The Construction Industry of Sudan: Potentials and Challenges

5/29/2011
The Construction Industry of Sudan: Potentials and Challenges

1. Abstract

The role of construction in socio-economic development has been addressed by various writers and international bodies, many of whom have focused on developing countries (Turin, 1973; World Bank, 1984; Wells, 1986; Ofori, 1990; Palalani, 2000). Developing countries in general and Sudan in particular face major problems related to extended urbanization, which are results of war, conflicts, socio-economic factors and environmental depletion. This growth is creating exceptional demands for space and services to be provided by the construction industry which provides facilities necessary for the economic development and well-being of people. Therefore, construction is an important sector contributing to survival and the economical output of nations, its role is inevitable. This paper will review the status of construction industry and its importance to the Sudan as a developing country.

The paper identifies the common challenges that face developing countries generally and Sudan in specific. Surveys and available literature were the main source of data beside the statistics provided by governmental authorities in Sudan and international organizations; United Nations, World Bank, etc.

Keywords: Construction Industry, Economy, Sudan, Challenges.

2. Introduction

The world's total population in 1950 was estimated at 2.5 billion, it is expected to triple by the year 2010 reaching 6.9 billion. The last few decades have brought a world that is far more urbanized with a much higher proportion living in large cities and metropolitan areas (UNCHS, 1996). The World Urban population has been estimated to be about 50% in 2010 (UN, 2008b). Between 2007 and 2050, the population living in urban areas is projected to gain 3.1 billion, passing from 3.3 billion in 2007 to 6.4 billion 2050. By midcentury the world urban population will likely be the same size as the world’s total population in 2004 (UN, 2008a).

The urban population of the least developed countries (LDCs) has increased from 0.8 billion in 1975 to 2.3 billion in 2005 and expected to be 2.9 billion in 2015. The urban population of the LDCs represents more than two third of the urban population in the world.

Sudan, as one of the least developed countries (LDCs) (UNDP, 2008), has experienced rapid urbanization rate during the last few decades. The total population of the country increased from 9.1 million in 1950 (UN, 2008b) to 39.1 million in 2008 (CBS, 2008). The urban population of the country- as percentage of total population- increased from 6.8% in 1950 to 40.8% in 2005 and estimated to be 74% by 2050. The inhabitants of Khartoum, the largest city in the country, increased from 0.9 million in 1975 (UN, 2008a) to 5.2 million in 2008 (CBS, 2008) and expected to reach 7.9 million by the year 2025. The share of the city in the total population in the country increased from 2% in 1950 to 13.5% in 2008, and the city accommodates more than
one fourth of the urban population of the country (UN, 2008b) & (CBS, 2008). The city has been ranked as the 214th, 53rd, 44th among the world’s urban agglomerations having 1 million inhabitants for the years 1975, 2007, and 2025 respectively (UN, 2008a).

The increase of the inhabitant of the globe and its urban population calls for more construction activities especially for housing. In developing countries, in general, the rate of construction is far below the demand for shelter, infrastructure and other amenities.

Many factors such as demographic growth, shifts from rural to urban areas, natural and human-made resource depletion, and significant changes in expectations and life styles, all combine in their various ways impose considerable pressure on the construction industry of developing countries.

Indeed, the Construction Industry has been identified as one of the main engines of growth in any economy. It provides the infrastructure required for other sectors of the economy to flourish, provides housing as the basic human need. Therefore, a nation’s development is highly dependent on the level of performance and efficiency of its construction industry.

Ofori (1990) describes the construction industry as “having several different sectors producing heterogeneous products, which are immobile, complex, durable and costly”. Turin (1980) ascribes the following features to construction: immobility, uniqueness, heaviness, bulkiness, complexity, long duration of production process, high expenses and durability and observed that whereas a few of these might be shared by other artifacts, no other product share them all. The characteristics of construction products cited by Moavenzadeh (1978) includes: custom-built nature, immobility, high initial expense, complexity and continuous changing technology.

Sudan, as a developing country, has experienced great developments during the previous decades. These developments took place in many fields, of which the construction industry is an important one. However, this development is concentrated in the capital and some of the big cities besides the areas of oil production.

3. The Construction Industry of the Sudan

3.1 The Socio-economical Signature of Construction Industry

The role of construction in socio-economic development has been addressed by various writers and international bodies, many of whom have focused on developing countries (Turin, 1973; World Bank, 1984; Wells, 1986; Ofori, 1990; Palalani, 2000). The provision and maintenance of shelter, other permanent structures and infrastructure networks are fundamental to the national economy. In almost every sector of the economy - agriculture, health, industry and communications - there is some construction component (UNCHS, 1986). Construction activity is an integral part of a country’s infrastructure and industrial development. Thus, the construction industry has been identified as one of the main engines of growth in any economy. It provides the infrastructure required for other sectors of the economy to flourish, provides housing as the basic human need, and is instrumental in providing national communications.
network (Palalani, 2000). Construction activities includes hospitals, schools, townships, offices, houses and other buildings; urban infrastructure (including water supply, sewerage, drainage); highways, roads, ports, railways, airports; power systems; irrigation and agriculture systems; telecommunications etc. Covering as it does such a wide spectrum, construction becomes the basic input for socio-economic development (Planning Commission (India), 2002).

Many studies highlighted the positive relationship between per-capita income and the ratio of total construction investments to gross domestic product, indicating the economic significance of the construction industry to economic growth and development (Turin, 1969, 1973). (1973) and Wells (1986), using cross-country comparisons, both found an association between construction investment and economic growth. Besides the direct impact of the construction industry on the economy through infrastructure provisions, further significant contributions are made directly/indirectly in terms of employment and income generation (Moavenzadeh, 1978; Ofori, 1988; Wells, 1985). The level of performance in the construction industry and economical output are cyclically co-related in a loop (Ebohon, 2000). This implies that increases in economic growth necessarily invites increased construction investments, resulting in high elastic demand for construction products and manifesting in rapid build-up of physical overhead, which offers significant employment and income generating opportunities. However, studies have shown that construction output grows particularly fast, often exceeding the rate of growth of the economy as a whole, as countries put their basic infrastructure in place during the early stages of development (ILO, 2001: 8).

The socio-economic signature of the construction industry can be gauged from a number of global indicators. Turin (1973) carried out the most comprehensive study on the role of construction in development through studying the economics of several countries. For the purpose of international comparisons, the most significant of these and those which are more readily available are;

- The contribution of construction to GDP; About 2-3% in developing countries, 5-7% in industrialized countries
- Value added by construction; 3-5% in developing countries, 5-9% in industrialized countries
- Capital formation in construction; represents 6-9% of GDP in developing countries, 10-15% for industrial countries, with an international average of about 55% of all capital formation
- The Contribution of new construction assets to GDFCF; 45-60% in all countries
- Intermediate inputs from other sectors in the economy:
  - 50-60% of construction’s inputs comes from other sectors in the economy
  - Level of imports of intermediate inputs for construction accounts for 5-8% of all imports of intermediate inputs in developing countries, about 5% of all imports.
- Employment share of construction sector; 6-10% of total employment in the majority of industrialized countries, and 2-3% in the less developed countries. When employment in the delivery of materials inputs is included, the share of construction employment can
account for as much as 15% and 10% in industrialized and the less developed ones respectively (Hassan, 2006).

The significance of the construction industry in development, in terms of growth, is much higher in developing countries than developed countries. For instance, the percentage shares of the value added (VA) by construction for most developed countries in Western Europe appear to be relatively consistent. Meanwhile, Eastern/Central European countries were also notable as their increasing needs for infrastructural developments generated more construction spending (Pheng et al, 2008).

### 3.2 Sudanese Economy Overview

Sudan is the largest country in Africa and the tenth country in the world, with a territory covering about 2,505,813 square kilometers of northeast and central Africa. The country’s primary resources are agricultural, but oil production and exports are taking on greater importance since October 2000. The country’s transportation facilities consist of 4,578 kilometre narrow-gauge single track rail lines, supplemented by limited ports and river steamers, airways and about 20,000-25,000 km of roads but only about 6071 km are paved roads and 2846 km gravel roads. The railways system which was built during the colonial period desperately requires refurbishment and substantial investment for upgrading its capacity. Besides, the country’s inadequate power generation and supply system has been a major impediment to economic growth. However, considerable efforts are made to increase the efficiency of system. On the other hand, a telecommunications services have received great attention, as a result substantial investments have been attracted to the sector.

Extensive petroleum exploration began in the mid-1970s and might produce all of Sudan’s needs. Significant finds were made in the Upper Nile region and commercial quantities of oil began to be exported in October 2000, reducing Sudan’s outflow of foreign exchange for imported petroleum products. There are indications of significant potential reserves of oil and natural gas in southern Sudan, the Kordofan region and the Red Sea province.

Instability is the main characteristic that dominates the performance of the Sudanese Economy. Since independence and till now, a number of plans were put under application, most of these plans weren’t carried out properly and hadn’t follow the time schedule set for the plans. The political instability was the main reason behind the failure in the application of different economical plans. The economical instability resulted clearly on higher inflation rates, instability and high fluctuations of exchange rates, and low level of investments. Similar to many developing countries, corruption has been a major characteristic of the Sudanese economic scene.

### 3.3 Sudan Civil Wars

Sudan has been in near constant conflict since it became independent in 1956. The two most extensive conflicts have been those between the North and South, with the first civil war lasting
from 1956 to 1972, and the second civil war from 1983 to 2005. The war in Southern Sudan was the most critical to the Sudanese society socially, economically and politically.

Sudan’s Comprehensive Peace Agreement (CPA) was signed on 9 January 2005, finally bringing peace between the North, represented by the government, and Southern Sudan, represented by the SPLM/A\(^1\), for the first time in 20 years. A final resolution of Sudan's civil war could greatly help the country's economy, lead to the lifting of various sanctions against the country, and encourage investment by foreign companies including oil companies.

Reopening the wounds of war, a conflict broke out in Darfur in 2003 and continues to date. Coming at a particularly inopportune time, during the peace negotiations between the government and SPLM/A, two rebel groups in Darfur, the SLM/A\(^2\) and the JEM\(^3\), began organizing themselves in the course of 2001 and 2002 in opposition to the Khartoum Government. While only loosely connected, the two rebel groups cited similar reasons for the rebellion, including socio-economic and political marginalization of Darfur and its people. The rebel movements began their first military activities in late 2002 and in the beginning of 2003 (UN, 2005). The conflict in Darfur has complicated attempts at ending the country’s larger civil war. The International community is looking forward to resuming the conflict in Western Sudan sooner. Great efforts have been carried out by the Sudanese government and neighbor countries to end the new civil war in Sudan to avoid any of the results of the war in Southern Sudan. Optimistic points of view consider the situation as less critical than the previous war.

### 3.4 War Impacts

Sudan in general and the southern region in specific have been negatively affected by war for all but 10 years of the independence period, resulting in serious neglect, lack of infrastructure development, and major destruction and displacement. More than 2 million people have died, and more than 4.5 million are internally displaced or become refugees as a result of the civil war and war-related impacts (UN, 2005).

War and economy are interdependent (Gueli, 2007), most of the nation’s resources were devoted to the war rather than development projects. The war in the South affected construction activities since developmental projects were suspended every now and then and some projects have started a long time ago without been finished yet. Construction projects suffer from the war as many other developmental projects (i.e. Jonglei canal). Moreover, a great portion of the economy output was devoted towards the military work and the war shifted most of the funds assigned for developmental and constructional projects to the war. The shifting of funds towards war has its observable impacts on all markets in Sudan. Construction and housing as growing markets suffered from the war severely. The equilibrium between demand and supply was not subject to market forces; instead it was at the mercy of the war and the resources available after

---

1. Sudanese People Liberation Movement/Army
2. Sudan Liberation Movement/Army
3. Justice and Equality Movement
covering the war costs. The market was reluctant to respond to the gap between demand and supply.

The migration was inevitable due to the war; migration wasn’t organized by the government. As a normal result from unorganized migration, demand and supply were unpredictable making it difficult to create a well organized and planned market for real estate and its submarkets. As a result, investing in construction and real estate was characterized as risky investment. Therefore, the role of the private sector in the construction and real estate markets was unrealizable. The final resolution of Sudan’s civil war could greatly help the country's economy, lead to the lifting of various sanctions against the country and encourage investment by foreign companies including oil companies. Thus, the governments of both nations (Sudan and Southern Sudan) are required to plan carefully for the new era which imposes new exigencies and different set of challenges.

In Darfur, which became the latest chapter in Sudan’s civil wars, 10,000-30,000 people have been killed and nearly a million have been displaced (UN, 2005). No doubt, if this war continues, it will cost the Sudanese economy as similar as the war in the South did. Sudan is in need of any resources including human resources in order to recover its economy.

3.5 Economy Performance and Implications on the Construction Industry

Sudan continued to witness a dynamic construction activity as a result of infrastructure rehabilitation and the increased demand upon private and business property. No doubt that the performance of all the markets and submarkets in the construction industry is subject to the goodness or badness of the general economy performance in that market boundaries. As mentioned before a direct link between the main macro-economic indicators and the construction activity do exist. The real growth of the sector’s output was either negative or near to zero till the mid 1990s, it had a positive value in 1997. The highest rate of growth the sector ever enjoyed was as high as 161.4% in 1998. Generally, the pattern of growth of the construction sector in the Sudan is highly fluctuating. Following the year 2005 the sector maintains its positive growth with only marginal changes (fig 1). The shift from negative to positive growth was a result of the national development projects executed at that time such as national roads, bridges housing projects and redeveloping of some projects and infrastructure. Moreover, the provision of infrastructure for oil production contributes significantly to the growth of the construction sector in the country.

Despite the growth that the construction sector enjoyed during the 1995-2003, the share of this sector to GDP showed a decreasing pattern (fig 1). The share of construction as percentage of GDP averaged 4.7% during 1982-1998 whereas it accounted for 2.7% during 1999-2009. The contribution of other growing sectors (manufacturing and mining) to GDP was greater than what the construction sector did. The oil sector share to GDP was relatively high resulting in the reduction of other sectors shares. However, the contribution of the construction sector to the economy has increased consistently pattern since 1999. The increase in the amount spent on
construction was, mainly, triggered by oil production; setting the infrastructure for oil production. The growth of the sector in real terms during 1982-2009 accounted for about 10.8% on average.

Figure 1: Productivity and contribution of Construction sector to the Sudanese Economy 1995-2007 Source: CBOS

In many developing countries nowadays, as it is the case in Sudan, development efforts often focus on the modern construction sector so as to deal with the growing investment programs and to meet pressing needs for urban shelter. Most of the construction work activities take place in the City of Khartoum and some other big cities

4. Challenges facing the Construction Industry of Sudan

The construction industry everywhere, given its special problems and requirements, faces problems and challenges. However, in developing countries, these difficulties and challenges are present alongside a general situation of socio-economic stress, chronic resource shortages, institutional weaknesses and a general inability to deal with the key issues. There is also evidence that the problems have become greater in extent and severity in recent years (Ofori, 2000). The situation in Sudan is similar to the general situation in developing countries. The difficulties that face construction industries in developing countries and the proposed solutions have been extensively investigated by the international organizations such the United Nations (1981, 1984), International Labour Office (1987), the World Bank (1984), also by Turin (1973), Wells (1986), Ofori (1990) and (Sultan & Kajewski, 2003 & 2004). The problems and challenges that face the construction and building materials industries in developing countries are common (Sultan & Kajewski, 2003), Sudan isn’t an exception. These challenges include;

- Lack of capacity of the construction sector (Du Plessis, 2002).
- Inefficiency and/or absence of regulatory instruments and professional institutions (UNCHS, 1996).
- Absence or inefficiency of quality assurance system, national standards and quality specifications; meaning that the quality of products and services (i.e building materials and labor force) in the construction industry are questionable (Palalani, 2000), and (Okema, 2000).
- Poor organization of the construction industry with a large number of very small and inefficient firms (Wells, 1986).
• An unfavorable operating environment for construction enterprises, which is further aggravated by complex procedures and regulations, delays in payments, and unsuitable contract documents.

• Contractors capabilities; lack of technical and managerial expertise, lack of adequate finance, difficulty in obtaining essential resources, materials, equipment and skilled personnel, and inadequate supervisory capabilities (UNCHS, 1996).

• Lack of planning at all the levels of the construction process (Wells, 1986).

• Low and fluctuating overall levels of construction activity.

• Lack of capacity and “economic rationality” in design, construction, and the production of building materials (Wells, 1986).

• Lack of finance (UNCHS, 1996).

• Information scarcity and lack of accurate data (Du Plessis, 2002; Palalani, 2000).

• Under development of the national systems of innovation (Milford, 2000).

• Inadequate and integrated research and development (R&D) facilities and programs beside the poor linkage between research and practice (Du Plessis, 2002; Ofori, 1994).

• High rates of risks and uncertainty (Du Plessis, 2002; Okema, 2000) including: Macroeconomic risks and uncertainties, insurance industry risks and uncertainties, site production risks and uncertainties, natural calamities risks and uncertainties, bureaucracy and corruption risks and uncertainties, contract and contractual performance risks and uncertainties, project risk and uncertainty due to public demand, political and insecurity risks and uncertainties, and donor associated uncertainties.

• Corruption: it costs construction industry in the world a huge amount of money \(^4\) (TI, 2005). Construction industries are particularly susceptible to corruption in licensing, taxation and obtaining government contracts, including bribery, fraud, embezzlement, and kickbacks (Sohail & Cailli, 2008). Beside the characteristics of the construction sector, the fragility of economies and ineffectiveness of the legal systems make developing countries prone to corruption (Fewings & Henjewele, 2008).

• Shortage of skilled labor due to the absence of training programs or the failure to provide adequate rewards (Wells, 1986; Ofori, 1994).

• Problems specific to the building materials industry
  – Inadequate capacity and inefficiency in the building materials industry, (Wells, 1986).
  – Building Materials; expensive, high transportation costs, high production costs and energy costs (UNCHS, 1996).
  – Unhealthy reliance on imported materials in face of foreign exchange problems, (Wells, 1986).

Imports of building materials are considerable; in many developing countries, a large proportion of building materials are imported. For instance, it is estimated that building materials alone annually account for 5 to 8 per cent of the total value of imports in Africa (UNCHS, 1986). The

\(^4\) The American Society of Civil Engineers claim that corruption accounts for an estimated $340 billion of worldwide construction costs each year.
potential for developing the domestic building materials industry, therefore, would seem large. However, in many developing countries, these potential developments are difficult to realize because of the relatively small size and large fluctuation of present demand, not only at the local level, but also in the national context. Scale economies apply to the production of building materials since large-scale manufacturing results in production feasibility (Elkhalifa & Shaddad, 2008).

Beside the underlying problems facing the construction industry in the developing countries and SSA countries on specific, apparently, the development of the construction sectors seems to be a challenge itself. It has been indicated that unless urgent steps are taken to develop appropriate institutions necessary to facilitate the development of modern and sophisticated construction industry, sub-Sahara Africa will remain a net importer of construction materials and services (Ebohon, 2000).

5. Conclusions and Recommendations

Construction activity is an integral part of a country’s infrastructure and industrial development. Covering as it does such a wide spectrum, construction becomes the basic input for socio-economic development. Besides, the construction industry generates substantial employment and provides a growth impetus to other sectors through backward and forward linkages. Sudan as a developing country experienced great economical development during the previous decades as a result of oil production and the end of war in the south. This development took place in many fields, of which the construction industry is an important one.

Overcoming the challenges that face the Sudanese construction industry to meet the requirements of peace and development is progressively demanding. The industry is already under severe pressure which casts a shadow of doubts as to whether its capacity, efficiency, strength, and resources to cope with the existing and expected situation. The authors identified a set of challenges that face the construction industry in the country.

The problems of CI in DCs have been extensively well reached and long lists of recommendations for the development of indigenous CI have been suggested. However, the results have been disappointing and the problems persist and many countries have not implemented these recommendations or have not put related polices and regulations into effect Ofori (2001). The failure in applying previous researches recommendation and the shift of donors to other fields results in the declining interest in CID (Ofori, 1994). Ofori (1993) suggests that the possible reasons, inter alia, behind the failure in applying those recommendations for the CID could be: recommended policies, programmes, schemes, techniques do not consider the methods procedures and administrative systems or required resources for implementations; recommendations concentrates on the role of government (Wells, 1984; Fox & Scott, 1999; Nordberg, 1999) regardless the role of the industry itself; recommendations are provided as shopping list without any attempt to prioritize them; lack of appropriate monitoring, control and periodic review of implementation; most recommendations are not put into a county-specific context; and recommendations usually do not cover all the issues if ever addressed. Ofori (1993) proposes a set of suggestions to materialize the research on the CID in DCs calling for the appropriateness of research, consideration of environmental issues, coordination and dissemination of research results. Ebohon (2002) indicates the urgent need to establish appropriate institutions necessary to facilitate the development of modern and
sophisticated construction industry. Some writers suggest the establishment of regional and continental (in Africa) bodies for the CID (Rwelamila, 2002) initiatives have already been launched for this purpose (Watermeyer, 2001) The CIB (2004) suggests the key roles that different stakeholders could possibly play to change the industry.

6. References


Gueli, R. (2007), Construction for development (but also for security?), *Proceeding of the CIB World Building Congress ‘Construction for Development’*, 14-17 May, Cape Town, South Africa


