

SKYSCRAPERS AS TOOLS OF ECONOMIC REFORM AND ELEMENTS OF URBAN SKYLINE: CASE OF THE ABDALI DEVELOPMENT PROJECT AT AMMAN

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INTRODUCTION

Definition and History of Skylines

The city's skyline is the line that separates earth from sky (1). It can be natural such as trees, mountains or sea, or man-made such architecture. Skyline is the product of several civilizations that has been shaped over many years, and it is different from city to another. Skylines in the past have been affected by historical, geographical, natural, economical, social and religious factors. In modern times the economic factor has become the main issue affecting our cities' skylines (Tunnard, 1965).

Every civilization has its own skyline image (Tunnard and Reed, 1965). The old Egyptian city's skyline (**Figure 1**) was dominated by the pyramids and obelisks to reach the sky as their religion and beliefs thought (Mumford, 1961). In Babylon City the use of ziggurats dominated the skyline. The temple or the pantheon at the summit of hills dominated old Greek cities (**Figure 2**). The triumph arches and large domes of churches dominated the Roman and Byzantine city of the past. The church towers continued to dominate the city of Medieval, Romanesque and Renaissance cities (Attoe, 1981). In Islamic cities, such as Cairo and İstanbul (**Figure 3**), the minarets and domes of mosques dominated the city skyline (Bianca, 1984).

Since the advent of the industrial revolution, the chimneys of factories started to take place instead of the religious building of the past (Worskett, 1969). During the 20th century, the adaptation of steel material in building construction paved the way towards high rise buildings and construction of bridges (Cherry, 1980). The 20th century city skyline is characterized by the introduction of electricity and telecommunication towers, and completely new building functions such as airports, train stations, large malls, large exhibition areas, stadiums, and galleries (**Figure 4**) (Bor, 1972). The 21st century city skyline is a continuation to the 20th century skyline with more emphasis on high technology style of buildings. High

1. I would like to thank Mr. Robert La Rock, an American English language teacher living in Jordan for his help in editing this paper.



Figure 1. Skyline of old Egyptian city. (Al-Ghazalah, 1995).



Figure 2. Skyline of Athens, example of Greek cities. (Al-Ghazalah, 2001).

technology style buildings will dominate the new Abdali skyline and thus, Amman's new skyline.

Shapes of Skylines

There are several shapes of skylines such as:

1. The mono focal skyline, in which a city center in the middle of the city reflects the type of city. The Acropolis was the focal point in Greek planning (see **Figure 2**), where the temple was playing this role in Roman planning (Houghton-Evans, 1978). The Friday Mosque is the focal point in the Islamic cities where examples from Damascus, Cairo, Baghdad and İstanbul (see **Figure 3**) prove this. During the industrial revolution the factory became the center of the city with its large and monumental chimneys (Unwin, 1991).

Figure 3. Skyline of İstanbul. (Turkey brochure, Turkish Ministry of Tourism, 1995).





Figure 4. Skyline of Manhattan, New York. (Al-Ghazalah, 1989).



Figure 5. Skyline of Cairo, where Mosques of Sultan Hassan and Al Rifaii is seen. (Al-Ghazalah, 1995).

2. The poly focal skyline, in which several focal points dominate the city skyline. Paris, Washington and Cairo are examples of this kind (**Figure 5**).
3. Amorphousness skyline, in which an irregular shape of skyline appear such as cities during the Georgian period in Britain (**Figure 6**).
4. Extensible skyline, where the development is grouped in a linear or circular manner such as the Hippodamian scheme, where Los Angeles and San Francisco (**Figure 7**) are two examples.



Figure 6. Irregular shape of skyline from London city. (*Over London, 1984*).



Figure 7. Skyline of San Francisco. (*Above San Francisco, 1984*).



Figure 8. Greater Amman map. (Greater Amman Municipality, 2007).

Amman's Skyline

Amman's skyline is a mixture of the third and fourth types discussed previously. It has an irregular skyline with extensible character as we will see later. Amman City is built on several hills that can be divided into five parts.

1. The central area where most hills meet that has large slopes between 10%-50%.
2. The northern section which has moderate slopes, around 25%.
3. The western section that has hills over 1000 meters high above sea level and inclinations that reach 50%.
4. The southern section that has heights less than 700 meters above sea level with inclinations that reach 70%.
5. The eastern section with heights around 600 meters above sea level and moderate inclinations (**Figure 8**).

This study is not after the revival of the traditional skyline, but legislations and design criteria for high rise buildings should be first introduced and second implemented to result in a desirable skyline and to reduce the negative impact of modern skyscrapers.

CONCEPTUAL FRAMEWORK AND HYPOTHESES OF THE RESEARCH

Amman's skyline, as most Middle Eastern cities, remained intact and had human scale until 1990s. Since then several skyscrapers started to tear its traditional urban tissue as they became the main indicator of economic growth and power in the world. To many inhabitants and even architects, skyscrapers represent the state of power. The framework of this study is based on investigating the impact of introducing seven skyscrapers (one of which will be the highest in Amman) upon the skyline of Abdali and on the whole of Amman. This urban regeneration project will definitely change the character of the skyline of Amman. The impact of the high rise building is affecting almost every inhabitant of the capital. Although most of these

skyscrapers are for public use, hints of their use for residential purposes are beginning to be seen with many investors.

The method of this research is based on studying the urban design and skyline of Amman in general, and at the location of Abdali in particular. A survey of public opinion from both specialists in the field of architecture and planning, and other individual inhabitants at large is made, to examine the social, the physical environmental, the economical and the planning effect of skyscrapers upon the residents of Amman. The local environment as seen by inhabitants is different from the view of the investor. We will try to interrogate the viewpoint of the investor by distributing a questionnaire among them. The aim of the survey is to evaluate the public opinion of the theory that believes in introducing and erecting skyscrapers to improve economy, which has been adopted by the Jordanian Government to stimulate economic growth. A standard procedure is followed in administering the questions in numerical order to achieve rational results. The flow of questions depended mainly on the problems that might arise as a result of erecting a high rise building. The sample consisted of 125 professionals and 250 randomly selected inhabitants living around Abdali with an equal percentage of males and females. The questionnaire took almost two weeks to complete, where two trained researchers, in addition to the author helped in its distribution and analysis. The survey was conducted at the beginning of the year 2005. Participants voluntarily agreed to make the interview and fill out the questionnaire as presented in **Table 1**. A study of previous skyscrapers at other cities is also tried later as case studies. This research has many objectives, to study the effect of the high rise building on the local environment and the city skyline.

URBAN DESIGN AT AMMAN

Origin of Amman



Figure 9. Greater Amman at 1948. (Greater Amman Municipality, 2007).

Amman is a modern city, although its history dates back to 9000 years ago. In 1878, a group of Circassians settled in Amman from the Turkish Empire from which grew the first settlement at the beginning of the 20th century. In 1922 Amman became the capital of Jordan. The growth of Amman was influenced greatly by the political situations of the region (Bowersock, 1977). Between 1920 and 1948 the growth of Amman was relatively slow and the local materials of masonry and sand were used. Amman's total area then was estimated to be only 5 square kilometers (**Figure 9**) (Greater Amman Municipality, 1987). Amman started to grow from the central area, discussed before, where its skyline was human scale.

The Early Stage



Figure 10. Greater Amman at 1976. (Greater Amman Municipality, 2007).

In 1948 a huge number of refugees coming from Palestine settled in Amman. The total population increased to about 225,000 inhabitants. In 1956 the municipality of Amman introduced the first comprehensive plan for Amman's future extension. The Abdali district started to appear to the western part of the city at that time (Amman National Strategy, 1987). The International Style started to dominate the public buildings of Amman, with the importation of building materials from different parts of the world. The dwelling architecture remained intact during this phase. The Abdali district was first used for commercial space and offices. In 1967 a huge number of refugees arrived in Amman due to the Arab-Israeli war of 1967. The total population reached over 550,000 and the area of Amman increased to 160 square kilometers. Between 1967 and 1976, some high rise buildings started to appear in the city skyline, but the total height of

any did not exceed 40 meters or 12 floors (**Figure 10**) (Greater Amman Municipality, 1986). A mixture of land use began to spread throughout the city, especially at Abdali, and privacy of residential houses began to be lost.

The Middle Stage

In 1987 the total inhabitants reached 960,000, and the area of Amman reached 350 square kilometers, when the Greater Municipality of Amman was established. The total number of inhabitants exceeded one million for the first time in 1989. In 1988 the metropolitan comprehensive plan for Greater Amman was developed. This phase was marked by the advent of erecting high rise buildings in the Amman area that exceeded one hundred meters in height. In 1991 a sudden increase in the population accompanied the Gulf War due to Jordanian workers returning from Kuwait and Iraq. This put pressure on Amman's infrastructure and increased the value of lands, therefore putting much pressure on the middle and low income housing projects (Greater Amman Municipality, 2003). In 2004 the population of Amman reached 2.03 million, and the total area reached 677 square kilometers (see **Figure 8**) (Municipality of Amman, 2005). The third Iraqi war in 2003 did not produce a huge influx of people returning to Jordan at the beginning. Only a few demands on middle and high-class housing projects especially for Iraqis accompanied this era (Statistical Development of Jordan, 2005).

The Modern Stage or the Stage of Skyscrapers

Since the 1990s, Amman has witnessed the building of several high rises which did not exceed 90 meters in height and the non human scale buildings started to appear. The 21st century skyline of Amman began with the erection of over 110 meters of building that miss this historically maintained human scale (**Figure 11**). In 2003, the completion of building Le Royal, which is a five star luxury hotel made it the highest building in Amman with 33 floors and 110 meters high, with a total developed area of around 118,000 square meters (General Mediterranean, 1999). Le Royal became the highest point in the city's skyline and therefore performs a significant role in defining the city to outsiders and residents. Despite the post-modernist style of Le Royal, its shape appears rigid and throwback in its discipline for functionality. By contrast, traditional design forms provide



Figure 11. Le Royal building. (Greater Amman Municipality, 2007).

simplicity, with richness and dignity. The international style as it appears in the design of Le Royal does not belong to the city of Amman. Most people and even architects see it similar to a large ship in the middle of the city. The race to build the highest skyscraper in Amman has become the major game ever since.

Jordanian Town Planning Principles

The main principles of Jordanian town planning followed the neighborhood and Garden City concepts. The concept of neighborhood is associated with the concept of the Garden City and New Towns. Sir Howard developed the Garden City Concept in 1898. He proposed the ideal town as limited in size to a population of 50,000 at the beginning and 250,000 at later stages. Its planning used open internal layouts, dead-end and curved roads and a wide use of gardens for almost every house (Unwin, 1971). The garden cities of Britain are distinguished by an elegant road network, a harmonious architecture and a generous ration of open space to buildings (Cherry, 1974). This is not the case of Amman neighborhoods, which adopted those two principles in theory only. The planning commission of Amman distributed residential and commercial users mainly and left all major land uses intact. Most of the planning of neighborhoods has followed the topography when laying down main streets or dividing land. Amman City is a hilly area where you may find the separation between one neighborhood and another is achieved by constructing wide avenues that follow contour lines. Other times, there is no distinction between these boulevards and the streets widths inside the neighborhood. This results in unclear boundaries between neighborhoods inside Amman City. One cannot distinguish between different neighborhoods due to the missing boundaries.

Legislation at Amman and the Construction of Skyscrapers

The first law for building regulation was the law (no 79) in the year 1966. Before that, only three buildings exceeded 10 meters in height, and although they were less than 40 meters, they were considered as high rise buildings in Amman (Figure 12). Several building regulations accompanied the growth of Amman, which laid the foundation for constructing high rise buildings. The first building regulation law paved the way to erect several high rise buildings between 1966 and 1979, the year when the second building regulation, law number 67, was enacted. Eight high rise buildings varying from 40 meters in height to almost 90 meters went up during the time of the first building regulation. The highest of them was the Tower Office Building in Zahran district. Five of these high rise buildings were hotels. The second building regulation enacted in 1979 produced a phenomenon in terms of erecting high rise building, especially during the 1990s.

During the 1980s only four high rise buildings were found varying in height between 30 and 50 meters (Figure 13). During the 1990s, the numbers increased to 16 reaching almost 100 meters in height (Figure 14). The erection of the high rise building is taken by an administrative decision and can be in any part of the city, regardless of the land use plan laid out by the Greater Municipality.

A development plan for the years 2002-2006 is completed recently with wide objectives serving several sectors of environmental, economic, social, and cultural and heritage development. The main principles of Jordanian planning depend on the 1987 master plan, which is still valid. One of the major problems of Jordanian planning is the lack of coordination between



Figure 12. Examples of high rise building during 1970s at Amman. (Greater Amman Municipality, 2007).



Figure 13. Examples of high rise building during 1980s at Amman. (Greater Amman Municipality, 2007).



Figure 14. Examples of high rise building during 1990s at Amman. (Greater Amman Municipality, 2007).



Figure 15. Jordan Gate project. (Greater Amman Municipality, 2007).

physical planning and infrastructure institutions. Even agencies managed by private sector such as electricity, telecommunication and water do not coordinate with each other. Amman's main street network in the city center is almost radial and concentric. The city center is considered as the main focal point, and to move from one hill to another, vehicles must pass through the city center. This leads to heavy congestion inside the city center. The topographical situation of Amman led to the creation of an irregular street network outside the city center. There are no real boundaries between various sectors or districts of the city. There is no green belt or buffer zone between neighborhoods, if they exist. Its expansion is irregular and subject to administrative decisions only. There is a mix in the land use plan. One can find commercial and residential uses next to each other and even in one building. Urban sprawl and low-density development are also considered as one of the main problems facing Jordanian planning, in addition to the lack of public participation in the planning process.

Jordan Gate Towers

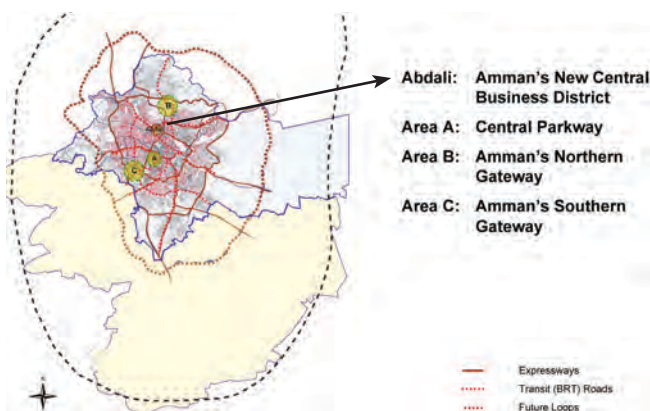
Jordan Gate's twin towers construction project started by the year 2005. It will become the highest building in Amman after its completion in the year 2006 (Figure 15). The Jordan Gate project has a large podium connecting the two towers that incorporate a large shopping center. It will host the five-star luxury hotel Hilton International, business offices, a large atrium, a commercial center, recreational facilities, storage, meeting rooms and restaurants. Each tower has 39 floors and is about 150 meters high with a total developed area of 220,000 square meters. The site of Jordan Gate is in the western section of the city of Amman, near the main road connecting Amman to its airport. The area of the site is 28,500 square meters. The project will be visible from all parts of the city of Amman due to its hilly properties. The cost of the project will be around US\$ 300 million. The style of the two towers is international where the main façades make use of glass as a cladding system. The two towers are identical. There is no utilization of any traditional method of construction or material (Gulf Finance House, 2005). The construction of the new skyscrapers of Jordan Gate, will redefine the city's skyline and will require a certain level of technology and the adoption of modern materials in the building process, both of which may not be found in Jordan.

Figure 16. Location of Abdali at Greater Amman. (Greater Amman Municipality, 2007).

Figure 17. The Abdali urban tissue at Amman. (National Resources Investment and Development Corporation, 2004).

The Abdali Project

The Abdali site was originally intended for army and military administration. It is located to the western section of the city near the city



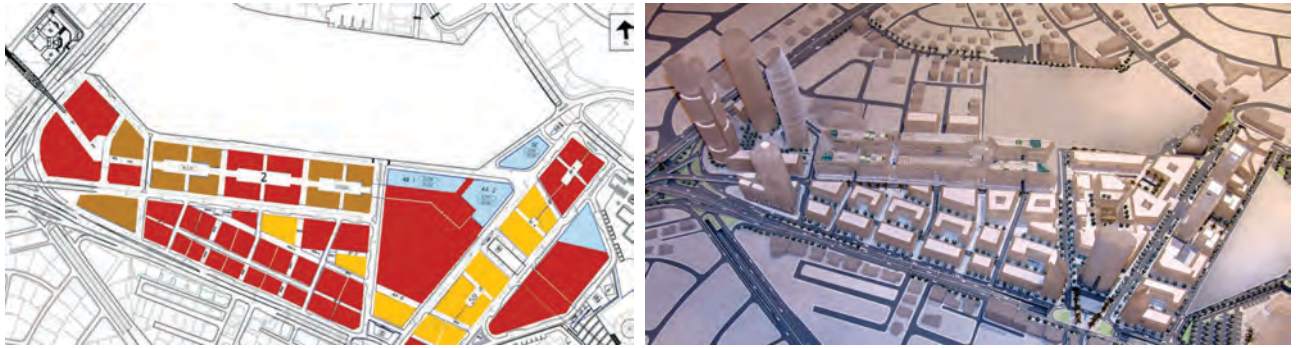


Figure 18. Main zones of Abdali, where red buildings means commercial, yellow buildings residential, and brown buildings mean serviced apartments. (Greater Amman Municipality, 2007).

Figure 19. General view of the Abdali urban regeneration project. (National Resources Investment and Development Corporation, 2004).

center (**Figure 16**). The site area is around 350,000 square meters, with a developed area of over one million square meters (**Figure 17**). The project will cost over US\$ one billion. The infrastructure for this project is nearly completed and the construction will start at the beginning of the year 2006 and is expected to take several years. Concern with economic performance has dominated the urban agenda of Amman since 2003 when the National Resources Investment and Development Corporation announced the launch of the Abdali urban regeneration project in partnership with Saudi Oger, a leading international developer (National Resources Investment and Development Corporation, 2004).

The political ideology of the city plays an important role in the globalization process, as Newman and Thornely, (2005) explain, which is occurring now in Amman. Economic growth leads to social satisfaction between high-medium and low-income groups in society (Smith, 2001). Amman presents an example of a global economic force that is taking place in a developed society. Amman is working to establish its position within the global economy. There are several factors leading the way towards good urban regeneration at Abdali, where property development forms a cornerstone of Amman's development strategy. Among them are:

1. The political stability of Jordan and the feeling of security.
2. The strong inward flows of capital investment from both foreign investors and the Jordanians working abroad.
3. The adequate infrastructure in nearly all aspects of life, in a context of rapid urban growth.
4. The absence of spontaneous settlements.
5. The cheap labor compared to other surrounding countries.

The Abdali site contains primarily four projects:

1. The office and retail buildings owned by Saudi Oger group, which will exist at the western part of the project, with a total built area of nearly 320,000 square meters, as seen in **Figure 18**. It will host two high rise buildings, one of which will reach 220 meters in height, the highest in the skyline of Amman. The Le Royal building completed in 2003, and the Jordan Gate towers due in 2006, will no longer continue to be the highest points at 110 meters and 150 meters respectively.

2. The American University of Jordan campus for higher education will occupy the northern part of the site. Its total area is about 140,000 square meters. It will host one skyscraper with only about a 100-meter height.

3. The library of the late King Hussein of Jordan, which will occupy the eastern section of the site near the Parliament and Court of Justice buildings. Its total area is about 60,000 square meters.

4. The rest of the developed area of around 510,000 square meters will be sold to local and foreign investors as shops and offices. The site will incorporate a well-designed plaza to the western part of the site. It will be connected to the eastern section of the site by a pedestrian spine, like the old bazaar of traditional Middle Eastern cities. It will host two pairs of identical towers at the edge of the site boundaries as a gateway to the project, as seen in **Figure 19**.

PREVIOUS STUDIES OF SKYSCRAPERS

Several European cities studied the influence of introducing skyscrapers to their skyline among them London. In 1999, a study to the existing situation of the location of skyscrapers within London was undertaken, followed by introducing a new map that contains proposals for new sites. The concepts of sustainability, which proposed by the Commission of the European Communities in 1990, and the compact city concept are tried in London at this stage (Breheny, 1997). The City of London was divided into several districts, of which each district was studied in detail. Urban design elements were examined on each district and the effect of erecting skyscrapers was studied accordingly. A map showing the location of the new proposed skyscrapers within each district is then suggested according to their impact on the city's urban design. Mixed-use developments of residential, retail and leisure facilities started to take place to result in the urban village forum explained by Aldous (1992), which formed a key component of sustainability not only in London but also in the UK.

The international and high technology styles have accompanied nearly all-new skyscrapers and became the landmark of the late 20th and 21st centuries' architecture (McNeill, 2004). Many architects involved in designing new skyscrapers, among them Norman Foster, who influenced several cities' skyline at London, Paris, Hong Kong, Riyadh, Dubai, and other cities (McNeill, 2005). Norman Foster is also designing the highest skyscraper of 220 meters high at the Abdali site in Amman, as this study will show later. Evenson (1981) commented that for many architects modern cities are distinguished by tall buildings or skyscrapers. The television tower in Riyadh, built in 1980, and the two skyscrapers in Riyadh Al-Faisaliah and the Kingdom are skyscraper examples designed by famous architects at the international level that redefined the skyline of their city. In Dubai, several high-rise buildings were erected that had international style that introduced a completely new skyline to a typical Middle Eastern city as seen in figure 20 (International Bank, 1995). These cases are considered examples on the wide spread of international style that can be anywhere or in any city. What this research is looking after is the correct balance between the international style of skyscraper and the local traditional architecture. The good selection of site for a skyscraper, use of available open space, the adaptation of local environmental conditions, and the design of good aesthetic shape should be taken into consideration at Middle Eastern cities future development (Abu-Ghazalah, 2006). Skyscrapers have spread throughout the world despite vast differences in social needs, beliefs, cultural attitudes, physical environment and climate. These elements differ from one region to another and create a traditional architecture for every society, casting doubt regarding the trend of universality in high-rise buildings (Hanida, 1994).



Figure 20. Skyline of Dubai city. (Federation of United Arab of Emirates Chambers of Commerce and Industry, 2006).

ANALYSIS OF AMMAN SKYLINE:

Amman skyline can be divided into 5 sections according to the natural topography:

The City Center Skyline

It is the location where all valleys meet, it is relatively low in height and characterized by residential and commercial buildings that do not exceed 10 floors or 35 meters (Figure 21). The Philadelphia Hotel is the only high rise building that reach 40 meters located at the city center built before 1966 and demolished in 1988 (Municipality of Greater Amman, 1987).

The Northern Section Skyline

It consists mainly of mountains whose heights reach 900 meters above sea level that is dominated by residential and educational buildings where no skyscrapers exist (Figure 22).

The Western Section Skyline

This part of the city has a height of over 1000 meters above sea level and has the same climate as the Mediterranean Sea with good agricultural land. It contains the high-income residential sector and many high-rise luxurious hotels (Figure 23). Jordan Intercontinental hotel and the Insurance Company building in Zahran district are the only two high rise building erected before 1966 (Al Abidi, 1995). Between 1966 and 1979, eight high rise buildings varying from 40 meters in height to almost 90 meters were erected in the western section of the city. The highest of them was the Tower Office Building in Zahran district. Five of these high rise buildings were hotels. During the 1980s, only four high rise buildings were found varying in height between 30 and 50 meters (Bani Hani, 1996). During the 1990s, the numbers increased to 16 reaching almost 100 meters in height. The location selected for the high rise building can be in any part of the city, regardless of the land use plan laid out by the Greater Municipality (Municipality of Amman, 2002). The high rise building could be easily erected next to a residential building or plot by an administrative decision. The allowable height of the high rise can also be easily increased according to an administrative decision. Many administrative decisions can be easily taken, thus confusing the whole planning theme of the City of Amman. The 21st century skyline of Amman began with erecting the 110 meters high Le Royal (Figure 11) and will continue in building the two towers of 150 meter high Jordan Gate (Figure 15). The seven new skyscrapers of Abdali, located in the western section of the city, vary in height from 100 meters to reaching 220 meters. The 220 meters skyscraper will become the highest in Amman. A study by Greater Amman Municipality in 2007 to the

Figure 21. City center skyline at Amman. (Greater Amman Municipality, 2007).

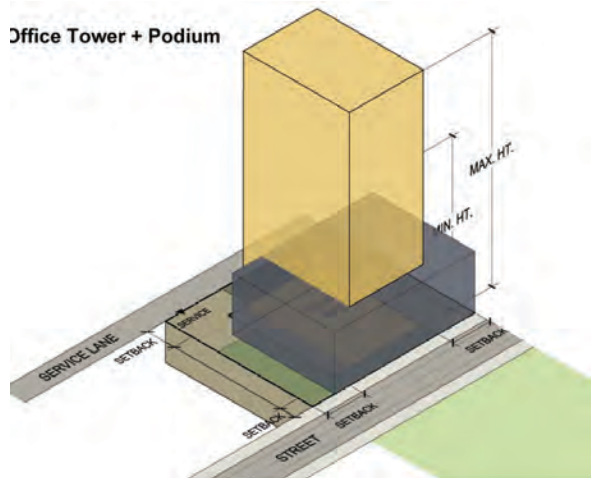
Figure 22. Northern section of Amman skyline. (Al-Ghazalah, 2007).





Figure 23. Western section of Amman skyline. (Al-Ghazalah, 2007).

Figure 24. A study to the maximum height according to its surroundings. (Greater Amman Municipality, 2007).



location of the future skyscrapers (Figure 24) insist that the minimum width of the street next to it should not be less than 32 meters to avoid the problems of Le Royal and Jordan Gate mentioned before. It also specifies the maximum height of high rise building according to the existing topography of the area selected for building.

The Southern Section Skyline

It is considered as a natural expansion of the Eastern Desert, with a maximum height of 700 meters above sea level. It is the largest section of the city of Amman where most of the building use is compacted residential. The high-rise buildings are rare in this area (Figure 25).

The Eastern Section Skyline

It is also considered as a natural expansion of the Eastern Desert, with a maximum height of 600 meters above sea level. Most of this area has low and middle-income residential buildings, where maximum height does not exceed four storeys with no skyscrapers (Figure 26).

Abdali Skyline

Despite the topography of Amman, which consists of several hills, the human scale can still be seen and felt all over its urban fabric, except for part of the Abdali district, near the city center (Figure 27). Figure 27 shows the existing situation of the Abdali district before the suggested project is implemented. It should be mentioned here that the demolition of the

Figure 25. Southern section of Amman skyline. (Al-Ghazalah, 2007).

Figure 26. Eastern section of Amman. (Greater Amman Municipality, 2007)



The new skyscrapers (Figure 28) will gradually change the human scale of the skyline of Amman. The Abdali urban regeneration site is considered an extension of the city center of Amman. The developed site will start to erect new skyscrapers at the edge of its boundaries.

Figure 27. Abdali skyline looking towards east. (National Resources Investment and Development Corporation, 2004).



existing building had been completed at the end of 2006. Since then the infrastructure is taking place and nothing from the new design has been constructed yet.

Two identical towers will be erected on the southern boundaries of the site. Two other twins will be built on the eastern boundaries of the site near the new plaza that will connect the new project to the existing buildings of the Parliament, House of Justice and King Hussein memorial library. Most of the inside development height will not exceed eight floors, or 30 meters. It is not yet clear why the planners decided to erect an all new skyscraper at the edge of the Abdali urban regeneration project. The resulting skyline will be different from other western model skylines where the highest buildings are usually at the center. Mostly the western skyline image follows the “value of land” diagram as Gosling and Maitland (1984) explained.

Factors Influencing Amman Skyline

a. The Natural, Social and Economic Factors:

Obviously there are many factors that shaped the Amman City skyline. Nature is seen as a primarily factor, where the natural topography determine the city skyline. The social factor has a great influence in determining the various densities of districts (Lynch, 1960). It is obviously seen in the eastern and southern section of the city of Amman, where low and medium housing projects dominate the city skyline. The economic factor is also associated with the social factor, where the existence of high rise buildings follows the value of land. The high value of land forces developers to erect high rise buildings to reduce cost, as widely seen in the western section of Amman city where the value of land reaches recently US\$ 1,400 per square meters in some commercial areas at west of Amman.

b. The Legislation Factor:

The recent building regulation amendments in the year 2005 paved the way towards erecting skyscrapers. The Law number 21 for the year 2005 allowed the construction of a high rise building in any space in the city of Amman, regardless of its original land use. This means that constructing



Figure 28. The design of one of the proposed skyscrapers at Abdali. (Greater Amman Municipality, 2007).

high rise buildings in residential quarters is not prohibited. The Law 21 put some conditions for constructing high rise buildings such as the existence of a street of not less than 16 meters in width next to the high rise building or the existence of two streets of not less than 12 meters in width. The Law also approved constructing high rise buildings of a height not more than 90 meters in any place at Amman, but with some further conditions (Law number 21 for the year 2005). For the Abdali urban regeneration project this Law will not be applicable. A new completely building regulation will be set up allowing constructing a skyscraper with any height.

c. Building Materials Factor:

The introduction of new materials and building techniques affected Amman's skyline, as the provisions for building a skyscraper became much easier. The use of steel, aluminum cladding sheets, double glazing and other new materials instead of stone and concrete blocks paved the way towards high rise buildings at Amman, ignoring all traditional building material and techniques.

MAJOR FINDINGS

General Discussion

The nature, which is seen as a primary factor in determining the Amman skyline, is important at Abdali because of the site's height above sea level. Although the Abdali site is adjacent to the city center, its site is approximately 900 meters above sea level, thus constructing high rise buildings within its boundaries will be visible at a far distance from Amman. The urban fabric existing around the Abdali site is for medium housing, and its density is not compacted. The value of land is considered high in relation to other sites at Amman. The approximately cost of land is about US\$ 1200 per square meter (Ministry of Commerce and Industry, 2005). Several international architectural firms are invited to design the seven skyscrapers at Abdali, among them Foster Association who designed several high rise buildings in the Middle East and around the world. The Greater Amman City building regulation will not be applicable at this site and a completely new building regulation will be set up allowing construction of skyscrapers with any height. The previous point mentioned about the spread erection of skyscrapers throughout the world despite vast differences in social needs, beliefs, cultural attitudes, physical environment and climate should be stressed here. These elements differ from one region to another casting doubt regarding the trend of universality in skyscrapers.

Survey Discussion

This research utilizes a survey of public opinion from both specialists in the field of architecture and planning, and other individual inhabitants at large, as seen in **Table 1**. In question number one, 68% of specialists think that the new Abdali seven skyscrapers will introduce a desirable skyline for the City of Amman, while 84% of inhabitants think the same. Most people who participated in the survey would prefer to see the new skyscrapers for commercial use. The percentage from architects and planners is 78% and 89% from local inhabitants, contrary to question number five, where only 28% of specialists and 45% of inhabitants prefer their home to be in a skyscraper. Residents at Amman prefer to live in a single family home if they can afford it, and in a small size residential building that has six to eight flats, as evident in question number six. The percentage from specialists and inhabitants is 92% and 87%, respectively.

Questionnaire		Architects & Planners		Inhabitants & Residents	
		Yes %	No %	Yes %	No %
1.	Do you think that Abdali redevelopment project will introduce a desirable city skyline?	68	32	84	16
2.	Do you like to see skyscrapers for commercial use at Amman?	78	22	89	11
3.	Do you like to see more than seven skyscrapers at Abdali site?	82	18	90	10
4.	Do you like to see modern image and style of the new suggested skyscrapers?	72	28	85	15
5.	Do you like your home to be in a skyscraper?	28	72	45	55
6.	Do you like to live in a small residential building of not more than eight flats or four storeys?	92	8	87	13
7.	Do you think that Abdali redevelopment project should take the public opinion in its design?	82	18	68	32
8.	Do you like to see in Amman the highest skyscraper of the World?	75	25	88	12
9.	Do you think that Law 21 for the year 2005 studied the high rise conditions for Amman City correctly?	21	79	35	65
10.	Do you like the human scale of Amman City skyline?	94	6	83	17
11.	Do you think that Abdali urban regeneration project will change the human skyline of Amman City?	98	2	74	26

Table 1. Questionnaire on Abdali urban regeneration project, which will incorporate the highest skyscraper at Amman, where total for the first cell is 125 specialists and for the second cell is 250 participants. (Al-Ghazalah, 2005).

Effect of the Seven Skyscrapers and Property Capital on Abdali Skyline

Inhabitants of Amman like to see skyscrapers in their city skyline, as seen in question number three. Almost 82% and 90% from specialists and inhabitants, respectively, supports that. This is in spite of their view on the effect of skyscrapers on the human scale of the city, where 98% from the specialists and 74% from the inhabitants think that the Abdali project will change the human scale of Amman, as seen in question number 11. Question number 10 argues that residents of Amman like the human scale skyline of Amman, where 94% from the specialists and 83% from the inhabitants support this. This result may confuse us, but the author of this research thinks that residents of Amman in general like the shape of skyscrapers and their effect upon skyline but in certain areas and for certain uses only. Residents of Amman would also like to see the highest skyscraper of the world in their city, as question number eight emphasizes. Almost 75% and 88% from the specialists and inhabitants support this. The survey supports the use of modern design and style of the new skyscrapers as seen in question number four. 72% from specialists and 85% from inhabitants supports this. Traditional treatment to the seven skyscrapers is missing in all designs. There is no single skyscraper that contains or incorporates traditional treatment or solution in its design. Glass is obviously the most used material in exterior facades, and the climate conditions of the city are completely missing. Amman City is

located to the southeast of the Mediterranean Sea climate and at the edge of the Syrian Desert climate. Mainly two seasons prevail: winter and summer. During summer, temperatures vary from 20°C at night to 35°C during the day. During winter, they range from zero to 10°C, with relatively moderate amounts of rain, at only about 600 mm per year.

Legislation Argument

In question number nine, neither specialists nor inhabitants are satisfied with the new Law number 21 for the year 2005. This law, as discussed before, eased the construction of high rise buildings without any control regarding location and land use plan of the districts of Amman. 21% and 35% from specialist and inhabitants respectively see that this new law studied the construction of high rise buildings in a good manner. Neither specialists nor inhabitants are satisfied at seeing random organization to high rise construction in their city. Taking public opinion of citizens into consideration seems to be also missing in the Municipality of Greater Amman. In question number seven, 82% from specialists would like the Municipality to take their opinion on the Abdali urban regeneration project and 68% from inhabitants agree.

The 21st century skyline of Amman will not continue to be dominated by minarets and domes. The Le Royal building, the Jordan Gate buildings and the seven skyscrapers at Abdali, all exceeding 100 meters in height, will shift the skyline image of Amman towards economic impact. The shape and style of a skyscraper is so important in defining the city skyline as they have become the latest landmarks of the city. Using traditional Middle Eastern elements of the past, such as courtyards, mashrabiyyas, and wind towers in modern ways may reduce the impact of skyscrapers and provide for a better environment.

The human scale character of the city of Amman should continue in future developments, especially at residential quarters. Fortunately it is intact for the city center and other eastern, northern and southern sections of the city. The western section of the city is seeing the major change in its skyline. Mixed land use plans should be prevented. The relocation of all new proposed skyscrapers for the City of Amman in the future from the western section of the city to the Abdali district may assure the continuation of the human scale of Amman City. The abundant construction of high rise buildings at residential quarters will result in a homogenous skyline for the whole city.

DISCUSSION

Economic Perspective

Concern with economic performance dominates the urban agenda of most modern cities, but this objective is pursued differently according to the ideology of the community (Friedmann, 2000). Amman has followed distinctive development trajectories that reflected both the interactions of global forces and local community. The primary global force of Amman is the competitive international environment engendered by economic globalization that moves the city towards an attractive location for investment. This competition is manifested in city marketing strategies that impact the desire to attract multinational corporations and specialists. Amman's situation is a mixture between state control and economic liberalism in which urban development is determined by the planning

vision of attracting foreign investment and reducing restrictions to free enterprise.

Recommendation on Planning Level

The case study of London, mentioned before, where the City of London was divided into several districts in which each district is studied alone might pave the way for solutions to Amman and Abdali skyline problems. The study of urban design elements should be applied first on each district before deciding where to construct a skyscraper. A map showing the location of suggested sites for constructing new skyscrapers within each district should be then suggested according to their impact on the city's urban design, contrary to the existing situation where the investor decides the location of his skyscraper. The concepts of sustainability, which proposed by the Commission of the European Communities in 1990, and the compact city concept should be tried in Amman at this stage. This might put an end to urban sprawl and reduce the travel distance and cost. The European Union in 2004 has been looking at the re-designing and retrofitting existing urban areas to support sustainable development which might also be an answer to Greater Amman problems.

Legislation Criticism

As the high rise buildings of the 20th century started to dominate the city of Amman, economic functions took architectural forms in offices and businesses, and 21st century architecture at Amman continued this trend. 21st century high rise buildings at Amman are much higher than in the previous century, as in the cases of Le Royal, the Jordan Gate project and the seven skyscrapers of the Abdali urban regeneration project. Other studies conducted by the same author of this paper investigated the Le Royal building, the Jordan Gate twin towers and measured the expected quality of life of the district of the Abdali. The Le Royal building located at Zahran district, one of the most luxurious residential districts at Amman has torn the urban fabric of the district due to its small site, of only 4,000 square meters, for this large building. There was a big debate about its construction, but finally it was erected after paying a fine of US\$ 1.5 million. The Law number 67 for the year 1979, which paved the way for the Le Royal construction was criticized by the author and other local architects.

The new Law number 21 for the year 2005 is worse than the previous one in terms of the rules and conditions for constructing high rise buildings as we saw previously. The Jordan Gate twins who will be built by the year 2006 will be located at another site near the western section of the City of Amman. The author, in his research on this project, concluded that skyscrapers at Amman should not continue to be built in a spontaneous manner, adversely altering the human scale of the skyline of Amman. Several architects have emphasized the importance of the city skyline in urban design, among them Kostof (1991) and many others. Many of the factors that formed the existing historical urban fabric of Amman are constant and are relevant today as they were in the past. New skyscrapers in Amman should be located in one zone so as not to lose the human scale of the city. Although the seven skyscrapers of the Abdali are located in one district, other problems are raised, as this study points out.

The new Law number 21 for the year 2005 is obviously encouraging erecting high rise buildings in random fashion and in residential quarters as well. This should be altered so that definite sites will be allowed for constructing high rise buildings. The case study of London, previously

mentioned might be the answer to this problem. The Abdali site might be appropriate for locating high rise buildings in the city of Amman, but careful location within this district should also be studied. Real estate investors in high rise projects should be aware of the people's desire not to live in skyscrapers, since many of these new skyscrapers suggest building flats inside them. Public opinion of locals must be taken into consideration in future Municipality of Amman projects. The recent situation can not continue, as these people will be the main users in the future.

Social and Lifestyle Role

Although the disparity between social change and technological treatments to high rise buildings is of great impact at Amman, the desire to continue certain aspects of social life style in residential areas is seen, as the result of this study, as one of the main ideological priorities that should be anticipated at Amman. In other words the use of skyscrapers for residential purposes should be prevented and a much stronger administrative law should be introduced to Amman to ensure continuation of social aspects of residents.

The author of this paper conducted another research about the Abdali urban regeneration project by measuring the expected quality of life of the inhabitants. He concluded that it will not change many of the aspects of life of inhabitants at Abdali alone, but it will affect the whole city of Amman and alter its skyline. Several domains were investigated and selected for the proposed study after using Delphi Technique and Concept Mapping Technique. The participants think that the project will improve the economy and social life of people due to the large amounts of developed area. The construction of over one million square meters will require skilled laborers during building and, after construction; the project will stimulate growth in retail sales, business and commerce. The establishment of the American University at Jordan will stimulate growth in education. In the survey conducted in the research many inhabitants saw that the new redevelopment project will provide for a new and desirable concept in urban design. The new high rise buildings will introduce a completely new skyline for the district of the Abdali and Amman as a whole. At the end of the conclusions the author mentioned that the Abdali urban regeneration project might improve the quality of life in general but only to a certain level.

It is not the intention of this study to conclude prevention use of skyscrapers at Amman, but the careful location and usage should be studied carefully before implementing such a project. Skyscrapers are the symbol of the modern city for both architects and inhabitants (Frampton, 1981). The spontaneous location of these skyscrapers at the city of Amman is producing a bad image of the city skyline. The Abdali urban regeneration project that groups all new skyscrapers in one district might be seen as the answer for spontaneous distribution. The location of these seven skyscrapers inside the Abdali project is criticized in this study due to their location at the edge of the district. The gradual increase in height of these buildings is missing and their relationship to the adjacent streets is inappropriate. The relocation of these skyscrapers inside the district will minimize their effect upon urban design of the area. Their relationship with adjacent streets will be minimal and their incorporation within the city skyline will be much appreciated by both architects and inhabitants.

Survey Implications

The method of this research, which is based upon utilizing a survey of public opinion from both specialists in the field of architecture and planning, and other individual inhabitants at large, gives us a perspective on the views of the citizens of Abdali and Amman regarding new high rise buildings in their city. The local environment as seen by inhabitants is different from the view of the investor. Investors do not mind erecting skyscrapers for residential purposes, while local inhabitants cannot live in such large buildings. Clues for constructing high rise buildings are seen widely at this project where several buildings are designed for such purpose but with less height than our seven skyscrapers example. The sample, which consisted of 125 professionals and 250 inhabitants living around the Abdali district, stresses that, as seen in question number five, where 28% of specialists and 45% of inhabitants do not like their home to be in a high rise building. The several suggested buildings for residential use at the Abdali urban regeneration project should be intended for other purposes, or a serious problem will arise later.

Architectural Style Selection

Traditional treatments in architecture have obviously been missing at Amman's skyscrapers. The climatic situation, cultural beliefs, social and economic factors that formed traditional architecture in the past differ from one country to another, casting doubt upon the trend of universality in skyscraper design (Clark, 1980). The revival of the use of traditional elements of the past might be the answer to the design of the new skyscrapers in Jordan, and in the Middle East. The revival use of courtyards as in the example of the National Commercial Bank at Jeddah, the use of wind towers, the use of mashrabiyyas, the use of new materials that overcome the disadvantages of climate, like fiberglass and Teflon, are all seen as answers to the problems previously discussed.

The Urban Setting

A less tangible but final recommendation stems from the nature and topography of Amman, which is seen as a primarily factor in determining Amman skyline. Although the Abdali site is adjacent to the city center, its site is approximately 900 meters above sea level, and the construction of high rise buildings within its boundaries will be visible at far distances from Amman. This may introduce the required skyline of the 21st century of Amman City without adversely affecting the surrounding neighborhoods and residential quarters. It is not necessary to erect a very high building to be seen from all over the city to become the major landmark of the city as the elevation at Abdali assures this.

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EKONOMİK REFORM ARACI VE KENTSEL SİLÜET ELEMANI OLARAK GÖKDELENLER: ABDALİ YERLEŞİMİ ÖRNEK PROJESİ, AMMAN

Gökdelenlerin çevre sakinleri ve yatırımcılar tarafından gücün ve ekonomik güçlülüğün sembolü olarak algılandığı Ürdün'de, yakın zamanlarda ekonomik durumun iyileştirilmesi amacıyla yabancı yatırımcıyı teşvik edici bir ekonomik reform süreci başlatıldı. Bu makalede Amman kent merkezi yakınlarındaki Abdali bölgesinin yabancı yatırımcılar elinde gelişen kentsel dönüşüm (kentsel yeniden oluşum: *urban regeneration*) projesi, önerdiği yeni gökdelenler ve bunların kentin silüetine olan katkıları açısından değerlendirilmektedir.

Amman'ın ufuk çizgisi, Orta Doğu'nun öteki geleneksel kentlerinde olduğu gibi, 1990'lara kadar değişmeden kaldı. O zamandan beri konut mahalleleri arasında gökdelenler inşa etmek, kendiliğinden ve denetimsiz biçimde ortaya çıkan bir inşa etkinliği oldu ve gökdelenlerin, fiziksel çevre üzerindeki, kentin sosyal yaşamı ya da kentin ufuk çizgisi üzerindeki etkileri araştırılmadan gerçekleştirildi. Abdali'deki yeni

gökdelen, sonuçta kentin silüetini yeniden şekillendirecek ve yeniden tanımlayacaktır. Oysa kentin silüeti uzun yıllar boyunca oluşmuştur ve pek çok uygarlığın ürünüdür. Tarihsel, coğrafi, doğal, ekonomik, toplumsal, dini etmenlerle pek çok teknolojik boyut ve çeşitli planlama yönetmelikleri onun oluşumunu etkilemiştir. Bu çalışma, Abdali kentsel yeniden oluşum projesinde yalnızca ekonomik etmenin dikkate alındığını ortaya koymaktadır. Çalışma, Amman kentinin bugünkü silüetini bazı bölümlere ayırarak incelemekte, yerel mahalle sakinleriyle yapılan bir anket sorgusu yoluyla da bu yeni projenin mahallenin geleneksel imajını nasıl değiştireceğini bulgulamaya çalışmaktadır.