

**SYMPOSIUM ON
“ROLE OF ENGINEERS IN ECONOMIC DEVELOPMENT
AND POLICY FORMULATION”**

KEY NOTE ADDRESS

BY

ENGR. IFTIKHAR UL HAQ

Honourable Chief Guest,

Members of the Congress,

Ladies and Gentlemen

It is my privilege to extend a very warm welcome to all including honourable speakers to this important symposium on Role of Engineers in Economic Development and Policy Making. An engineer can be defined as some one who is directing the great forces of nature for the benefits of mankind.

Ladies & Gentlemen

The economic development of any country depends on resource utilization, government policies, environmental sustainability, levels of achievements in science and technology and awareness of latest tools for the economic development. Hence, science and technology play a very major role in economic development of a society. Engineers make up the core of innovative development and play an increasingly crucial role in the adoption of science and technology. Although the role of engineers is considered to be confined only to the designing of infrastructure, yet they also have a very important role to play in the policy making and management. Engineers have a diversified role in the society for the development of the economy of a country. Engineers can have significant influence on the infrastructure development, government policies, agricultural productivity, environmental sustainability, disaster management, ethical and social responsibilities and many other fields for socio-economic progress of any country. One of the major challenges for the engineers is the utilization of indigenous resources for high-tech, innovations so that a society can develop a balanced economy based in its own resources.

Engineers being the core part of a society, will have to take part in the development and progress of any country. In the future ahead, Engineers will have to continue partnership with scientists in the great mission of acquiring new knowledge of the physical and biological worlds.

In Pakistan, there has been a growing trend of dissociating the engineer from policy planning and management roles. The quality and pace of development in the country has suffered in direct proportion to the diminishing role of engineers in the realm of policy planning which has been increasingly dominated by generalist bureaucrats. The result of this defective policy is before the nation in the form of lopsided, unsustainable and high cost projects leading to

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deterioration in infrastructure, quality of services and highly retarded economic growth and development technology.

It is with this view that Pakistan Engineering Congress decided to hold a seminar on this important subject to highlight the dire need for an increased role of engineers in Policy Formulation and to discuss ways and means for increasing such a role.

Nine papers on this subject have been presented by various learned authors. I express my sincere thanks to the authors for sparing their valuable time to develop these papers on a rather difficult and controversial subject.

1. FIRST PAPER BY ABDUL KHALIQ KHAN, DR. IZHAR UL HAQ AND UMAIR MANAN

Main features of this paper are.

- i. The proposed dams at Diامر Basha, Kalabagh & Shyok River should be urgently built to boost the economy further.
- ii. WAPDA has identified 33 Hydropower Projects for implementation in the coming decades. The benefits of these projects can be maximized by proper sequencing and ranking. It is prudent that engineers should decide ranking these for construction of future projects and the politicians should work for the procurement of funds and for the removal of any hurdles.
- iii. The Provincial Irrigation Departments should establish High Efficiency Irrigation Systems Directorates.
- iv. Use of indigenous coal for power generation will provide cheaper power and reduce the burden of furnace oil imports. The extraction of coal from Thar Field and establishment of thermal power stations utilizing this coal should be urgently started.
- v. Value engineering of large size and mega projects can greatly reduce the project costs and enhance benefits. In several other countries the projects designed by Consulting Engineers are over viewed by teams of expert engineers for value engineering. The Consultancy Services for value engineering should be promoted in Pakistan.

2. SECOND PAPER BY ENGR. RIAZ NAZIR TARAR

Major recommendations made in this paper include.

- i. Engineers should play pro-active role in economic development of the country instead of the present subservience role to the biased Bureaucracy and Decision Makers.
- ii. The first step in this regard should be to erase the tarnished image of Engineers by strictly following the Code of Ethics (such as one prescribed by Pakistan Engineering Congress).

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- iii. National Engineering Institutions, such as Pakistan Engineering Congress, and others should assume a proactive role:
- iv. He also recommends that the Engineers should
 - a. Emphasize the need for priority implementation of multi-purpose storages with priority for sequential construction in keeping with respective status of engineering preparedness.
 - b. Focus upon immediate start of construction on fully engineered Diamer Basha Dam Project already on the high priority.

3. THIRD PAPER BY DR. ENGR. JAVED YUNAS UPPAL

This paper deals with Engineers' New Role and main issues discussed include, Engineers have played a critical role in increasing the health, technology and quality of life in the last 50 years, from developing new equipments and goods, power systems, weapons, new materials, transport vehicles on ground, water and air better, water supplies, design of buildings, improved agriculture, transportation systems, basic infrastructure power plants etc.

He concludes that Economic development relies on engineers who bring about technological changes to achieve its aims. The governments need to take tough steps to remove the impediments that are in their way. Let the radical technological innovations take the lead, rather than the technological fixes that have been evident to date. Such measures would require a long-term view and a preparedness to bear short-term economic costs while industry readjusts.

4. FOURTH PAPER BY ENGR. USMAN-E-GHANI

In his paper, Mr. Usman-e-Ghani emphasizes that : Development around the globe, in one way or the other, is an on-going process. It may, therefore, be found as somewhat acceptable which is possible only through the role of engineers in several sets of formats.

He has quoted Dr. C.M. Chang from his book titled "Engineering Management: Challenges in the New Millennium" he highlights that:

Only 26% of CEO's in the top 1000 companies had their first degrees in Engineering (more in foreign countries);

Only 10% of university presidents are engineers;

Few engineers are in Congress;

He mentions of President Jimmy Carter as the only engineer president, who against an emerging trend of the recent U. S. history did not get re-elected.

He concludes that

For an effective, contributive and visionary role engineers are much required to understand the path to be the managers first and the leaders eventually with simple and adaptable traits and portraits.

5. FIFTH PAPER BY DR. SARDAR MUHAMMAD TARIQ

Dr. Sardar Muhammad Tariq says that the roles that engineers have taken go well beyond the realm of knowledge and technology. Engineering impacts the health and vitality of a nation as no other profession does. The business competitiveness, health, and standard of living of a nation are intimately connected to engineering. As technology becomes increasingly engrained into every facet of our lives, the convergence between engineering and public policy will also increase. This will require that Engineers develop a stronger sense of how technology and public policy can interact.

He also recommends that Governments must ensure that policy is appropriately formed by engineering advice at all stages of development and delivery.

6. SIXTH PAPER BY DR. MUHAMMAD NADEEM

Major conclusions of the paper include : The earlier role of an engineer must change from a simpler one to more innovative and demanding role by using computer technology for cost cutting through new and powerful techniques.

This is only possible if our education sector can be transformed into a state of the art system where innovative ideas and new inventions could be generated for cost cutting in industrial development. New ideas in product design is the way to success. A recent example is that smart phone idea of Samsung simply outperformed all major other competitors of the world.

7. SEVENTH PAPER BY DR. ASAD SARWAR QURESHI AND ATIF NAWAB

Discusses that Engineers have contributed very largely to society, but are a misunderstood group, as their efforts are often under-appreciated. Delivery of most of the services essential to modern life such as electricity, aviation, television, medical imaging, sewage networks, the telephone, water networks and railway lines are the result of engineering efforts.

Then he lists Engineering Achievements in 20th Century and Future Challenges such as

Nuclear technologies

Petroleum and gas technologies

Health technologies

Imaging technologies

Space explorations

Agricultural mechanization

Electronics

Aeronautics

Automobiles

Electrification

He concludes that : The development of the modern world would have been dominated by science, engineering and technology and the role of the engineer is linked closely to the needs of society.

This year's engineering skills is likely to be higher than ever before in order to deliver sustainable engineering systems. Therefore, engineers will have to shoulder major responsibilities at policy and project planning levels.

8. EIGHTH PAPER BY DR. MUHAMMAD ANWAR BAIG AND NAUMAN A. BAIG

Major recommendations include.

- i. In Pakistan there are 144,000 registered engineers in 23 disciplines. The curriculum have been revised and updated after the creation of HEC which includes 30-35% non-engineering courses and 65-70% engineering courses.
- ii. Engineering institutions must be hotbeds of generic technology creation and the place where new principles of production and technology management are explored and systematically investigated.
- iii. Engineering institutions must learn how to deal better with small or medium-sectors of our economy.
- iv. Courses on technological innovation and entrepreneurship should be regular parts of the curricula. Interdisciplinary projects undertaken jointly with small firms should be given special attention.

9. NINETH PAPER BY SOHAIL NAQVI AND ALI HASNAIN SYED

Major recommendations included in this paper are.

- i. Engineers should be given management training as a good manager should be good engineer. In a country like Pakistan, most of the issues are related to management than

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technical. So through training on management, the engineers can enhance their performance and participate in the planning and management sectors.

- ii. Engineer's potential should be utilized in the authority positions of institutions like WAPDA, Petroleum Industry, Science and Technology etc. so that they can cater to the situation in a better way on the basis of their knowledge and experience.

In the end I would again like to thank you all for attending this seminar and bearing with me for this key note address. It is time now for honourable authors to present their papers and recommendations. Pakistan Engineering Congress will summarize these recommendations to be presented to the concerned authorities for serious consideration and implementation.

Pakistan Zinda Bad