

Attributes of urban and environmental development and the role of greater Amman municipality

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This paper aims to concentrate upon the role of Greater Amman Municipality to achieve the urban and environmental development of the City. This Research investigates and analyze a group of Architectural projects within Greater Amman Municipality that had been built during the second half of the 20th Century such The Hussein Youth City, King Abdullah Park and King Hussein Gardens. The studied projects provided an approach towards the improvement of the urban environmental quality and management as well as the development of life quality of Amman city population.

تهدف الورقة الى التركيز على دور امانة عمان الكبرى في تحقيق التطور الحضري والبيئي في مدينة عمان ومدى اهمية التوسع للمدينة وتطوير خدماتها وذلك من خلال دراسة وتحليل وتقييم مجموعة من المشاريع المعمارية والحضرية في المدينة والتي نفذت في النصف الثاني من القرن العشرين، وخاصة المشاريع الكبرى كمدينة الحسين للشباب وحدائق الملك عبد الله الاول وحدائق الحسين وما تحتويه هذه المشاريع من فراغات حضرية ومنشآت ومناطق خضراء. ان هذه المشاريع التي تمت دراستها تقدم اتجاها وطريقة نحو تحسين نوعية البيئة الحضرية وإدارة المتنزهات التي تنهض بنوعية الحياة لسكان مدينة عمان.

Keywords: Environment, Green areas, Urban design, Urban landscape, Development

1. Introduction

Jordan is considered an arid, semi-arid country, with an area of about 89.000 km². Amman is the capital, which is located in the mid North Country [1-2], fig. 1. Rainfall occurs mainly in the winter season, with heavy rain in January and February. The rainy days start mainly in November and end in May. The mean annual temperature in Amman is 17.4C°. The population in Amman reached 1.864.450 persons in 1999 [3-4]. Intensity of rainfall in Amman varies due to the variety of the topographic features. Where as the amount of rain in the Western parts is greater than that of the eastern and southern ones. Topography of Amman is rather distinguished. It consists of a combination of hilly area, ranging between 725-1000m (asl), in addition to valleys and plain areas heading towards the desert in eastern parts [5]. The urban development of Amman city started in down town and in its surrounding seven hills at the beginning of the 20th century. In this stage, Amman witnessed an evolution of the building industry. Many administrative, governmental and political buildings were built [6]. Several

development plans were launched in Amman by the end of the 20th and beginning of the 21st centuries. These plans and projects offered large open spaces and green areas in the city and improved the environment of the residential areas of Amman's suburbs. The Greater Municipality of Amman played a major role of planning and applying these projects. For the purpose of this paper we chose three of Greater Municipality of Amman's projects to examine. The main objective of this research is to understand the role of these three projects in developing the quality of life and quality of urban environment of Amman.

2. Amman city development

The urban expansion of the city of Amman has accelerated throughout time. Notable irregular distribution of houses and buildings has taken place. In the year 1933, the Jordanian Emirate issued the city council by law number 243, which was responsible for the organization and the distribution of construction works within the municipal boundaries, figs. 2 and 3.

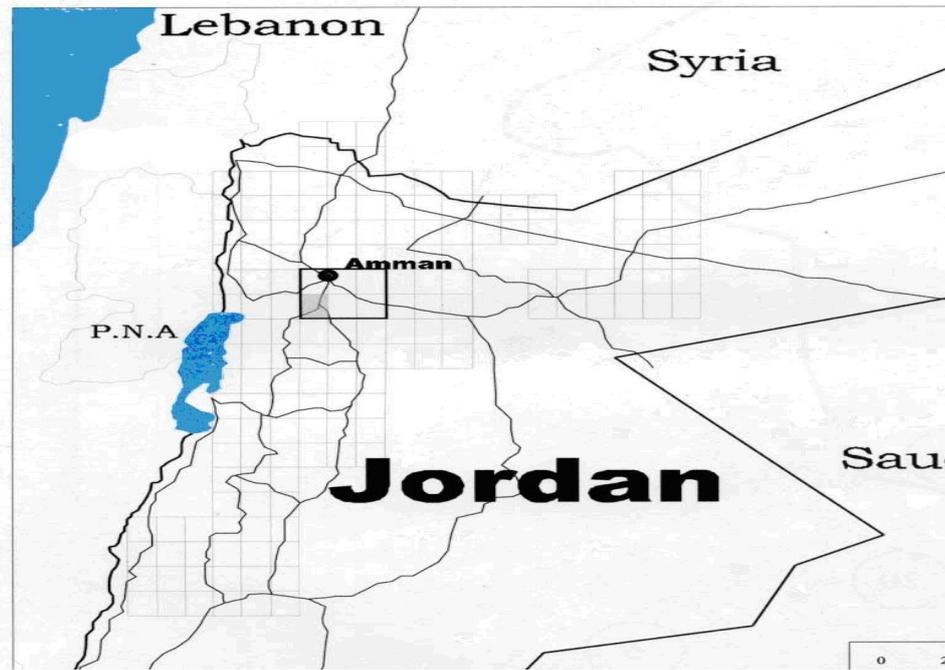


Fig. 1. Location of Amman city.

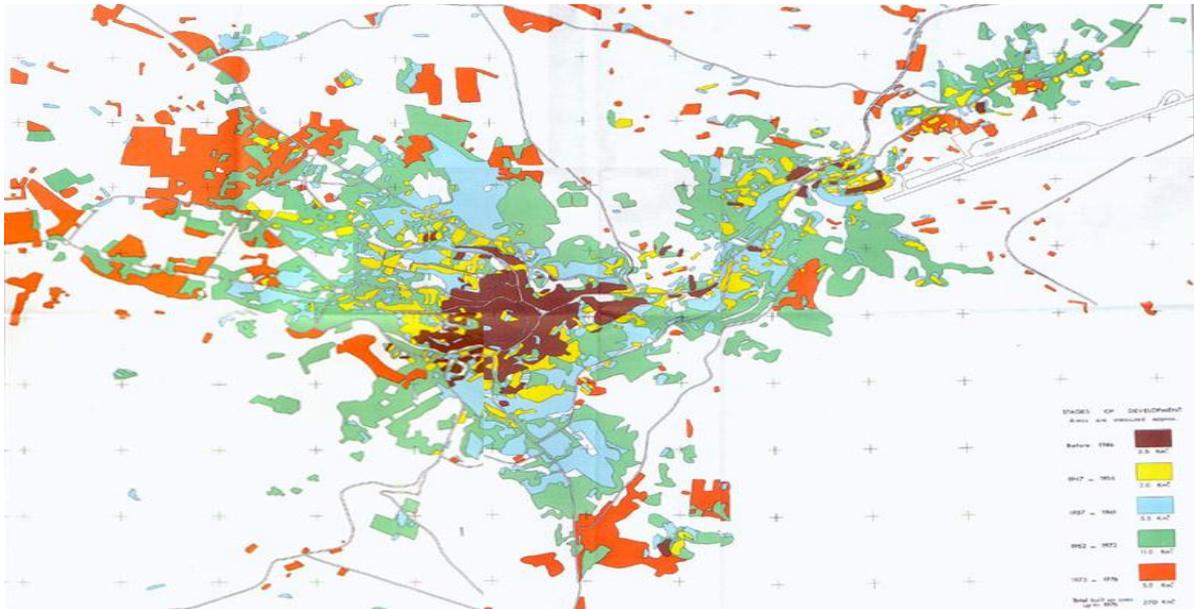


Fig. 2. Distribution of construction through time.

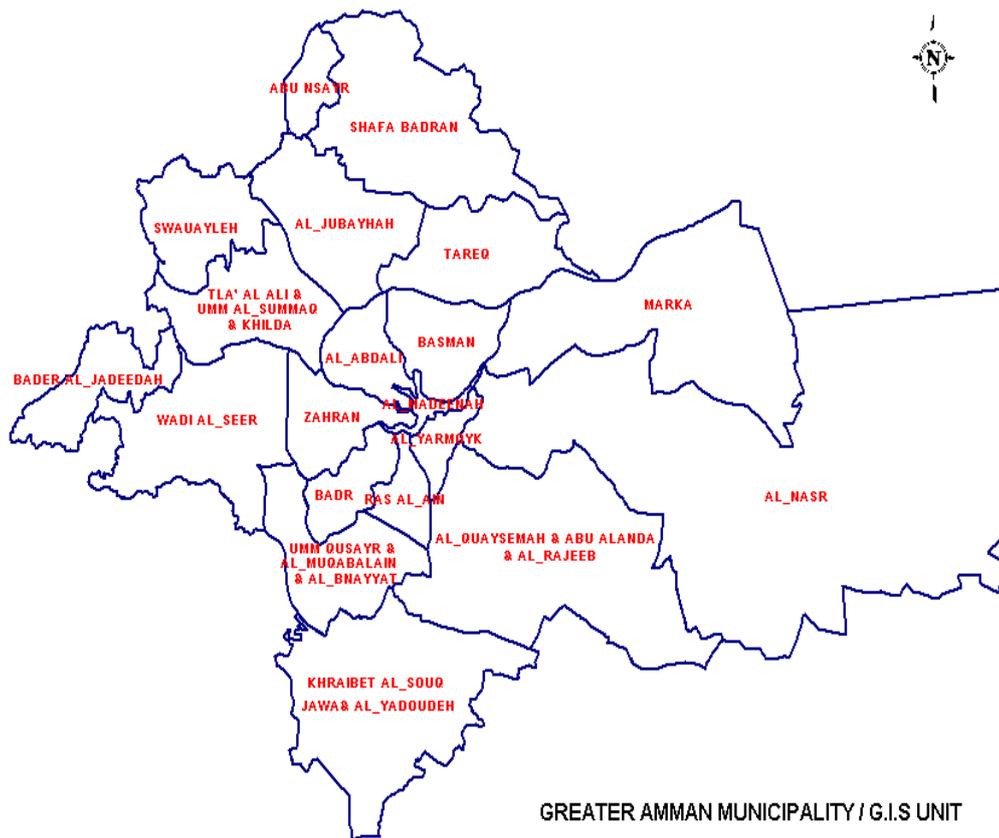


Fig. 3. Districts of Amman city.

Fast increase of construction activities occurred between the period 1948-1970, when two refugee influxes took place from Palestine to Amman and other Jordanian cities [7].

A period of development has started by the arrival of professionals, who have introduced visions of the modern city. Those professionals are graduates from universities such as Beirut, Cairo, Baghdad, Damascus, Europe, and USA. Distribution of buildings has become more regular while strict building regulations have been imposed, such as heights and plot coverage, set backs, density ...etc.

Duties of the municipalities were issued as a public law in the official newspaper of "Arabic Orient Journal", in 1925. The following are the main items of duties:

1. Architect Accomplishments: Included future vision of city planning, buildings, streets, in addition to the infrastructure, gardens, parks and planting of trees.

2. Sanitary Duties: Included cleaning of streets, collecting of wastes, burning of solid wastes, and monitoring of quality of food and beverages.

3. Civil Needs: Included rental of vehicles, and animal drawn carts, construction of hospitals and residents for old people.

Another dramatic increase in population was caused by a sudden refugee influx, in the year 1990, due to the Iraqi surge into Kuwait.

2.1. The role of greater amman municipality in urbanization and environmental upgrading

In 2002, the boundaries of Greater Amman Municipality increased from 86Km² to 630Km², with a population number reached over 1.8million person. The city of Amman is now divided into twenty districts. Fig. 3 shows

the distributions of these districts in Amman [8].

During the past 6 years, the Greater Amman Municipality was mainly concerned about keeping the city clean and beautiful. Duties of the Greater Amman Municipality have gone beyond the terms of development and enhancing the environment. Its duties have taken several measures for the beautification of the capital. These can be summarized as follows:

1. Construction of tunnels: Bridges to ease traffic congestion caused by the high rate movement of vehicles. Tunnels have been constructed in different bottle necks throughout the hills of Amman.

2. Construction of Public Edifices: aim to expand the cultural, political, economic and social activities. Such as the New Bader district, commercial buildings in Swifieh and Al Hussien Cultural Center in downtown Amman.

3. Street Furniture: As to add a touch of beauty to the city of Amman, the Greater Amman Municipality has erected many fountains and water features, such as the Hijaz and the Parliament building.

4. Biogas Project: The purpose of this project is to minimize air pollution, soil and ground water pollution that could occur from gas and sludge from the solid wastes in landfill. The Greater Amman Municipality has constructed the biogas project also to produce electricity. The project started in 1999 with an investment capital of 4 million US dollars. It was a donation from GEF and the Danish Government.

5. Sanitary Landfill at the "Ghabawi": For the past 6 years, the Greater Amman Municipality worked to decrease the effect of solid wastes on the environment at Russeifah. This has been done in concert with the recommendations given by the Lord Mayor of Amman and authorities in charge. Studies have been carried out to select a new location for sanitary landfill.

In 2003, and upon different technical studies, recommendations were made to select a new site in the Ghabawi area, which serves the conurbation of Amman, Zarqa and Russeifah.

6. Gardens: with the expansion of concrete buildings in Amman, the green areas have been decreased. The Greater Amman Municipality, established various public gardens and parks for different purposes: educational, entertainment and cultural, such as the garden of birds and the traffic gardens. In addition to non-specialized gardens such as al Hussien Youth City, there are 6 public parks for entertainment of public, with a total planted area exceeding 3000 dunums (1 dunum is 1000 m²). In 1984, the number of planted trees in Amman was 35,523 trees, with a gross planted area of about 180,000m², while the total number of small and large public parks reached 50 [9]. As for the areas of parks in the different districts in Amman, as well as share of green land per capita [10], are shown in table 1. Planting trees has the potential to reduce energy consumption for air cooling. This can cause an overall decrease in summer temperature. Thus reducing the production of tropospheric ozone and improving the quality of the environment. Planting trees could also improve our urban micro-climate; reduce air cooling energy consumption, lower smog levels and increase the production of oxygen [11].

7. Combating Desertification Projects: The Greater Amman Municipality worked on combating desertification through different measures. One of which is the green belt. This project includes the planting of thousands of dunums by trees on the eastern borders of the capital of Amman. This project started in October 1993, with undergoing planned stages.

The total planted lands exceeded 4731,000 m², and the number of planted area exceeded 350000 trees of different species, such as Pinus Halapensis, Cupressus Arizona and Eucalyptus Camaldulensis [10].

The purposes of such projects are as follows:

- Development and usage of land for agricultural purposes in east Amman.
- Combating desertification in eastern Amman.
- Prevention of environmental pollution due to quarry activities.
- Prevention of land slides and soil erosion.

- Rehabilitation of ecosystems in areas affected by environmental pollution.

8. Planting of Trees: The Greater Amman Municipality, continues to plant different areas with trees especially, along medians of main streets, edges of hillsides, valleys, intersections and highway interchanges.

Table 2, shows the number of trees and planted areas in gardens, parks, hillsides and other variable localities from 1994 until 2000.

2.2. Major environmental and urbanization projects in Amman since the sixties

For the past forty years, Amman witnessed the establishment of large urban projects within its most inhabited areas. These major projects contributed to the creation of more green areas in the midst of the urban context in Amman, which ensured a proper and

balanced development of its urban environment. Those urban green spaces were also used for recreation including social, cultural and athletic activities. Three of the outstanding projects are described below in some details.

2.3. The Hussein youth city

The Hussein Youth City is considered one of the most important urban features in Amman. It occupies 1200 dunums and was opened in 1968, fig. 4. This vast establishment was to create a climate in which an emergent intellectual, cultural, spiritual, social and sporting awareness could blossom [12].

King Hussein Sport City is considered as one of the most successful projects. This can be noted from the following points:

Table 1
Planted areas in Amman and share of green land per capita

No	District	Area (km ²)	Population/capita	Gardens	Total areas/gardens (dunum)	Parks	Share garden /capita
1	Madina	2.716	38456	5	87.905		2.3
2	Basman	15.542	172799	12	93.208		0.5
3	Marka	100.315	74529	7	103.838		1.4
4	Naser	61.259	143312	6	46.285		0.3
5	Yarmuk	5.989	136503	1	4.083		0.03
6	RasAin	9.875	96289	7	46.121	1	0.5
7	Bader	5.776	94689	3	30.199		0.3
8	Zahran	13.529	71429	8	57.196		0.8
9	Abdali	14.037	149789	11	72.074		0.5
10	Tareq	22.617	26390	5	26.219		1.0
11	Qesma Abualanda Ragib	61.032	57841	10	193.717		2.8
12	Qrebtsuq Gawa Yadude	51.067	56692	4	16.701	2	0.3
13	Umqsair Muqablin Buniat	24.061	20735	3	16.805	1	0.8
14	Wadisir	39.793	95147	5	83.409		0.9
15	BadrNew	19.280	8488			1	
16	Suweileh	26.250	53183	2	18.984	1	0.4
17	Tlaali Umsumaq Khilda	17.316	49933	8	62.000		1.2
18	Jubaiha	28.041	39060	4	26.800		0.7
19	Shafabadran	45.313	6502	1	4.900	1	0.8
20	Abunusair	6.573	18822	3	33.284		1.8

Table 2
Total of planted trees and planted areas in Amman

Year	Number trees	Area/dunums
1994	249500	1296
1995	207422	650
1996	263644	1065
1997	220350	380
1998	135596	543
1999	192734	821
2000	67957	2397

-Maintenance and keeping of green planted areas in a dense, crowded urban area.

-Improvement of environmental conditions especially air quality, despite of the surrounding high density of vehicular traffic. [13].

-Attraction center for sports and cultural activities.

-Attraction place for picnicking and entertainment for common people.

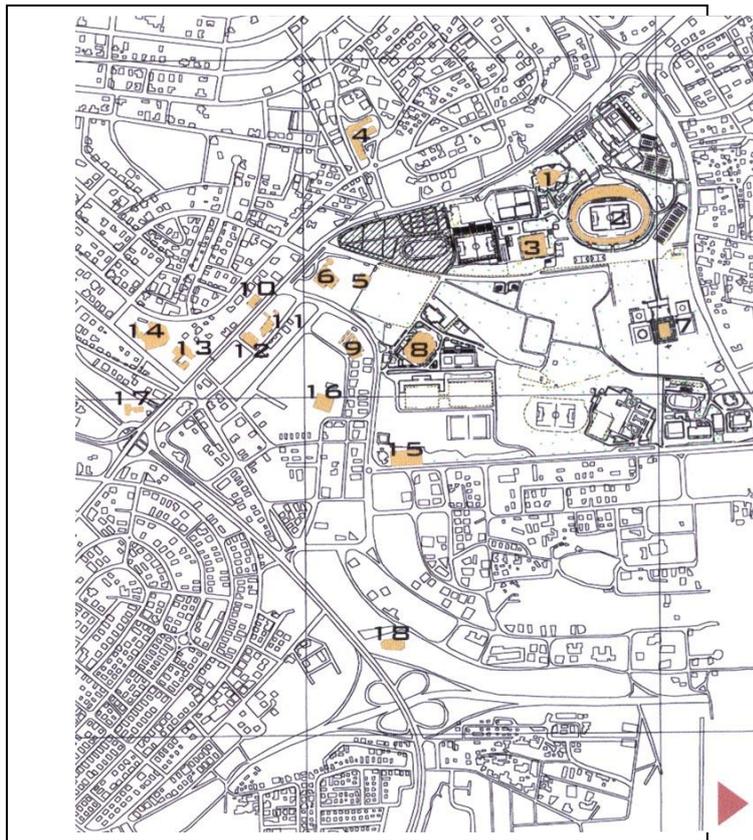
King Abdullah Park: It's a unique blend of shopping, commercial facilities together with cultural and leisure activities, plus extensive landscaped parklands [14].

The complex is superbly located in a highly sought after area of the Shmaisani district, and is prominently situated adjacent to Wadi Saqra. This site is bounded in two

sides accessible from both sharif Nasser Bin Jamal street and Shakir Bin Zaid street. It occupies 82 dunums of land, where as the construction area occupies 27 dunums, 52 dunums public garden and 3 dunums of land for children park, see fig. 5.

This project is divided into nine major parts as follows:

Shops: The major feature of commercial aspects of development is the shopping mall. This forms the major North/South axis of the development and opens out at its northern end into the pedestrian concourse. Complete services are provided for shops such as electricity supply, telephone communications, fire detector, alarm point, as well as drainage connection, water supply, mechanical ventilation, heating and air conditioning.



1. Palace of culture
2. Amman stadium
3. Sports palace
4. The specialty hospital
5. High council for youth
6. The royal cultural center
7. The Marter Mausolium
8. Prince Hamza hall
9. Ministry of interior
10. Arwad hotel
11. Grand palace hotel
12. Regency hotel
13. Palestine hospital
14. Marriot hotel
15. Fire station
16. Amman stock exchange

Fig. 4-a. Master Plan of Hussein youth city.



Fig. 4-b. The Hussein youth city, ariel view.

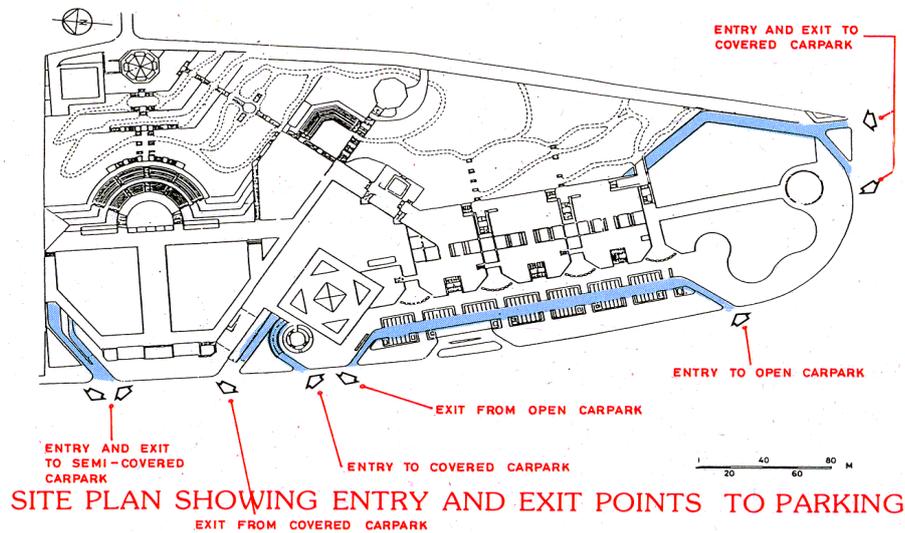


Fig. 5-a. Master plan of King Abdullah park..

Supermarket: It is the principal focal point of the whole complex, being not only at the center of the park, but being also the largest and most prominent building of the complex.

Kiosks: A large Kiosk is located within the landscaped parkland. This Kiosk is hexagonal shaped, has a steep pitched conical roofs and it is used for the sale of light refreshments, soft drinks ...etc.

Kindergarten: The Kindergarten is ideally situated on one side of the triangular shaped pedestrian concourse. It is basically consisting of a fully enclosed patio, surrounded on three

sides by play rooms for children of different age groups.

Amphitheatre: The amphitheatre is an impressive structure built into the natural hillside. It is a semi-circular open theater on the lines of the original Greek and Roman.

Amphitheatres

Restaurant: It is an octagonal shaped restaurant and is situated at the highest point of the park. The large external paved terrace offers a captivating view over the whole complex below.



Fig. 5-b. King Abdullah park.

Car parking facilities: There are three main areas for car parking. All are controlled by electronic entries and exit barriers.

*Grotto and Luna Park :*It is an artificial cave system, built into the steep hillside adjacent to the Luna Park.

Children theatre and skating ring: The children theatre is situated adjacent to the Luna park and Kindergarten. It is easily accessible from the main pedestrian concourse. The open theatre is simply designed, having a flat square "stage area", 20 square meters and serves over 950 people.

King Abdullah project started in the year 1984, and was finished in the 1988. The main objective of such project are as follow:

1. Delineation of cement constructions.
2. Increase of green space area, in crowded urban areas.
3. Improvement of the environment by planting trees.
4. Construction of more commercial projects and car parks.
5. Center of cultural and entertainment activities.

The experiment showed some sets backs concerning the environment such as;

-The construction has exceeded the green area, which has nearly vanished.

-The project seems to be designed and constructed for the elite, with high cost materials.

-The project has created traffic jams around it.

After using these buildings for many years, one can find that both buildings and urban spaces have transformed in many ways. Functions and space activities altered, and dense congregation of local restaurants and amusements have emerged, thus attracting both poor and middle class people.

The failure of the original design scheme to meet its principal aims, led to the failure of the project as whole. The objectives sought by planners and city officials have not fulfilled the proposed output of the project, while the basic requirements and community needs have not been mentioned. Consequently, this project can not be considered successful.

King Hussein park project: It is considered a unique location where His Majesty Late King Hussein has recommended to establish a public park in it.

The Jordanian public has been delighted to receive such a donation from H.M. King Abdullah (II). The area of this park is 700dunums. Fig. 6, shows the distribution of buildings and propose planted areas, in the King Hussein Park. [14].

The project started in 2002, with a proposed green area of 70% of the total size. Fig. 6 shows the different function of the project; thereby the major activities in the project are as follow:

Royal car museum: Most part of the museum was constructed in the natural setup where rocks, soil and plants, emerge with beautiful scenes of nature, fig. 7. The museum exhibits contains cars from late King Hussein Private Collection. Some of the cars are related to historical events which took place in Jordan.

Cultural village: The village is considered as a group of traditional buildings designed in a modern style, connected with covered passages. Traditional handicrafts which are about to disappear are displayed. Restaurants and some other services are included in the village, fig. 8.

In the middle of the village, the Jordan Pavilion exhibited in the Hanover Expo 2000 was reconstructed, with all sculptures and other ornaments which are related to Jordan's history and culture.

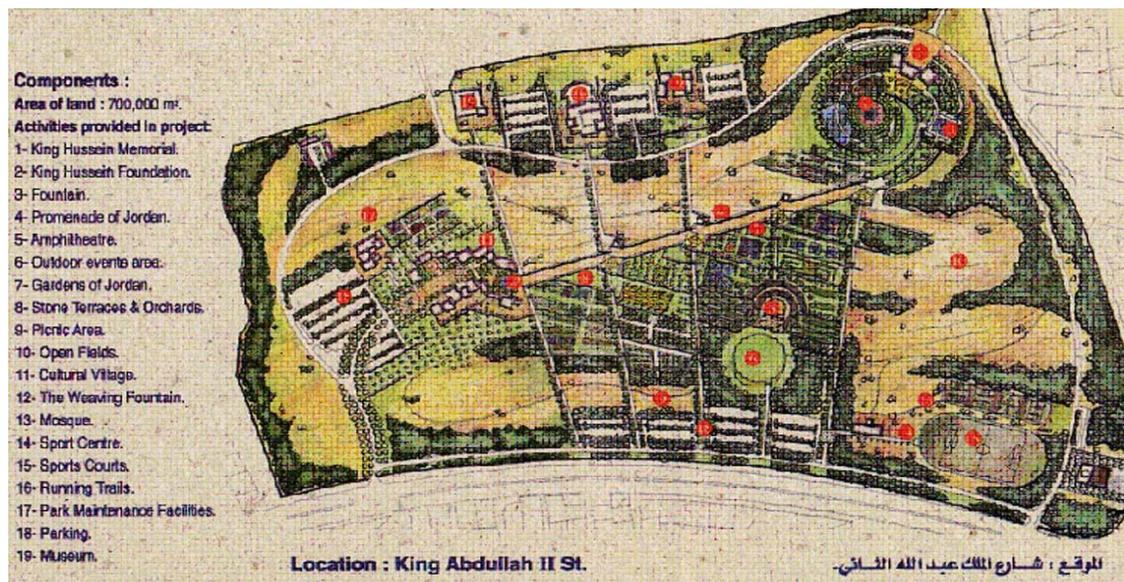


Fig. 6. King Hussein garden project.



Fig. 7. The royal car museum.



Fig. 8. The cultural village.

Promenade of Jordan: The promenade of Jordan extends 400m in length. It describes the cultural trip throughout history, and eventually reaching the King Hussein Memorial. This is expressed by different paintings and works of Jordanian artists.

Gardens theme: They are located in the middle of King Hussein Park adjacent to the area along the promenade of Jordan from the eastern side. They display aqueous features, plants and unique trees. They are located on different levels where they resemble historical epochs and different ages.

Sport Courts: They are designed with different courts to the practice of sports for youth and children. Sport courts grounds for as football, basketball and volleyball, fig. 9.

3. Conclusions

The Greater Amman Municipality has transformed the capital city of Amman into a modern metropolitan, with modern roads, communication networks, and a highly advanced infrastructure to cater for the needs of a growing modern society.

For the past 6 years, the Greater Amman Municipality has intensively worked to minimize the environmental pollution occurring from different sources, as well as combating desertification. Actually total planted areas reached more than 37,229 dunums, by the

year 2000⁽¹²⁾. The role of the Municipality has extended beyond the beautification of the city and the enhancement of its image. Planting of trees added a touch of beauty to the city. In addition, it improves the quality of the environment. Future plans may include the planting of special drought resistant trees so, to provide more shade, decreasing temperature and helping the purification of air. Improving methods of irrigation can also be included in future plans; so as to reduce water consumption and lessens evaporation. The Municipality would encourage the public awareness concerns the urban environment, through sponsoring school campaigns that could promote such goals.

The enhancement of the urban environment is a reflection of an appropriate relationship between the green and the built up areas of the city. The Greater Amman Municipality has intensively worked to establish many urban parks within condensed residential areas.

On the cultural level, after choosing Amman as the Arab Cultural Capital for the year 2002, the Greater Amman Municipality witnessed the opening of the Culture Avenue in Shmeisani Area. A new pedestrian park avenue that spans a 360 meter-long street has been constructed including landscaping, paving, street furniture, as well as cultural and touristic landmarks on both sides of the

street. A summer theater for musical performances has been included. The design of the pedestrian avenue has focused on providing a linear cultural space with visual continuity. A flexible layout has allowed a free movement between the various elements of the design. The design also has utilized lighting, as well as semi-transparent materials to give a sense of lighting and to ensure visual flow. Another cultural landmark in the Greater Amman Complex down town fig. 11. It includes the town hall, the Hassien Cultural Center, the

Municipality Buildings, Al-Nawaffer Plaza, a Mosque, the National Museum, and a series of Plazas and Gathering areas.

In conclusion, it seems clear that in order to maintain a continuous image of modernity to Amman as one of the cleanest and organized Arab cities, and to ensure a proper balanced development schemes.

The future development of Amman depends on the collaboration between the Municipality and other public and private authorities.



Fig. 9. Sport courts.



Fig. 10. Cultural Avenue in shmeisani area.



Fig. 11. Al-Nawaffer plaza in down town Amman.

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