Paper No. 96

ENGINEERING CONSULTANCY AND CONTRACTUAL SERVICES IN PAKISTAN

By MOHAMMED OMAR*

The efforts of an engineer, who designs a project, and the contractor, who builds the project, are directed towards the same goal, namely, the creation of something which will serve the purpose for which it is built in a satisfactory manner.

People of this sub-continent during pre-Independence period have achieved many such goals, glaring example of which is the most sophisticated irrigation system of the Punjab. This we accomplished with our own limited resources and without any foreign assistance. There is, however, no denying of the fact that we did it with very primitive methods like that of Pharaoh's era, depending entirely on living muscles of human being and its friendly beasts of burden. At that time we could afford this luxury because we had money and there was no dearth of time. But after partition when we suddenly woke up from our slumber, we found ourselves far behind even from the settling dust of advancing nations. Others have built completely new worlds of their own by defeating the wrath of extreme weathers and by harnessing the unlimited energies of nature while we were still puddling mud in stagnant water for construction material and ploughing earth with prehistoric appliances.

It was perhaps the first time in the history of this country when we realised that the fundamental components of an effective machinery for economic developments of a country are neither hoards of milling human beings nor vastness of country land but the capital to sustain in and technical competence to carry it out. Pakistan, unfortunately, faces shortage of both. The problems of scarcity of human skill and highly qualified specialists in our country are as important as the smallness of our resources as without the former the utilisation of the latter remain ineffective and inefficient. While the capital for development can be raised within a short period of time, acquisition of skill and competence are difficult to be achieved without the continued and concerted efforts spread over a number of years. The new nations, which are in a hurry to catch up with the advanced nations which are continually growing at a rapid rate, cannot wait indefinitely for its expertise to emerge gradually with the

**Director, Development (Water) WAPDA, Lahore.*

development of industry and other factors. In other words, the basic need of the under-developed country is a technical skill even before industrialization.

Pakistan was faced with these problems when it started its economic career as an independent state. It was realised soon after setting the house in order, that the nation's economy could not be left to take care of itself and extra-ordinary efforts were needed to break the stagnation and create condition for a rapid and balanced growth of the country. The limited physical and financial resources can beneficially be utilised only through organized and integrated development planning. The first formal exercise in planning was carried out in Pakistan in 1950. This was followed by the creation of a full-fledged planning machinery which produced, one after the other, three Five Year National development plans for the period 1955—1970. The fourth is also in its toddling stage. The sincerity of efforts in this country for achieving a higher standard of living and rapid rate of development first time attracted many advanced countries and international agencies to transfer their resources in the form of capital inflow, sharing technical knowledge, and transfer of skilled personnel.

Pakistan was still struggling to launch its development plans when India's bid to divert the eastern rivers threatened the very existence of West Pakistan. It was not merely a threat. India revised the Bhakra Dam Project to increase its storage capacity, started construction of the Harikey Barrage, the Madhopur-Beas Link, the Ferozepur-Sirhind Feeders, and simultaneously announced her intention to construct the Beas Dam and the Rajisthan Canal. It was clear that these works were being built to give India additional capacity to cut irrigation supplies to the canals in Pakistan.

For 11 years Pakistan was engaged in a series of conferences to seek the solution of the water dispute. Every passing year brought new disappointments and increased Pakistan's fears while India continued to build the works to divert the rivers. It was a most frustrating experience for Pakistan.

The solution was finally achieved with the signing of Indus Water Treaty in September, 1960. This Treaty placed a new responsibility on Pakistan as the 2-billion dollar Indus Basin Project was the largest civil engineering works ever undertaken in the world. It contained huge system of replacement works consisting of 2 storage dams, 8 Link Canals, 6 barrages and several ancillary irrigation remodelling works which were to be completed within a time limit of 10 years.

Few people in Pakistan and outside believed that Pakistan could complete this gigantic task within the prescribed time limit. Past performance on large scale projects where we solely relied our construction activities on the feeble working capacity of half-fed human beings and equally half-starved

donkeys, justified this pessimism. Obviously, Pakistan with its own resources and technical skill could not dream of completing the Indus Basin Project within the prescribed time. We thus looked towards the developed nations for necessary assistance, which they readily extended partly because of political reasons, partly because of humanitarian reasons.

Now when we look back on the achievements of Pakistan in different fields of activities, especially of Indus Basin Project during the last 10 years and compare them with the extremely narrow economic base on which the country was struggling to survive the results, sound unbelieveable. The average annual growth rate of gross national product jumped from 2 per cent from 1959-60 to 5.5 per cent in 1964-65 and to 8.3 per cent in 1967-68.

In agriculture field index of production shot up from 100 in 1959-60 to 143 in 1967-68. The most noteworthy achievement was the spurt in output of Mexi-Pak wheat and IRRI rice varieties.

In industry the index of manufacturing industries (base : 1959-60) rose to 261 in 1967-68.

The electric power output in East Pakistan increased to 304 M.W. and in West Pakistan to 2200 M.W.

The 677 Million dollar Mangla Dam, the largest earth-fill structure in the world with a total fill of 140 Million C. Yd., was completed within 5 years 6 months, one year ahead of the schedule, surpassing the construction speed on the 80 Million C. Yd. Oriville Dam in the U.S.A. which took more than 6 years to complete. The 159 Million dollar TSMB System comprising three major link canals and two barrages was completed early in 1965, 15 months ahead of time limit specified in the Treaty. The really fantastic story of all was that the 125 mile long TSMB link was launched and operated to full capacity in the very first year of its completion, a record in the history of irrigation. The 54 Million U.S. Dollar Qadirabad Barrage on the Chenab river was completed in March, 1967 in a record period of 30 months. The 105 mile long Qadirabad—Balloki Link and the new L.C.C. feeder costing 71 Million U.S. Dollar and a total excavation of 90 Million C. Yd. was completed in a record period of 38 months and was successfully operated to full capacity in the very first year, an all time record in the history of irrigation. The same story of success was repeated on Marala Barrage, Rasul Barrage and Rasul-Qadirabad Link etc.

Pakistan achieved these spectacular results, apart from other factors, mainly due to the assured regular flow of finances, high skill of consulting engineers who designed and supervised the construction and the contractors who completed the projects, without which it would have been impossible for

Pakistan with the limited technical resources available in the country to successfully complete these works. This on the one hand was undoubtedly a question of survival for Pakistan but on the other hand it did create difficult sociological, psychological and technical problems. Among these the most important problem is the creation of vicious circle of an increasing dependence on foreign services. The engineers who designed and laid railway lines, installed industrial plants and executed the most advanced irrigation system in the Punjab and other projects like Kotri Barrage, Link Canals etc. without any foreign assistance, started slowly losing confidence in their capabilities and beginning to feel much at ease when a foreign firm of specialists carries out their project on a turn key basis. The administrative authorities of the country started relying wholly on foreigners and ignoring local talents by considering them as incompetent and of inferior grade. It is our experience that the projects having a foreign consultant's seal passes through all stages very smoothly while even a small proposal by local engineers gets volley of objections at the threshold of the offices of the administrative agency. It has also been noticed in a number of cases that the services provided by the aid giving countries have been of a mediocre standard. The equipment supplied by them has been out-dated in the sense that it had no market within their own countries or in the competitive world market, that the attempt to transfer knowledge and know-how has been half-hearted and finally the costs of the projects have unduly increased due to high cost of services and imported technique. In such cases the real worth of foreign assistance stands questionable. The local technical personnel feel frustrated when they find the foreign specialist doing almost the identical job enjoys incomparable facilities in the form of air-conditioned houses, free transport, 5 to 10 times more emoluments etc.

Limitation of space does not allow a more detailed description of what we achieved and what we lost during the last 20 years by accepting the foreign consulting and contractual services. Perhaps it would still be better if we leave this issue for the next generation to decide after seeing the full impact of these services. We must, however, at this stage, make the obvious adjustments in our method of approach and terms of acceptance of such services so that we are bracketed with the loan receiving countries and not considered as aid begging nation :

(1) Streamlining the procedure for the selection of Consultants. There must be a Central agency for prequalification and selection of foreign consultants or at least prescribe the minimum standard of Consultant Services. Detailed scrutiny be made regarding the qualifications and experience of the Consultants before any particular job is assigned to them.

(2) Unless there are compelling circumstances to employ foreign consultants/contractors or necessary competence is lacking in the country, only Pakistani firms of Consultants/Contractors should be engaged.

(3) All out efforts should be made to bind the foreign consulting and contracting firms to work in collaboration with the Pakistani firms. The arrangement of collaboration should very clearly be defined in the terms of agreement. The participation of the local consultants should be in a manner that they get sufficient experience and training while working in association with the foreign firms and that they do not act like a sub-contractor or local liaison office.

(4) A model form of agreement should be evolved so as to clearly define the responsibilities of consultants/contractors and also include suitable penalty clauses for mistakes in designing, estimation of cost and quantities and delay in the completion of the job. It should, however, be kept in view that the terms of agreement do not discourage the foreigners to work in the country.

(5) There should be adequate educational and training programme to increase the number as well as improve the competence of local expertise. Regular arrangements for getting them trained in the latest techniques in construction methods, equipment and management in various foreign countries should be pursued in a well co-ordinated and centralized manner.

(6) The departments employing foreign consultants should ensure that the Pakistani counterparts get full training benefits right from the stage of initiation of the project up to its completion and operation.

(7) There is a constant drain of talent from Pakistan to developed countries in the West. The problem is not so simple as to control it by mere regulation and ordinances. There is a necessity for creating proper climate and attractive working conditions in the country so that our people do not feel an urge to migrate to foreign lands.

(8) There is a general trend among the foreign experts as well as in local engineers that automation and mechanization is the answer for quick and efficient returns. This may be true in countries where labour is extremely expensive, but in countries like Pakistan where labour is abundantly available there is a definite need to combine the machine with the human resources in a most suitable and economical manner.

(9) Proper encouragement and protection should be given by the Government to the local consulting engineering services by way of regular and continued engagement on jobs, sufficient price preference over foreign concerns, relaxation in import restrictions, fair competition opportunities with foreign firms.

(10) Similarly, the Government should provide to the local contracting firms proper incentive, procure expert advice and financial assistance where necessary to improve their organization, acquire knowledge about the latest techniques for construction and utilize the construction equipment most effectively and efficiently. As a matter of fact contracting organization should be declared as an industry and all facilities which are normally extended to a growing industry such as tax holiday, import of machinery, reduced custom duties, credit loans on easy terms and marketing protection etc. should also be given to it.