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Priorities in Building and Construction Industry in the Arab World

Foreword

Arab World is the land of civilizations and religions. Its location is of significance, since it is a crossroads of strategic roads. Its area is about 14 million sq. km, and its population in 1990 was 232 million persons. It's worth mentioning that its geological structure embraces internal resources, in addition to surface resources - petroleum, minerals, water, plants, animals, etc.

Construction industries are significant in the Arab World. These industries are basic due to people's need to them. They were established in order to meet people's needs for residence and other associated buildings, in addition to other service constructions, such as roads, potable water, sewage, health, education, culture, etc. These all constitute residential environment and constructive structure for man's life - society and individual.

Building and construction industry makes up a considerable volume of manpower utilization and a proportion of investments, as well as exploiting the natural resources of different natures, such as minerals (iron), wood, rocks, marble, sand, and other aggregates, brick soil, etc. These resources form raw materials to this industry, in addition to expert manpower - skillful, half-skillful and executive. For the execution of these industries, general contracting companies, public or private, were established, and had now legal organizations on both national and Arab regional scales. It's worth mentioning that the wide-spreading and continuity of these industries require the existence of rules and principles starting from its studies and designs. They also require making plans of work on local and regional levels gradually, until they reach the level of projects, with the presence of specializations to execute these industries. An example is raw materials industry in all its kinds, as these materials are no longer used as they exist in nature, but they undergo some specific or wide processing. This branch developed from a simple and manual industry to mechanical industries, with their own techniques, such as iron, with all its specifications for various uses in construction, cement, gypsum, sand, marble, etc. This industry certainly requires manpower, which makes it of significant impact in work markets, not to forget that this industry is similar to other industries and economic activities.

Building and construction industry is considered one of the main channels in seeking to achieve a framework of Arab cooperation, starting from economic and political and service integration on Arab World scale, so that this industry will be able, like other industries, to accomplish its local national, Arab regional, as well as international aims. Constituents of this are available on the Arab scale, as integration among economic and financial resources exists to a degree that no other region in the world has. The same is true with the cultural and scientific aspect, in addition to the large demand and wide markets for the goods of this industry.

Building and construction industry is gaining economic and social significance since it is in line with human civilization along its extensive history. Man's ability to

benefit from raw materials was concentrated in order to discover new construction materials that fit the environment he is living in. Production and consumption of construction materials became an aspect of civilized progress of peoples and a distinctive milestone in Arabic industrialization through meeting principal needs of Arab citizen and defining essential requirements from building materials, as a result of construction move that Arab World is witnessing at present.

Although some building and construction industries and building materials have flourished in some Arab countries, others are still in the beginning of their way; thus, mutual cooperation and research is essential for the success of building and construction industry in these countries in order to achieve sufficiency and limit importation. There are several factors that affect the change rate of the productivity of this industry and the slow spreading of technology in Arab countries that lack sound standards and data, which necessitates that Arab efforts be exerted to find solutions for such problems.

The paper reviews the principal constituents of building and construction industry, which are exemplified in:

1. Raw materials and construction materials and their industries
2. Planning and design for buildings and constructions
3. Contracting, execution and technology
4. Financial investments in this sector

Then, the paper handles the concept of this industry and other related industries. Based on what this concept includes, construction materials are classified as follows:

1. Main materials:
 - a. Natural construction materials
 - b. Half-processed construction materials
 - c. Processed construction materials
2. Coating materials
3. Covering materials
4. Auxiliary construction materials
5. Insulating materials

Increase of population and the need for residence have led to the forecast of growth of demand on building and construction industry. This industry is now considered essential for developing economic activity level, since it contributes significantly to achieving economic development, providing citizens with houses, building industrial cities, building roads, and constructing public utilities, such as hospitals, roads and recreation facilities.

However, the cost of construction materials forms two thirds of the total investment in building projects, and investments in housing constitute 20-30% of fixed capitals of countries. This supports the importance of building and construction industry and pushes for guiding its utilization and improving its quality. Thus, relation of building and construction sector with other economic sectors is evident, with impacts on other sectors in society. It has a great role in increasing the proportion of workers in building and construction sector; this percentage differs from one country

to another, according to the degree of manufacturing construction materials, of self sufficiency, and of technical level used in the processing method. If building and construction industry is given suitable practical and scientific planning and programming, it will meet the society's needs of houses and utilities, and will save society a lot of import expenditures.

Building and construction industry consumes large amounts of energy, specially binding materials industry, such as cement, iron and ceramic. Building and construction industry consumes large amounts of energy as well in:

- a. Building materials processing
- b. Building materials transport
- c. Investment of buildings

In order to rationalize energy consumption, we should make strict control on the consumption of heat and electric energy, and direct the attention to cut production costs, save its consumption, and use practical methods to reduce fuel consumption in factories through developing construction materials factories by benefiting of the great development of this field in industrial states.

As for control of energy consumption in buildings, it is very important to improve quality of raw materials and provide better designs for buildings so that they consume the lowest quantity of energy. Buildings should be also directed in a way that allows the most of sunshine to enter during winter, in addition to using insulation.

Building and construction industry has a great impact on environment. Environmental issues have gained a great significance in the world. Since this industry has a polluting effect inside factories and the ambient atmosphere, efforts must be concentrated for early consideration when planning for any industrial project in order to define consequent hazards and take the necessary procedures in time. Specifications should be followed, and pollution standards should be defined in order to reduce and limit them. This can be fulfilled through using modern designs for plants and equipment necessary to register quantity of emitted dust within limits of healthy environment.

Consideration should be given to comprehensive urban construction planning, and to encouraging exchanging of information about all sanitary building materials, and avoiding as much as possible the use of building materials that cause large pollution in environment. This can be achieved only through planning and pre-designing on intact scientific bases, which will ensure having acceptable residence at reasonable cost, and through ensuring technical specifications and constituents of construction materials, and placing specifications particularly for building and construction materials. This should take into consideration materials available locally and on the Arab scale, and specifications should be applied in a way that ensures their quality and gain the utmost benefit of available resources, with utilizing experiences continually.

Quality management is a civilized way to achieve economic and social development, and this cannot be accomplished without the existence of quality policy, objectives, and plans sponsored by institutions to provide the consumer with what he needs of building materials with specifications and characteristics that meet his different demands at the time he needs, with suitable and acceptable prices

All efforts were directed towards production control to ensure its quality and achieve and adhere to specifications, which are considered one of the main bases in quality control process. Satisfying the consumer requires altering the specifications according to modern scientific and practical innovations, in way to serve his requirements and needs, which change with time. New management systems lead to quality assurance in the field of building and construction, elevate it, and limit waste. It can be said that application of positive outcomes of quality assurance management is improving production quality and organizing it, and is a realistic clear understanding to production capabilities and its ingredients. This necessitates giving more importance to manpower, as building and construction industry cannot be established on machines and equipment only, no matter how high the technology is. Care should be given to workers through developing manpower and training them in view of developing technology in order to accomplish more progress in the field of development and production for the good of mankind.

Requirements of manpower should be estimated on the basis of current and future development of employment structure in building materials industry. The most important factors affecting this are:

- a. Specifying types of occupation and classifying them
- b. Study of employment structure
- c. Planing of training

Training is not confined to qualifying the worker and employing him, but it should be continued in order to cope with modern methods of production and performance; to suit development in organizations, sciences, and technologies; and to prepare appropriate procedures to provide training in the field of engineering, technical expertise, maintenance, and technical support to achieve and develop production. The significance of maintenance in building and construction industry is evident in production and safety aspects; therefore, importance of maintenance, protective and designing, is confirmed. Maintenance is considered of great significance in advancing works according to the planned course and within the specified periods, and this requires exerting concentrated efforts by all different activities for better preparation and furnishing comprehensive requirements of work, which support this industry and cope with its development.

The main objective of processing construction materials is meeting essential needs of population, residence being an urgent need for man. Home is classified the second of essential needs after food, and residence is a social need emitting from relation between environment and society; this relation is established within a residential gathering that requires inevitable utilities. Thus, this study is made to define the need to construction materials necessary for residence, and principal problems of building industry in housing sector, which encounters increasing demand on building materials, and to estimate its volumes, whether they are raw materials, processed, or half-processed construction materials.

Providing construction materials in a good way helps to found industrial projects, and consequently establish commercial markets. If we consider that the building movement we witness at present in all Arab countries is based mainly on cement, and if we consider that the consumption volume of this material is an evidence

of progress of nations' civilizations, we can take cement as a principal indicator of how much other building materials are needed.

However, it is difficult for building and construction industry to face this increasing demand sufficiently for reasons, the most important of which are:

- a. Lack of information about raw materials of building materials industry
- b. Deficiency of skills and weakness of technology of building materials industry
- c. Misuse of building materials during housing construction
- d. Non-stability of technical workforce due to inappropriate circumstances

The study reviews construction materials industry, and gives some statistics about production, consumption, variance and comprehensivity of these materials in Arab countries. Variant are the investments necessary for these materials, their characteristics, the stages of processing them through providing raw materials, the importance of exploiting available energy in existing factories, the possibility of their production and altering them to serve Arab local environment, and developing them to meet future needs and achieve self sufficiency in a way to export the surplus to benefit from foreign currency in providing the requirements of their production. The study as well offers the essential obstacles facing building and construction, the increase in demand on which led to depletion of some raw materials and fuels. Deliberation is now focused to find alternative local materials and to confirm the reciprocal influence between preparation process and industry development, as it is difficult for planners to find suitable planning methods in this field.

Continuing the accomplishment of human stability should not be on the account of environmental requirements, so building industry should be developed in the direction of depending on substitute local materials.

Moreover, concentration of the need for building materials industry in cities had its influence on migration from villages to cities, which brought about the idea of establishing relatively far suburbs, depending on modern methods, in accordance with the nature of land. Not to forget seeking ways of financing in building and construction industry, since this industry requires a large capital, sometimes of external source. This creates problems in looking for funding sources which can be provided by commercial banks, public or private sectors, or Arab funds, etc.

The study as well addresses the problem of lack of technical expertise in industrial research and projects, as technical skills are not available with the required specifications, in addition to the existence of foreign manpower, and the consequent competence between Arab and foreign contracting. Through reviewing building and construction industry, the study reveals deficiency of local production, which is unable to meet the essential needs of materials to cope with economic and social development in its different branches, whether this deficiency is as a result non-optimal use of available energies, or shortage of these energies to meet this demand.

The study concludes with conceiving future horizons for building and construction industry in the Arab World, being an integrated commercial geographical

unity that can provide bases for establishing Arab industries within the framework of Arab cooperation in the technical, administrative, and political fields, and can put various solutions in a balanced way to develop this industry through:

1. Performing a geological survey to provide information about available building and construction materials,
2. Encouraging investments in establishing local building materials industry,
3. Encouraging the use of local materials
4. Establishing a general policy for financing, according to bases that ensure the rights of all parties concerned,
5. Unifying standards used in this industry on the Arab level, and developing them continuously,
6. Establishing special legislations to protect environment in a way suiting circumstances of building and construction industry,
7. Establishing balanced and integrated plans for marketing and distributing building materials,
8. Getting use of industrial wastes as substitute materials,
9. Preparing a joint program for technical, industrial, and professional training related to this industry in Arab countries,
10. Improving work situations and wages to maintain workforce, and
11. Applying programmed legislations to save energy.

The above can be applied by cooperation among Arab states, where Arab economic integration exists. This contributes towards achieving economic unity, which will bring welfare to Arab states and accomplish a new stage of civilization, depending on the course of comprehensive national planning, and will provide production factors to establish an economic unity of joint interests in enhancing economic and technical capabilities to establish building materials projects and building and construction industry.

Arab industrial coordination is a large economic objective aimed at exchanging expertise and presenting technical consultations within the framework of Arab integration and cooperation, in addition to solving problems that encounter industrialization, offering advice and guidance to Arab states, and studying projects through cooperation among Arab states.

Joint ventures can be divided into two parts:

1. Regional projects
2. Local projects

Cooperation among Arab states to establish joint ventures will give a civilized character that facilitates the process of economic and social development.