

THE CIVIL ENGINEER'S APPROACH IN TACKLING NIGERIA'S TECHNOLOGICAL AND ECONOMIC PROBLEMS

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1.0 ABSTRACT

Nigeria is at the verge of technological and economic self-empowerment and for much progress to be made on improving the technology and economic base simultaneously, there must be the consciousness and will to change the status quo. In doing this, there must be the primary steps of identifying what has been the problem? How can this problem be eliminated and to what extent? What will be the contribution of the integral segment of the concerned to eliminating of the problem and many other questions to be answered in retrospect of the entire issue. This paper therefore tries to identify few of the problems and the way forward that a segment of the Nigeria professionals, particularly, the civil engineer will prefer solution in a little way to tackle the Nigeria problem economically and technologically. No doubt however, that most of these areas identified have been severally

and individually touched scantily but the reiterative manner in which they were approached have given wide scope and broad based importance to solving our problems our own way.

2.0 INTRODUCTION

Much has always been said about the Role of Engineering in the development and advancement of this country in such a way that the texts have always concerned themselves primarily with formulating proposals and plans for the growth of research activities related to construction. However, in some cases methods of advancing alternative technologies as either adaptation or completely novel one to those imported from technologically advanced nations of Europe, Asia the Americas, Canada, and some times North and South Africa are developing in third world. Most of these works and efforts have been based on, unfortunately, less realistic analysis and half baked

diagnosis of the actual conditions which engineering technology has on the underdeveloped Nigeria than on naïve optimism about the inevitability of progress through engineering.

Hence, there is an intimate desire to take a more diagnostic approach to the problems associated with the Nigerian Economy and more advertently concern with establishing an understanding of the role which existing civil engineering institutions, professional bodies, organisations, companies and government agencies as well as ministries, inter governmental/ministerial groups may actually play with a view to preferring variable solutions which will in future enhance speedy economic recovery and promote technological growth. It is obvious however, that a lot of infrastructure would open a wide perspective of new production possibilities thereby attracting foreign investments. In the last few years, there have been serious attempts to understand the civil engineering profession in Nigeria as it relates to our societal and economic needs. Have there been any conscious contributions and response to the needs and yearning of the demanding society? Nowadays, the demand for the expertise of the civil engineer (indigenous) is enormous.

Discussion

In considering the role of the civil Engineer in tackling Nigeria economic and technological problems one is tempted to believe that in actuality the civil engineer has more than a nominal role to play. A cursory look at the poor state of our roads, market squares, bridges stream/river paths, highways, airports (if they exist at all in some states), railways, farm ways and stalls, village sheds and wrestling arena, dams, canals, industrial plants, state and national monuments boreholes, culverts and drainages cess pools and spillways strongly attest to this assertion. Unarguably, the civil engineering institution provides the necessary spring board and foundation through the application of scientific and engineering knowledge for design, construction and maintenance of facilities for human use and conveniences. Infrastructure form the bedrock of industrialization which in turn commences the process of economic advancement. It is a known fact that no nation can experience visible greatness, economic and technological growth without firstly possessing the basic infrastructural set-up and requisites. The essence of fundamental infrastructures as a catalyst in the aforesaid path to self-development cannot be over-emphasized. It is

also for this singular reason that the civil engineer is faced with daunting challenges in the area of providing standard, durable, functional long lasting and cost effective public and private utilities/amenities. The degree of protection, comfort, pleasure and function ability that throughout its "working life" depend in no small measure on the materials that are used to give physical form to the visions and aspirations of all civil engineers involved in its various construction and care. The functioning of any infrastructure at any time has among other things, depended on the ability of the designers to make the best and perhaps the most imaginative use of the resources both material, finance and human they were able to command. The civil engineer therefore employs the best, efficient and cost effective alternative in terms of materials and technique in design and creation of structures.

These structures are built to achieve maximum ability such that projects once completed, will last for the stipulated designed lifetime. The highways are built to accommodate vehicular pressure and ease the means of transportation of goods and people. The dams are constructed to generate optimum and constituent power supply for use in homes and industries. Water supply conduits are laid to transport water into homes, offices and industries after such waste must

have been treated in properly designed and well constructed treatment plants. Canals are constructed for maximum disposal efficiency. All these provide the conducive business environment required to attract Influx of external investments in the areas of agriculture, manufacturing, petroleum etc. The activities generated by this influx of external investments excited the economy which automatically translated into better standards of living for Nigerians and a general improvement in individual purchasing power. The gross domestic product is thus significantly enhanced. Regrettably however, the construction industry in Nigeria today is yet to fulfil these goals in its entirety. Up till the present moment most designs and construction for infrastructure and movement like stadium, seaport apron, quays and sluice gates, airports runway and other key constructions, dams are being carried out by multinationals seemingly appearing as if the ingenuity and capability for engineering design are not there. For many years of pre-independence and post-independence era our governments had been engaging the services of the multinationals to handle these jobs. Having constructed few of these things across the country at various locations it should have been expected that further development in other locations within the country and infact African continent the

the expertise invariably should be indigent in nature. Suffice it to state here that this is not the case. Consequently, foreign consultants tend to proceed on 'Turnkey basis'-design and built or what may be termed as ALL-IN-CONTRACTS. This type of contract style had taken turn severally and persistently all over such that where huge sums of capital need be invested, it wins favour. Sometimes, however, the same group usually stay around to maintain the structures after commissioning for some years. There is a large sum of foreign exchange expended on this each time services are contracted out in that manner. Amongst the disadvantages of the "turnkey" formula the most evident is that of insensitivity to local conditions. This gives rise to technical solutions that are ill-adapted to the physical, economic and human conditions of the nation. These contractors and indeed consultants do not invent a new technology for each country, specifically suited for local resource and factor endowments. Inadequate preparations and deficient feasibility studies by expatriates give rise to failures and malfunctionability of systems built in that condition.

The state of the nation today calls for an effort at autonomous theorization. An obvious and most effective counter to the problems of economic down turn to develop indigenous engineering proficiency and independence by developing local innovative capacity through research and development of designs and instructions.

These designs and instructions should as far as possible be optimal, i.e. they should be the least cost and highest productivity solutions which are consistent with the external constraints of market input availability and labour skills. Products from these indigenous, theorization could for example be ploughed into developing alternative building materials which could be used in mass development of low costs prototype housing estates for low income earners. This particular initiative could go a long way in addressing the problem of housing occasioned by rural-urban drift. The benefit of this of course is the creation of jobs for the skilled and unskilled unemployed who may work as brick layers, carpenters, concrete mixers etc. An overall assessment will be indicative of decimation in dependency level and a substantial increase in savings for individuals and corporate institutions. For the civil engineer to contribute meaningfully in tackling Nigeria's economic problems the government must show interest and commitment to providing enabling environments for the practice of engineering in all its ramification. In other words, there must be a practical demonstration of government readiness, capability and willingness to supporting indigenous consultants and contractors. This could be reflected in award of contracts, adequate funding of research institutions and

bodies, establishment of a construction bank which would serve as source of funding for innovative engineering projects and provision of sufficient laboratory requirements in higher institution to reasonably equip research students, postgraduate students and undergraduates of civil engineering with basic engineering orientation necessary to record exploits.

3.0 CONCLUSION

These measures enumerated above when put in place will in no small measure increase database, capacity building in areas of innovative design orientation, enduring economic progress. They will further place Nigeria on the threshold of power and greatness, amplifying her status as the torchbearer of the African continent

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