HIGH – RISE BUILDINGS (TOWERS) AND HOW THEY AFFECT COUNTRIES PROGRESSION

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Introduction:

Country's progress is achieved through economic, urban and planning progress; they are the most important reasons that encourage technological progress by seeking the use of the latest materials & systems. All these elements help to attract sources of capital to the country. With the end of the twentieth century many countries began to achieve progress through the preparation of comprehensive plans to establish high rise building investment projects with the development of many standards and principles to ensure the success of these schemes. Most of the Arabic gulf countries, Malaysia and Hong Kong started such steps in order to promote the country at various levels. Where feasibility studies played a major role in studying all factors and elements affecting the project and the level of success of the investing companies. Such feasibility studies have been developed through the concerned authorities in these countries. Such feasibility studies had a significant impact on the success of high rise buildings projects in these countries. With the end of the twentieth century and the beginning of the twenty first century Egypt witnessed the construction of only few investment projects such as (The Nile City towers, First Tower, and the tower of Faisal Islamic Bank). And there have been some attempts to develop a comprehensive plan to Cairo (Cairo 2050) in an attempt to encourage the establishment of investment projects with high rise buildings. But no progress was achieved in such attempts, and they did not receive the appropriate support to approve them and to encourage the construction of such projects.

Reasons for taking the trend of constructing high rise buildings (Towers): (1)

There are many reasons to establish a high rise building investment project. And they are as follows:

- Rapid growth of population in urban communities, and therefore the constant pressure of the limited land area affected the evolution of building.
- Expensive land prices.
- Restriction of random expansion in major cities adjacent to agricultural land.
- The high cost of setting up infrastructure for new cities.
- Expression of progress and civilization.
- **The aim of this paper:**
- This paper aims to study the principles and standards for the preparation of a comprehensive plan for Cairo and the construction of high rise building investment projects. Also this paper gives recommendations related to encouraging capitals & investors to invest in such projects.

The development of high rise buildings:

High rise buildings started in ancient Rome with its four storey wooden residential buildings. Then such residential buildings were constructed using bricks.

fig. no. (1) Shows the Chicago building of the home insurance co. 1883

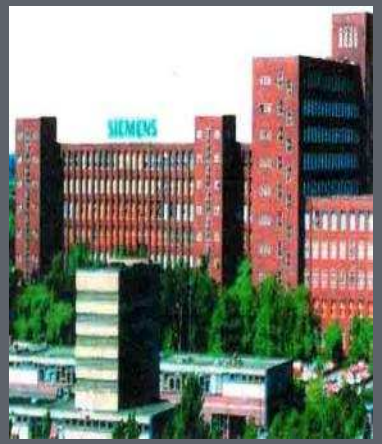
fig. no. (2) Show the Woolworth building in New York 1913

fig. no. (3) Show the Empire State building in New York

As well as high rise buildings are easy to be located.

And such buildings depend on many technical & engineering factors in the country.

The following are some examples of high rise buildings (Towers) and how they developed over the recent years

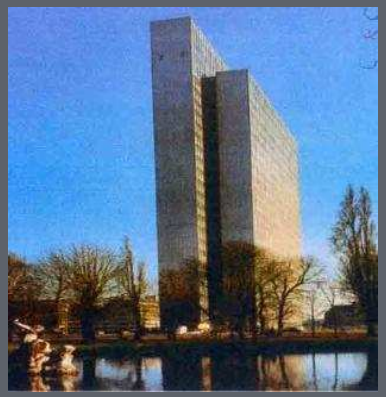


Siemensstadt building 1928

Chrysler building 1930

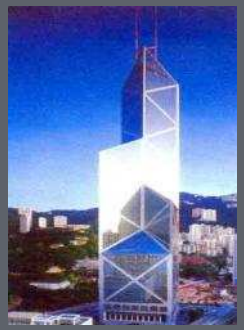
Empire state building 1931

Lake shore drive apartment building 1950

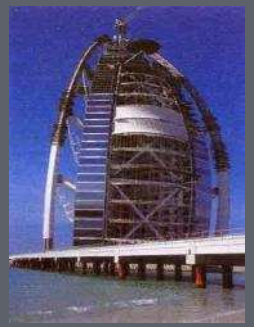


Phoenix building – Rheinrohr, Germany 1952

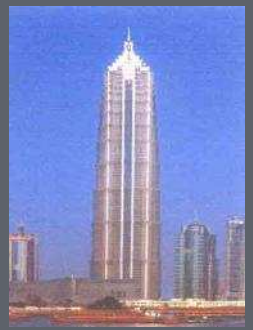
Chase bank tower, Chicago 1969



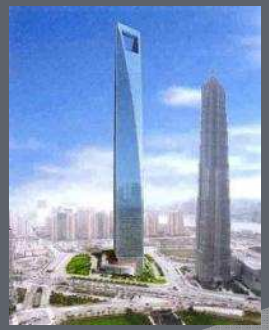
China bank tower, Hong Kong 1990.



Burj Al Arab, Dubai 1999.



Jin – Mao tower, Shanghai, China 2000.



World financial center, Shanghai, 2008.

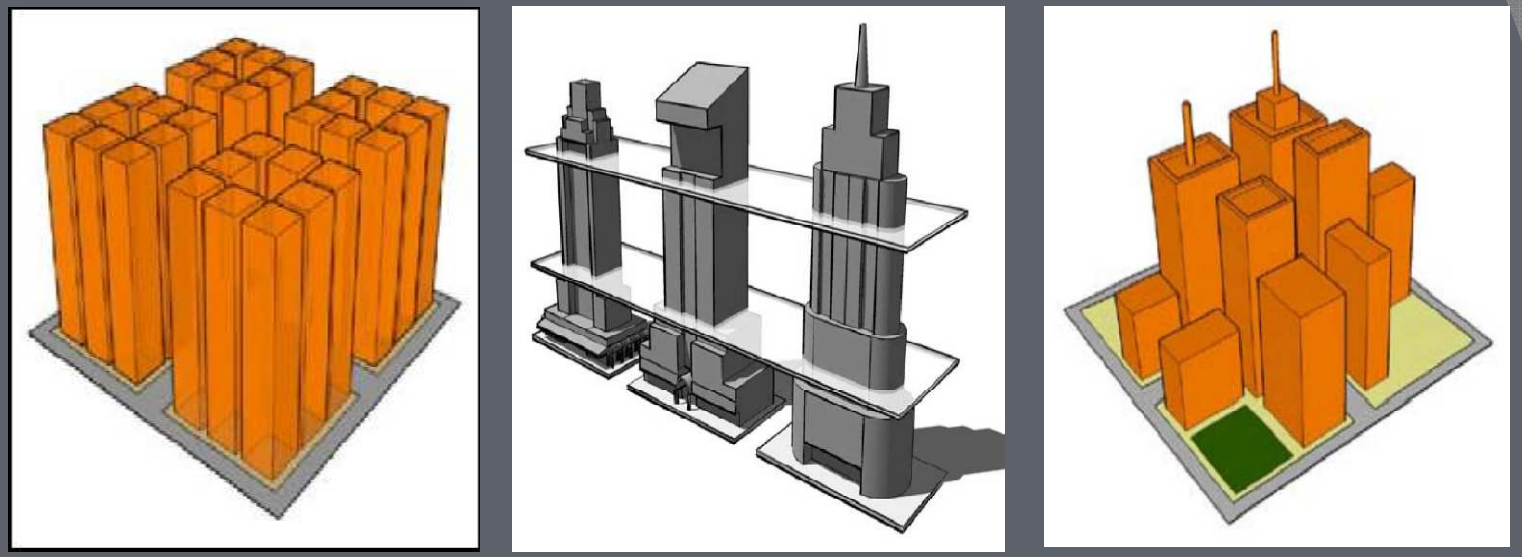
Northeast Asia Trade tower, South Korea, 2006.

High rise buildings (Towers) design standards:

There are many building design standards that must be taken into consideration when design high rise buildings.

High rise buildings construction conditions:

There are many construction conditions that must be applied when constructing high rise building,.



(Fig. no. 4 shows methods of gathering high rise buildings)

Principles & design standards related to use construction systems are as follows:

- The building must achieve all building laws related to internal spaces.
- The building must apply modern technological systems.
- The building must constructed using suitable structure systems.
- The building should have a distinctive.

Elements that affect the buildings height & growth:

There are many elements that encourage the construction of high rise buildings, and they are as follows:

- Available construction materials and structural technology to implement the construction.
- The advancement of the required services for building uses such as mechanical systems (Elevators, HVAC, etc.)

Eco-friendly high rise buildings design standards:

Environmental standards must be applied when designing high rise buildings. As most of the countries nowadays seek to achieve sustainable buildings to maintain the efficiency of the building

High rise buildings (Towers) Economics:

Economic feasibility studies are considered one of the most important success elements in the investment projects. These studies focus on all the affecting elements in the project and all funding capabilities. Buildings economic studies have developed greatly especially after the technological progress and the advancement of construction materials variety, and construction methods.

Main points of value engineering can be summarized into the following points:

- Functions Analysis.
- A Balanced evaluation between the three primary elements of any building (performance - cost - quality).
- Creating a multi-phase work plan (data collection – analysis – evaluation & development).
- Achieving better savings as a result to proper consumption of (materials – working hours – enhancing performance).

Cost reduction:

Cost reduction can be defined as a method to lower expenses paid on procedures that result in lower quality or performance in order to decrease the needed budget, its elements can be summarized into the following:

- Cost study to all project elements in all different stages.
- Cost reduction to different operations of the project.
- Cost reduction by changing the final product to a better one that achieves the required efficiency.
- Studying all of the project stages and the time schedule.
- Achieving the general requirements of the projects elements.

Economic studies for a high rise building:

First: Primary studies, marketing and feasibility of implementation.

Second: Study of the design economics and other complementary studies.

Third: Contract economics and bidding.

Fourth: Implementation economics and organizational studies of the buildings construction stages.

The location of high rise building and its impact:

The location selection of high rise building is considered one of the most important elements affecting the success of the project

Fig. no. (5) shows the layout of Dubai's city

Fig. no. (6) shows the comprehensive plan to develop Jeddah's city.

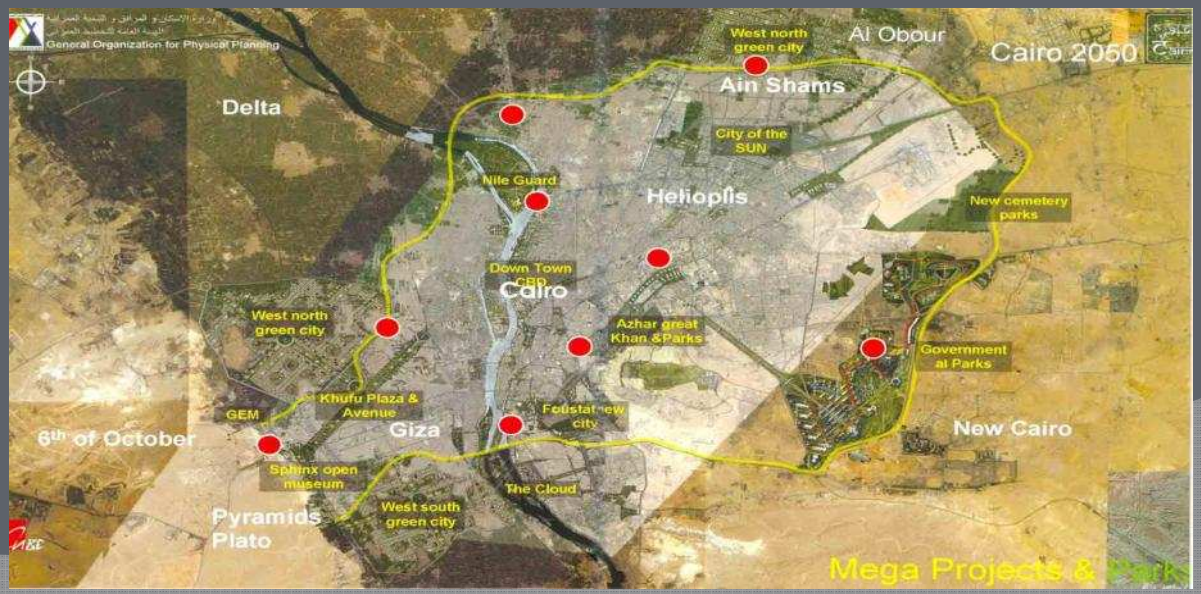


Fig. no. (7) Shows the master plan of Cairo and the schematics for the high rise district

Examples for some high rise buildings in Egypt:

Where some capitals have sought to establish high rise building projects in Egypt. Which was built under a special exception of the previous prime minister of the Egyptian government, As there was no mechanisms ors comprehensive schematics for such projects, as these projects where not placed on the government's plans for the advancement of the country.

And some of these examples can be reviewed, including:

Nile city towers – Egypt

First residential tower – Egypt

Faisal Islamic bank tower – Egypt

A Comprehensive plan study for the development of the city of Cairo: (10, 11)

(Cairo 2050) is a promising comprehensive plan that aims to achieve a great futuristic development to the city of Cairo. One of this plan's branches is the construction of high rise building investment projects to achieve development and welfare.

Fig. no. 8 shows the comprehensive master plan to develop the city of Cairo

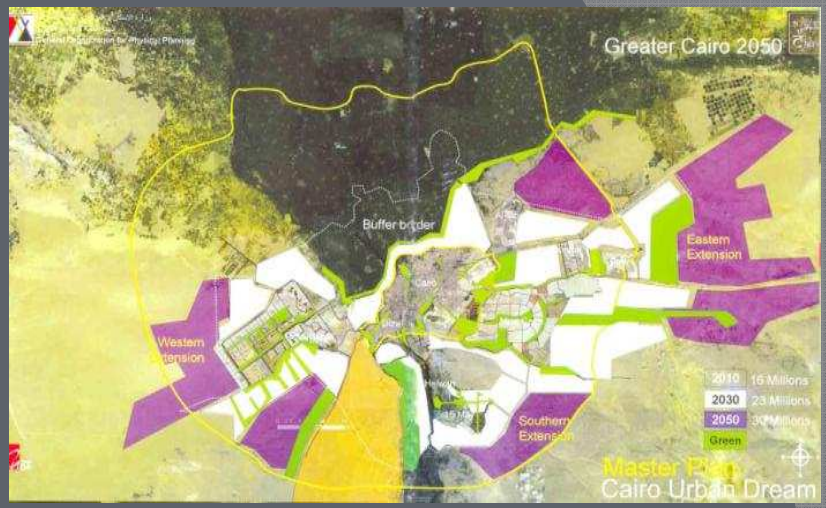


Fig. no. 9 shows the different time stages for the development comprehensive plan implementation

Fig. no. 10 shows the general forms of gathering a high rise collection of buildings.

Results and recommendations:

There are many results and recommendations, and they are as follows:

- **On the level of the state:**
  - A comprehensive plan for the development of Egypt must be adopted to draw implementation mechanisms and to create special strategies for the country's development. And implement these strategies on stages starting from Cairo to identify the targeted areas for investment.
  - Encouragement of capital sources and the formation of investment entities in high rise buildings to achieve the targeted plans.
  - Provide all possibilities and legislative needs to seek the start of a new generation of high rise towers.

- **On the level of consultants:**
  - Formation of consultancy agencies to develop mechanisms for the implementation of these schemes and devise new strategies to ensure their implementation on the required level.
  - The innovation of new architectural designs and integrated systems that fits a new high rise buildings.
  - Study of the local and international market to meet to their needs.

- **Role of the designer:**
  - Facades must be distinct and able to achieve a good balance between form and economic cost
  - Making a use of local finishing materials and detail study and how they fit in the project
  - The environmental good standards and requirements must be applied when it comes to the selection of finishing materials used in external facades

- **On the level of investors and capital owners:**
  - Encourage the formation of investment entities to finance such projects
  - Formation of an investment committee to provide all the required economic studies to ensure the success of these projects
  - Encouragement of foreign capital with good expertise in high rise projects.

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