbors miserable. Filth containers full of rotten waste of all kinds with the contents spilling over on the streets are a common sight in our towns. Particles of this waste get mixed up with the air that we are forced to inhale. Storm Water channels have been transformed into sewage drains, oozing out nauseating smell & dangerous gases. Not long ago it was reported in the press that the gases emanating from one such drain passing through erstwhile a posh locality badly damaged the rubber linings of the air conditioners installed on the buildings close to the drain. One just shudders to imagine what havoc these effluent gases would be playing with the health of the residents & passers by of the area. Don't these issues relate to environment?

One can go on counting & counting such issues, but the point to ponder is that shall we keep our eyes closed to these problems? Is it not the duty of all of us, engineers & environment experts to look into this aspect and pay more attention to this than what we are presently doing?

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MEET THE NEW PRESIDENT

Engr. Husnain Ahmad the newly elected President was born at Pasrur, district Sialkot in 1963. He was primarily schooled at Lahore till his graduation from the University of Engineering & Technology (UET), Lahore. From UET Lahore, he acquired Bachelor and Master Degrees in Civil Engineering. During his stay at UET, he also held University Colour for representing the University in Rifle Shooting Competitions and remained student's representative throughout his tenure.

After graduation, he started his professional career by joining Communication and Works Department, Government of the Punjab in 1989 as Assistant Executive Engineer / Assistant Project Manager, yet, he continued improving his educational qualifications and earned many distinctions. He was also awarded the Britannia Chevening Scholarship. During his stay in UK he earned Master Degree in Business Administration from Cardiff Business School, University of Wales and acquired the fellowship of Institute of Professional Financial Managers, London. His continued endeavour for improving his academic excellence inspired him to have Master Degree in Computer Sciences. His research aptitude made him author of more than eight technical refereed publications. He has also been awarded the Congress medal for co-authoring a paper on the topic : "USE OF ENVIRONMENTAL FRIENDLY FINELY DIVIDED MATERIALS IN BRITTLE MATRIX COMPOSITES".

Besides rich scholastic credentials, he has a remarkable diversified experience of serving in various organizations. He supervised construction of various prestigious buildings such as Pediatric Hospital Lahore and highways projects, such as Saggian Ravi Bridge and construction of over 400 kilometers of roads. He also headed Information Technology Department (ITD) of City District Government Lahore (CDGL) where he remained instrumental in planning and developing a vision for IT department and contributed significantly in getting Lahore declared as one of the first e-districts of Pakistan. He was also the first Project Director of the University of Veterinary and Animal Sciences, Lahore where he helped in envisaging the developmental needs and initiating practical execution of construction activities for developing the needed facilities.

Apart from his brilliance in academics and professional persuits, he not only participated in social activities but also possess a unique honour of representing his equals as well as community at all levels. During his stay at University of Wales, his efforts for the promotion of multi racial culture and image building of Pakistan were widely acknowledged. He also had the honour of getting elected as President Pakistani Students Society, National Union of Students UK. He has a large number of features in his cap, such as Member Chartered Institute of Marketing, UK. Life member Pakistan Engineering Council, Member of Executive Council, Institute of Engineers, Pakistan. Elected Vice President Britannia Alumni Association of Pakistan (BAAP) and life Member Old Uetians Association.

Ever since Mr. Ahmad came into the fold of Congress in 1991, he actively participated and made untiring efforts in uplifting of and promotion of the Congress. He served Congress as Treasurer, Business Manager and contributed in its various committees, such as, Public Relations, Welfare of Engineers, Symposium Professional Activities, Library and Publications, Constitution and Bye-laws, Building and Fund Raising, apart from convening Membership, Administration and Finance Committees. He was also elected as Vice President of the Congress during the 70th Session. Last but not the least, Mr. Husnain Ahmad is the ever youngest President of the Congress during 94 years history since its creation.

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WELFARE OF ENGINEERS

In keeping with the objective of the Pakistan Engineering Congress of promoting science, profession and practice of engineering, the executive Council of this August Body has Instituted 60 Nos. Scholarships for Graduate Level Engineering studies and 16 Nos. for Post-Graduate studies at Rs. 2,000/- per month each for the whole study period as under. The unique feature is that the numbers of scholarships tabled below are being increased appreciably from year-to-year.

GRADUATE LEVEL

Sr. No.	Name of University / Institute	Number of Scholarships
1	University of Engineering and Technology, Lahore	9
2	University of Engineering and Technology, Taxila	9
3	Baha-ud-Din Zakria University Multan College of Engineering and Technology	3
4	**Punjab University** Institution of Chemical Engineering and Technology, Punjab University New Campus, Lahore	3
5	National University of Sciences and Technology (NUST) Military College of Signals, Rawalpindi	3
6	NED University of Engineering and Technology, Karachi	6
7	Mehran University of Engineering and Technology, Karachi	6
8	Sir Syed University of Engineering and Technology, Karachi	3
9	Quaid-e-Awam University of Engineering and Technology, Nawabshah	3
10	NWFP University of Engineering and Technology, Peshawar	6
11	GIK Institute of Science and Technology Topi (Swat)	3
12	Balochistan University of Engineering and Technology, Khuzdar	3
13	Ali Ahmad Shah University of Engineering and Technology, (Mirpur) AJK	3
	Grand Total	**60**

POST-GRADUATE LEVEL

Sr. No.	Name of University / Institute	Number of Scholarships
14	University of Engineering and Technology, Lahore	5
15	NWFP University of Engineering and Technology, Peshawar	2
16	University of Engineering and Technology, Taxila	4
17	NED University of Engineering and Technology, Karachi	2
18	Mehran University of Engineering and Technology, (Jamshoro)	2
19	Balochistan University of Engineering and Technology, Khuzdar	1
	Grand Total	**16**

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- The Congress is also awarding Scholarships for the Education of the Children of deceased Engineers facing financial hardships. The amount of scholarship is Rs. 2,000/- per child capped at Rs. 5,000/- per month depending upon the pecuniary conditions of the families of departed Engineers.

- The Congress has given a donation of Rs. 5 Lac towards the fund for Liver Transplant in China of Engr. Capt (R) Latafat Qaseem Executive Engineer, of Irrigation and Power Department Govt. of the Punjab. He is suffering from Liver Cancer and Transplant Facility available in China is by far most economical.

- The Multi-purposes Mashhadi Hall (i.e. Auditorium) of the Congress located at 4th Floor of its Building named after Past President Engr. Syed Nazar Hussain Mashhadi in recognition of his services to the Engineering Congress is undergoing renovation / alternation to be able to cater for all its activities in it. It is being propely carpeted, Air Conditioned and equipped with multi-Media / LDC etc.

- The Congress has extensive Programme for holding Lectures on current issues concerning Engineers / Engineering Profession.

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NATIONAL TRADE CORRIDOR IN THE REGIONAL AND GLOBAL CONTEXT

Dr. Engr. Asad Ali Shah, Member Infrastructure and Energy Planning Commission, Govt. of Pakistan delivered lecture on "National Trade Corridor in the Regional and Global Context" at Pakistan Engineering Congress Headquarter on February 17, 2007. The lecture was largely attended in the jam packed Multi-purpose Hall of the Congress.

The learned speaker eloquently spoke on the concept of National Trade Corridor / its objectives.

He said that performance of the transport system in Pakistan has not been up to the mark with economic losses from congestion and poor quality roads and mismatch between supply and demand for transport services and supporting infrastructure. The logistic constraints are impact competitiveness of the country's trade and industrial development. The conventional system, documentation clearance, movement facilitation and electronic data interchange has yet to be modernized to international levels. These inefficiencies are resulting in increasing the cost of business. Constraining economic growth, reducing export competitiveness, and hindering social development. It is estimated that these inefficiencies are imposing a cost to the economy in excess of Rs. 220 billion annually or 3.5% of the GDP.

He added that in order to cope with the situation, a major initiative namely the "National Trade Corridor (NTC)" has launched to address the entire logistics chain in a holistic manner and revamp transport sector including ports and shipping, roads, railway, trucking, aviation and trade facilitative measures. The NTC initiative is in line with Medium Term Development Framework (MTDF 2005) strategy, which includes establishment of a multi-modal transport system ; emphasis on as management with consolidation upgrading, rehabilitation and maintenance of the existing system enhanced private sector participation in sector development and institution capacity building research and development and use of modern technology, procedures and processes to increase efficiency. The strategy also incorporates measures for enhancing regional connectivity through road, aviation and shipping sub-sectors to improve North-South and East-West trade

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links with Central Asian States, Iran, Afghanistan, India and Europe and development of energy and industrial corridors with these countries.

Talking about the objectives of establishment of NTCMU and TTFU, he said that the objective of the Project is to provide overall technical leadership and coordination with line ministries and other organizations in undertaking measures / reforms project to improve the logistics system that would lead to reducing the cost to trade and business in the country. Focusing on improving the infrastructure sector, services and streamline procedures, the proposed NTC and TTF components will :

1. Enable institutions of the infrastructure sector conduct project and studies and project preparation activities in a timely manner and in line with international standards and best practices.

2. Ensure implementation readiness of the infrastructure projects.

3. Improve institutional capacities within the infrastructure agencies to meet business management and process changes as required by recent sector policies, reforms regulatory agencies.

4. Work with the private sector to improve in-house logistics.

He went on to say that the technical assistance will further enhance the internal capacity of infrastructure agencies develop a project program and implement identified projects successfully. The proposed steps will ultimately build intellectual leadership and also enhance the productivity of all those involved in Trade and Transport Facilitation.

He concluded that the crux of the talk was that with gigantic modernization of Ports, Roads, and Railway Net-Work Road and Freight Industry, State of Art Air-Terminals, Media and Communication expansion, under the "Trade and Transport Facilities Project" will usher in an economic revolution (in a period of 5 Years) in the country with "Gawadar" playing a pivotal Role. According to the speaker "Gawadar" will be one of the most advanced city of the World in a decade and a hub of economic development. A film on Gawadar was also shown.

The session was followed by questions from the audience which were elaborately answered by the speaker.

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TARGETS SET FOR ACHIEVEMENT IN THE 2ND MEETING OF THE 71TH SESSION OF THE EXECUTIVE COUNCIL

President PEC, informed the House, that he would greatly appreciate the In-Put of the members of Executive Council in respect the cardinal goals that ought to be achieved in 71th Session to make the Congress a progressive and vibrant organization. Engr. Iftikhar-ul-Haq suggested that all members of the Congress may be invited to convey their proposals in this respect.

Elaborating his vision for 71th Session, the President outlined some of the major objectives i.e.

- Membership Committee should embark on a well-planned programme to visit Chief Engineers / Administrative Heads of various engineering departments / organizations and Faculty Members of Engineering Universities with the twin purpose of (a) introducing the congress and (b) increasing the Congress Membership.

- Building Committee may prepare a "Short Term" and a "Long Term" plan of maintenance / construction activities i.e. construction of Additional Block Cum Parking Lot in the existing premises (if feasible) or alternatively acquire additional Space / Building etc. for future use.

HONORARIUM TO CONGRESS STAFF AS WELL AS OTHERS WHO WORKED DURING THE LAST ANNUAL SESSION WAS GRANTED AS UNDER IN RECOGNITION OF THEIR SERVICES TO THE PAKISTAN ENGINEERING CONGRESS

Congress Personnel	Rs. 69200
Computer College Personnel of PEC	Rs. 10000
Personnel of NDC (Regd.)	Rs. 22000
Others for Receiving Congress Subscription / Election Duty etc. during the Session	Rs. 23500

WELCOME TO NEW MEMBERS

The Executive Council of the Pakistan Engineering Congress approved Membership of the following new members in to the Congress fold. The Engineering News congratulates all of them and welcomes them to Pakistan Engineering Congress

Members admitted on 08-04-2006

1 Engr. Zia ul Hassan Khan
2 Engr. Muhammad Atif ur Rehman
3 Engr. Danish Rafique
4 Engr. Luqman Zaffar
5 Engr. Muhammad Shafqat Khalid
6 Engr. Mashood Ahmed
7 Engr Muhammad Riaz Zahid
8 Engr. Mian Nadir Qayyum
9 Engr. Hafiz Muhammad Ramzan
10 Engr. Intizar Ali
11 Engr. Irfan Ullah
12 Engr. Roshan Ali Bhatti
13 Engr. Khurshid Ahmad Mirza
14 Engr. Naveed Abbas

Members admitted on 20-05-2006

1 Engr. Muhammad Usman Rashid
2 Engr. Muhammad Shahzad
3 Engr. Shafiq Ahmad
4 Engr. Asif Hayat Bhatti
5 Engr. Zameer Hussain
6 Engr. Muhammad Tayyab Ahmad
7 Engr. Muhammad Akbar Nawaz
8 Engr. Muzaffar Abbas
9 Engr. Atiq Ullah
10 Engr. Ali Jawaid Ghuman
11 Engr. Najamuddin Sheikh

Members admitted on 29-07-2006

1 Engr. Arif Saeed
2 Engr. Mian Babar Qayum
3 Engr. Muhammad Saeed
4 Engr. Muhammad Hamid Mahmood
5 Engr. Shahzad Ahmad
6 Engr. Muhammad Asif
7 Engr. Naseer Ahmad Zia
8 Engr. Arshad Saeed Khan
9 Engr. Aamir Miandad
10 Engr. Nisar Ahmad
11 Engr. Muhammad Yasir Malik
12 Engr. Ch. Muhammad Nadeem
13 Engr. Muhammad Kashif Khan
14 Engr. Syed Abid Ali Abid
15 Engr. Qasim Haq
16 Engr. Muhammad Ashraf
17 Engr. Hafiz Waqas Haider Shah
18 Engr. Imran Ghani
19 Engr. Asrif Masood
20 Engr. Syed Fayyaz Hussain
21 Engr. Amir Nadeem
22 Engr. Muhammad Zaman Khan Dawer

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Members admitted on 21-10-2006

1 Engr. Hafiz Faisal Hassan Abid
2 Engr. Abdul Qayyum
3 Engr. Syed Muhammad Zaier Abbass Zaidi
4 Engr. Muhammad Farooq Azam
5 Engr. Zeeshan Ali
6 Engr. Usman Arif
7 Engr. Aataf Ahmed
8 Engr. Babar Saeed Sehole
9 Engr. Muhammad Hafeez Khan
10 Engr. Tanveer Afzal
11 Engr. Syed Farrukh Ali Shah
12 Engr. Muhammad Asjad Ajfan
13 Engr. Muhammad Shahbaz
14 Engr. Faiz-ul-Hassan Sipra
15 Engr. Hassan Mohy-ud-Din

Members admitted on 20-01-2007 (71st Session)

1 Engr. Asif Mahmood
2 Engr. Muhammad Afzal Mughal
3 Engr. Jahanzeb Afridi
4 Engr. Bilal Ahmed
5 Engr. Muhammad Imran
6 Engr. Muhammad Aamir Iftikhar
7 Engr. Sh. Saeed Ahmad
8 Engr. Nabil Haider
9 Engr. Anzar Hussain Shah
10 Engr. Aun Muhammad
11 Engr. Ch. Rashid Majeed
12 Engr. Muhammad Saleem Shahid
13 Engr. Muhammad Zubair Asghar
14 Engr. Imran Sadiq Afridi
15 Engr. Muhammad Mudassar Ali
16 Engr. Abdul Qayyum
17 Engr. Muhammad Imran Malik
18 Engr. Imran Rashid
19 Engr. Faisal Shoukat
20 Engr. Shahid Mahmood
21 Engr. Muhammad Arshad
22 Engr. Kashif Nadeem
23 Engr. Zahid Majeed
24 Engr. Ijaz Ahmad Bhatti
25 Engr. Mahmood Ahmad
26 Engr. Aqil Inam
27 Engr. Aftab Ahmad Chaudhry
28 Engr. Syed Salman Mazhar
29 Engr. Hafiz Haider Ali
30 Engr. Syed Muhammad Sajjad Hashmi
31 Engr. Muhammad Afzal
32 Engr. Arshad Chaudhry
33 Engr. Abdul Majeed Naveed
34 Engr. Atif Ameen Awan
35 Engr. Muhammad Abu Bakr Khan Sherwani
36 Engr. Muhammad Umar Farooq
37 Engr. Muhammad Zaka Ullah Khan
38 Engr. Muhammad Akram
39 Engr. Muhammad Bilal Ahmad
40 Engr. Umar Karim
41 Engr. Muhammad Shahbaz Rasheed
42 Engr. Shoaib Ahmed Awan
43 Engr. Ali Mukhtar

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CHANGE OF TELEPHONE NUMBERS OF PAKISTAN ENGINEERING CONGRESS

1. Telephone Numbers.

The New Telephone Numbers of the Pakistan Engineering Congress are (the previous one's stand withdrawn).

(a) Congress Office

President PEC	042-5784237
Secretary PEC	042-5784237
Director (Admin. and Finance)	042-5784238
Congress Office	042-5784235
Congress Office (Fax)	042-5784236

(b) Computer College

Manager PEC Computer College	042-5784240
Computer College (Fax)	042-5784239

The President and Secretary can also be contacted on following phones.

President PEC		042-5861123 (Residence)
		042-5861508 (Residence)
	Mobile #	0300-4340102
Secretary PEC		042-5843874 (Office)
	Mobile #	0303-7313891

2. Any change in the designation/address of the members.

You are also requested to kindly inform the Congress Office about any change in your office/residential address etc.

3. Membership Cards.

The Congress has decided that its members should be issued Membership Cards (Renewal Cards). In case, you do not posses it please inform us. Also please arrange to deposit the Membership Fee if in arrears.

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THE FOLLOWING INFORMATION IS REQUIRED FOR UPDATING "MEMBER'S DATA"

(Please fill up the followings)

M. No. (Congress) _____ M. No. (Council) _____

Name _____

Deptt./Org. _____

Telephone (Office) _____ Telephone (Residence) _____

Mobile No. _____ E-mail Address _____

Fax No. _____ Date of Birth _____

Discipline _____ District _____

Address Office _____

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Address Residence _____

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After completion of this Performa please return to Pakistan Engineering Congress Office 97-A/D-1, PEC Building, Liberty Market, Gulberg-III, Lahore-54660

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