

التحليل الخرائطي لكفاءة توزيع المساحات الخضراء في مدينة بغداد (بلدية الرشيد حالة دراسية) باستخدام GIS

*م. د زينة جميل يوسف

الملخص

يكمن دور الخرائط في تحليل التوزيع الجغرافي والمكاني ، وابرار مدى كفاءة هذا التوزيع بما يلائم والحاجة للمستخدم ، فكرة البحث هو تسخير الخريطة لإبراز توزيع المساحات الخضراء واطهار دورها في تحقيق المتطلبات البيئية مع ابراز الخصوصية الثقافية والاجتماعية للمكان ، حيث تعتبر المساحات الخضراء احد انواع البنى التحتية التي يجب ان تتوفر في المدن .

Abstract :

The role of maps lies into analyzing geographical and spatial distribution, and confirming the efficiency of this distribution in a way that meets the needs of the user. The idea of the research is to depict the distribution of green spaces and to show up their role in fulfilling environmental requirements, with highlighting the cultural and social specificity of the place. The green places are considered one of infrastructures that should be available in cities .

Abstract:

The green and recreational areas are considered as lungs of the city in which you take your breathe. It is deemed to be an outstanding element for urbanization and it must be taken into consideration when planning and designing cities as a result of their environmental, economic, social and recreational significance . In this current study the green spaces and recreational areas are represented in gardens and parks as well as stadiums . The researcher has adopted the map in showing up the residential neighborhoods' adequacy within Al-Rasheed Municipality for these green spaces. The researcher has reached to several conclusions, most importantly , the lack of efficiency in the distribution of green and recreational areas, where there is discrepancy in the geographical distribution . There are residential neighborhoods where individual 's share got increased and surpassing the criterion set by the comprehensive development plan (5 m²) for each person at the level of neighborhood or residential district, and there are neighborhoods lacking green spaces and recreational areas.

Keywords: - Cartographic analysis, Green Spaces, Recreation Areas.

1-1-The problem of the research

Showing up the role of the map by using GIS in showing inefficiency in the distribution of green spaces and recreation areas within the municipality of Al-Rasheed.

1-2- Research Hypothesis

It is a preliminary answer to the problem of study in having the maps' ability to indicate the imbalances and proportion of the individual 's share in the green areas.

1-3- The Goal of the research

The aim of the research lies into evaluating and assessing the cartographic analysis for the green spaces distribution's efficiency in the area of the study

1-4- The Important concepts in the research

1-4-1 The cartographic analysis: It is the process of drawing the map and making the reader able to interpret it by using the specific cartographic symbols based on the symbols of the line and the position adhering the method of direction and changing the shape and color.

The analysis process is to be carried out via the symbols that exist in the map which represent the problem of the study

1-4-2- The Green spaces: - It is the green land of the city, and it is considered one of the most important urban uses that being dedicated and assigned for recreation purposes, known as the land that occupies green spaces surpassing the open spaces ⁽¹⁾.

Thus , the green spaces are essential to any city that seeks to achieve the element of comfort and prevention of many kinds of pollutants, besides , it is considered important areas for its residents ⁽²⁾

1-4-3- Recreation: - Means the operations or recreational uses done by the residents for recreation and enjoyment and spending their free time , their annual and weekly holidays ⁽³⁾

1-5-The Significance of Green Areas

1. Environmental importance: - It works to purify the air for being essential in the filtering of air pollutants , dust particles and having an impact on the mitigation of dust storms, as well as being important in reducing the temperature and raising the humidity , in addition to its impact on solar radiation through the process of evaporation. It has an importance upon maintaining soil moisture to reduce evaporation through shading, reduce the impact of sunlight on the soil, resulting in lower soil temperature, as well as improve air quality, increase oxygen and reduce the proportion of carbon dioxide.

2. Social importance: - For being park , it is a place where different classes meet for intellectual communication and reducing the pressures of life.

3. Economic importance: - It contributes into providing jobs within the parks and contributing into raising the physical value of the facilities that are located near the green areas.

4. Recreation importance: - It is considered important areas for recreation and entertainment in the leisure time by having the families spend some leisure time , enjoy beautiful areas , reduce the pressure of routine life and work.

1-6- Study Area (Municipality of Rasheed)

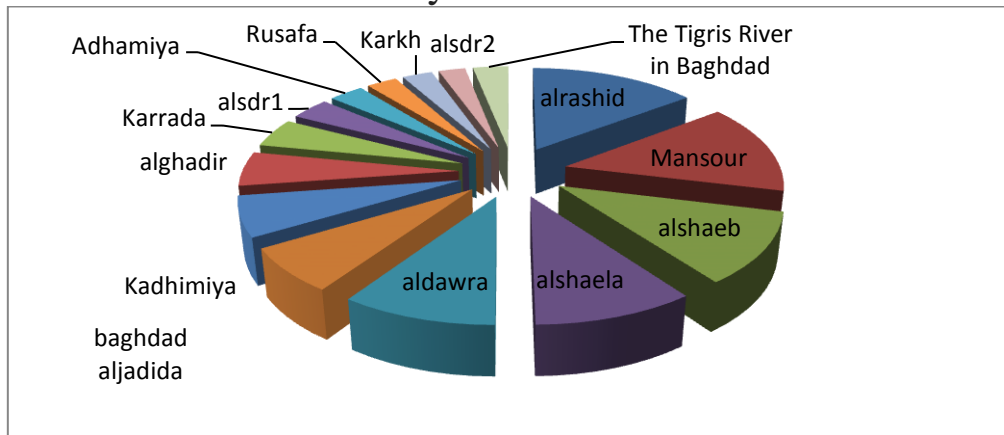
The study area is located in the city of Baghdad, the capital of Iraq, and it is one of the municipal departments of the Municipality of Baghdad. The city of Baghdad consists of 14 municipalities as shown in Table (1). The Municipality of al-Rasheed occupies the first place in terms of area amounted 13059.8665 hectares, 14%.66 of Baghdad area ⁽⁴⁾.

Table (1) Municipality departments in the city of Baghdad and its area for the year 2018

percentage%	Area H	Municipal Chambers	
14.66	13059.8665	alrashid	١
14.16	12610.4775	Mansour	٢
11.07	9860.6138	alshaeb	٣
10.01	8920.1033	alshaela	٤
9.62	8568.2317	aldawra	٥
6.87	6116.9992	baghdad aljadida	٦
6.29	5603.7086	Kadhimiya	٧
5.39	4797.174	alghadir	٨
4.56	4057.5681	Karrada	٩
3.48	3098.0688	alsdr1	١٠
3.05	2715.8467	Adhamiya	١١
2.69	2392.344	Rusafa	١٢
2.67	2373.52	Karkh	١٣
2.36	2102.6091	alsdr2	١٤
3.12	2778.1404	The Tigris River in Baghdad	
100	89055.2717	City of Baghdad	

Source: - Municipality of Baghdad, Division of Geographic Information Systems, 2018

Figure (1) Percentage of municipal areas in the city of Baghdad for the year 2018



Source: - The work of the researcher based on the data table (1)
Administrative Map - Scale 1/50000, 2018.

Through the map (1) and Table (1) and Figure (1) , it shows the location of Al-Rasheed Municipality in respect to other municipal units in the city of Baghdad. The study area is located to the southwest of the Tigris River, bordered to the east by Al-Dura municipality, from the north west ,Abu Ghraib district, from the south , Rashid district, from the west , Yusufiya. Baghdad international airport is located within its western parts and remaining parts of the airport located within Al-Mansour municipality⁽⁵⁾.

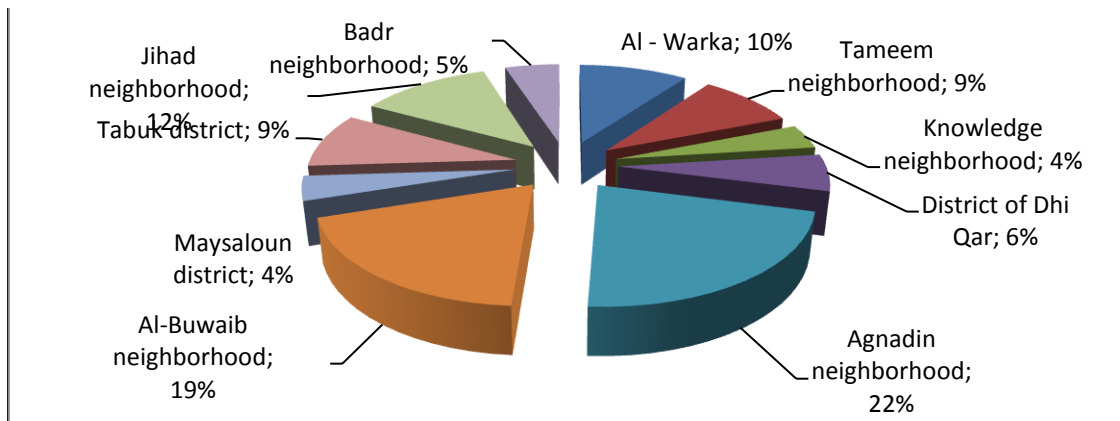
Al-Rasheed Municipality includes ten residential districts distributed among 49 residential districts as shown in Table (2) and figure (2) and map (2) which determine the residential neighborhoods and residential districts.

Table (2) Residential areas and their areas in the study area and their percentages for the year 2018

percentage%	common name	Area H	neighborhood
١٠	Al-Amel neighborhood	٦٧٢	Al - Warka
٩	The Bayaa	580	Tameem neighborhood
٤	Sédia	290	Knowledge neighborhood
6	Sédia	٣٩4	District of Dhi Qar
2٢	media	١٤٢٦	Agnadin neighborhood
١٩	Sédia	١٢٣٣	Al-Buwaib neighborhood
٤	the police	٢٩٠	Maysaloun district
٩	Martyrs	٦١٠	Tabuk district
١٢	Strive or Struggle	٨٢٧	Jihad neighborhood
5	Euphrates	٣٢٨	Badr neighborhood
100		٦٦٥٠	Total area of living

Source: Al-Rasheed Municipality Department, Department of Licenses and Licenses under Modern Numbering 2018.

Figure (2) Percentage of Neighborhoods in the Municipality of Rasheed for the year 2018



Source: Dependence on Table 2 Data

The table 2 , figure 2 and map indicate the largest residential neighborhood which is the neighborhood of Agnadin area of 1426 hectares by 22% and is currently called al-Saydiyah neighborhood that includes 9 residential districts , and the smallest residential neighborhoods area is al-Maarifa neighborhood, which includes one residential district with 290 hectares and ratio 4% , , the neighborhood of Maysaloun, which is currently called al-Shorta district, which includes five residential districts and an area of 290 hectares with ratio 4% o.

Thus , we can explain the most important uses of the land and the most area within the study area, by getting back to table (3) and figure (3).

Table (3) and figure (3) indicates that the residential use occupies the largest area within the study area to have its area reach to 2988 hectares and 22%.88 of the area of the study, while the Health use has occupied the lowest area with 11.1 hectare , 08% of the total area of the study area

Table (3) Urban Land Use and Percentages within the Municipality of Rasheed for 2018

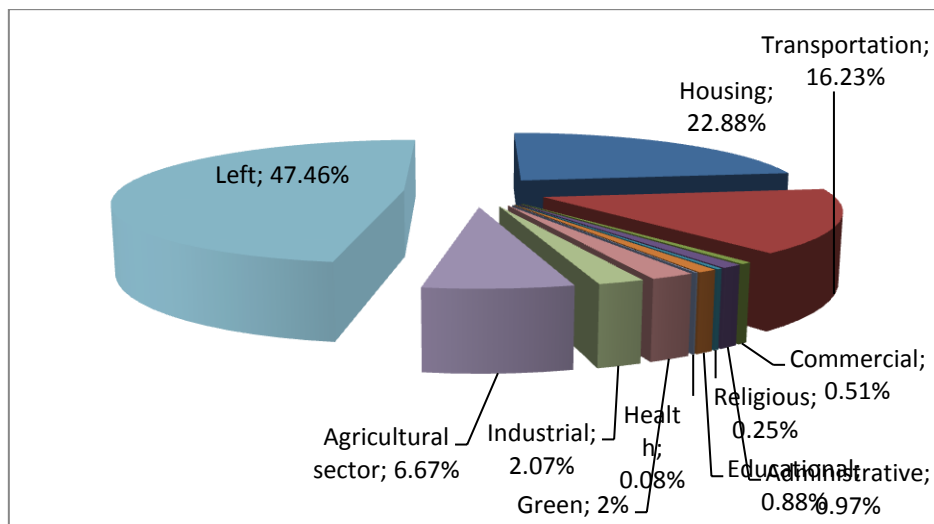
percentage%	Area H	Uses
22.88	2988	Housing
16.23	2119.1	Transportation
0.51	66.8	Commercial
0.97	127.3	Administrative
0.25	32	Religious
0.88	115.4	Educational
0.08	11.1	Health
2.00	260.9	Green
2.07	270.2	Industrial
6.67	870.7	Agricultural sector
47.46	6198.3	Left
100%	13059.8	Total

Source:

1. Baghdad Municipality, Base Design Section, Geographical Information Systems Division.

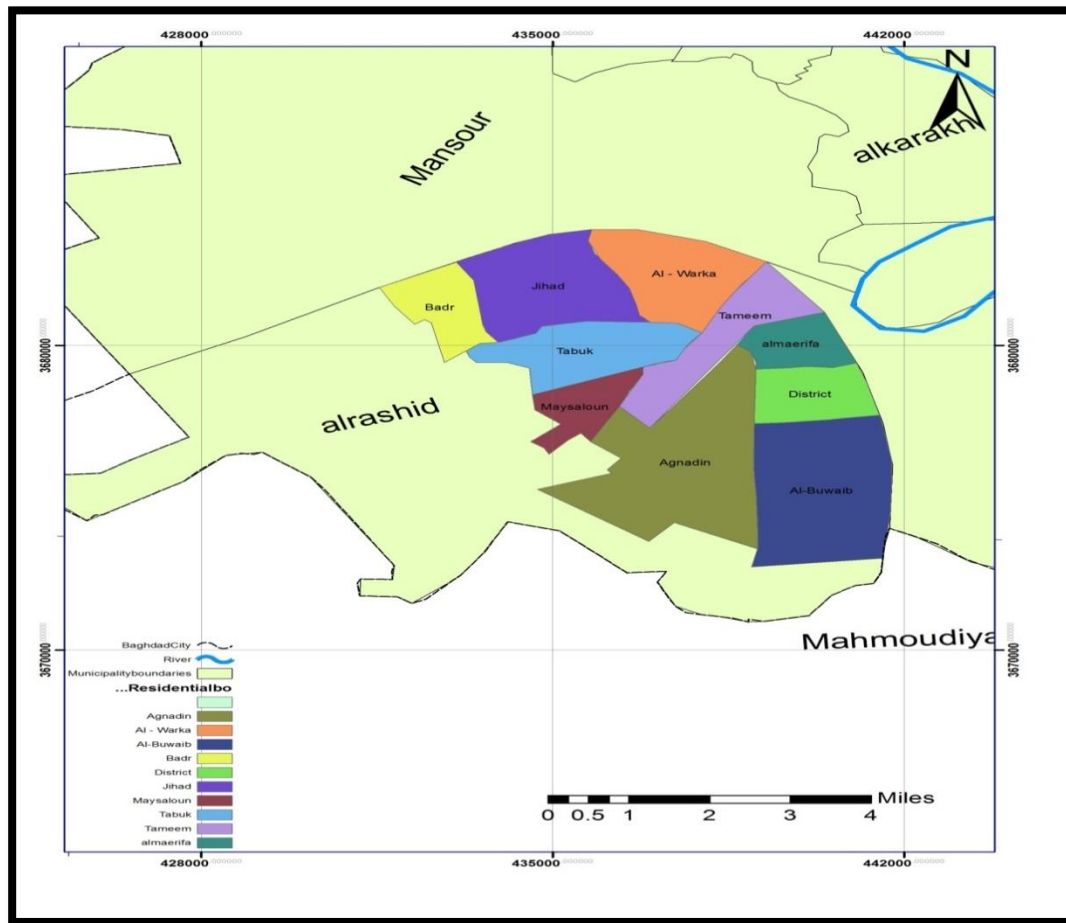
2- Al-Rasheed Municipality, GIS Division.

Figure (3) Percentage of Land Use in the Municipality of Rasheed for 2018



Source: Dependence on Table 3 Data

Map (2) Residential neighborhoods in the Municipality of Rasheed for the year 2018



Source: Municipality of Baghdad, Department of Geographic Information Systems GIS, Map of the Municipality of Rasheed for the year 2018.

1-7- Green spaces in the area of the Study

The green areas are considered important in each city owing to their functional efficiency and efficiency in specifying some of the climatic problems, hence it shows the effect of the use of green areas as recreational areas in addition to their environmental role provided to the population. By getting back to Table (3) and Figure (3), we find the total use of the green area in the study area is 260.9 hectare, with ratio 2% of the total area of the land uses in the study area. This area is distributed on ten districts. According to table (4), figure (4) and map (4), it has indicated the ratio of green areas for each residential neighborhood in the study area and individual's share based on the criterion set for the overall development plans for the city of Baghdad for the year 2030, which is 5 m² / person.

Table (4) per capita of green spaces m² / person in the residential neighborhoods of the municipality of rational for the year 2018

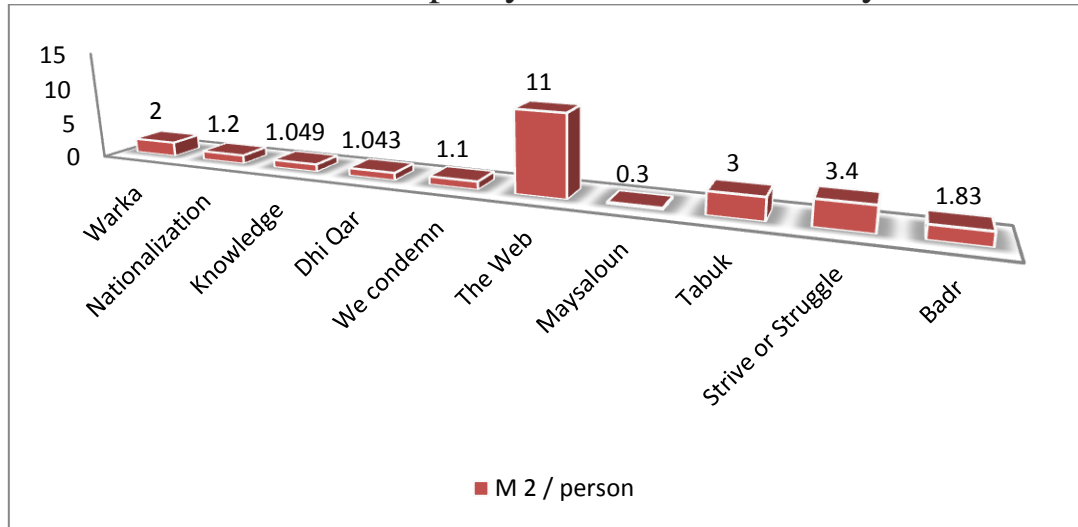
Per capita use is 2 m / person	Percentage of green areas%	Area of green spaces ha	population	Area H	The name of the neighborhood
٢.٠	٣٦,١٧٢	٤١.٢	١٩٧١٠٠	٦٧٢	Warka
١.٢	١٤,٧٤٩	١٦.٨	١٣٦١٠٤	٥٨٠	Nationalization
١.٠٤٩	٣,١٦٠	٣.٦	٣٤٣٠١	٢٩٠	Knowledge
١.٠٤٣	٣,٢٤٨	٣.٧	٣٥٤٦٦	٣٩٤	Dhi Qar
١.١٠	١٠,٩٧٤	١٢.٥	١٣٠,٤٦٣	١٤٢٦	We condemn
١١.٠	٢,١٠٧	٢.٤	٢١٦٧٢	١٢٣٣	The Web
٠.٣	٠,٢٦٣	٠.٣	٩٩٠٠٠	٢٩٠	Maysaloun
٣.٠	٢,٠١٩	٢.٣	٧٦٥٠٠	٦١٠	Tabuk
٣.٤	١٩,٣١٥	٢٢	٦٣٢٠٠	٨٢٧	Strive or Struggle
١.٨٣	٧,٩٩٣	٩.١	٤٩٥٠٠	٣٢٨	Badr
	١٠٠	١١٣.٩	٨٤٣٣.٦	٦٦٥٠	Total
٣.٠٩		General Average			

Source :

1- Municipality of Rasheed, Planning Division, Planning and Follow-up Department, Estimates of Municipal Councils for 2018.

2 - The Municipality of Baghdad, the comprehensive development design of the city of Baghdad until 2030, p. 76.

Figure (4) per capita of green spaces m² / person in each residential district in the Municipality of Rasheed for the year 2018



Source: Dependence on Table 4 data.

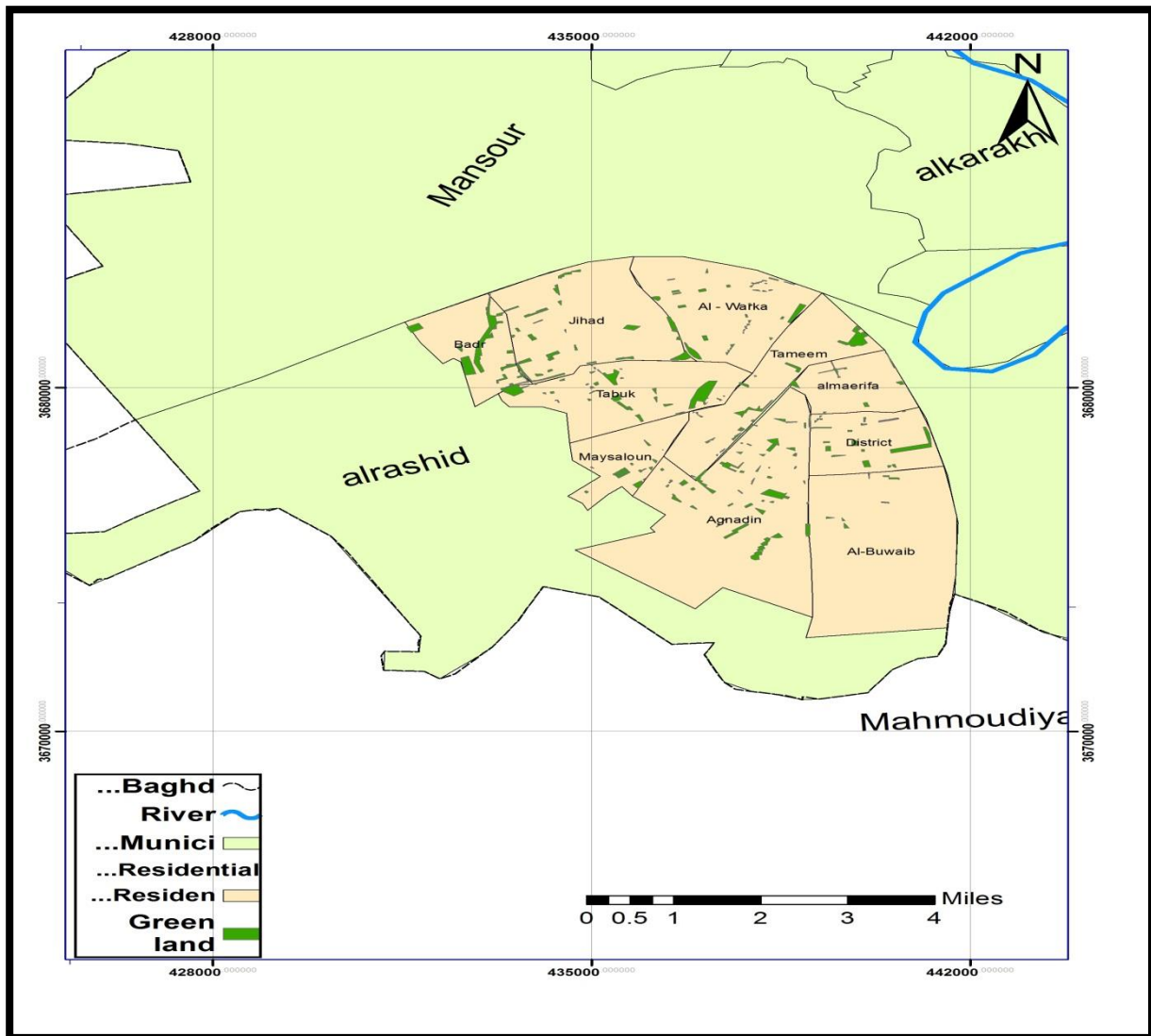
Table (4), Figure (4) and Map (4) show that there is a difference in the distribution of green areas on the residential districts in the study area, where it was found that the average rate of per capita share from the green areas amounted to 3.09 m² / person, which is less than the standard planned by the Baghdad municipality in the comprehensive development plan. It has showed that there are residential neighborhoods exceeding per capita share of the average standard planned, and there are neighborhoods where per capita share got reduced from the criterion specified, the latter played in determining the share of the individual area to use green spaces and the corresponding area of the neighborhood and its population.

It was found that Hay al-Buwaib , where capita shares amounted 11.0m² /person despite the fact that the use of green areas was 2.4 hectares, but because of the area of the neighborhood, which amounted to 1233 hectares and its population amounted to 21672 people , it has increased per capita share that exceeded the planned standard. The lowest per capita reached 0.3 m² / person in the neighborhood of Maysaloun due to the small area of use of green areas, which amounted to 0.3 hectares and the small area of the neighborhood 290 hectares, which is considered one of the smallest residential neighborhoods in the study area. While Hay al-Warkaa has largest area of use, which amounted to 41.2 hectares, but the per capita share was less than the planned standard amounted to 2.0 person / for

the area of the neighborhood, which amounted to 672 hectares in respect to a large population of 197100 people. The green areas in the study area are parks, and playgrounds and stadiums .

The researcher has found that there is no equalization in the distribution of green areas, the highest percentage was in the Warka area with an area of 41.2 hectares by 36%,172 , followed by Jihad district with an area of 22 hectares and 19%.315 hectare , and 14%,749. The lowest residential area was the district of Maysaloun, where the green areas reached to 0.3 hectares by 0%.263of the total green areas.

Map (3) Geographical distribution of green areas in the Municipality of Rasheed for the year 2018



Source: Rasheed Municipality, GIS, Unpublished data for 2018.

Conclusions

1. The map appears a huge role in explaining the extent of difference in the distribution of green areas and residential neighborhoods suffering from this negligence have been specified . This necessitated to get back to the map to make the reader understand the problem of the study.
2. Al-Rasheed Municipality is considered a huge one in respect to other municipal units that include 10 neighborhoods where there are 49 residential districts.
3. Al-Rasheed Municipality is characterized with its land use diversity , the residential use occupies a large area than other uses , with an area 2988 hectare with ratio 22%,88 of total of land uses area amounted 13059.8 hectare .
4. The green areas occupy 260.9 hectare with ratio 2%.00 of total of uses areas in the study area and it has appeared that there has not been equivalence in the distribution of the green areas in al-Rasheed Municipality.
5. The general average of per capita share of green land 3.09m²/person which is less than the criteria planned by Baghdad municipality in the comprehensive development plan , so it appeared residential neighborhoods where per capita shares exceeded the criteria planned and there have been neighborhoods where per capita share got reduced .

Recommendations:

1. Paying attention to the role of the map to specify the problems the area suffers and identifying most important problems via placing plans to identify the type of the problem and could we avoid it with simple solutions?
2. The extension of green areas for being considered as a necessary place and that areas should be equally distributed among neighborhoods.

3. Attempting to increase per capita share through increasing the area of use in a way that is suitable to the criteria planned by Baghdad municipality and area and number of populations .
4. Increasing plantation and concerning over parks suffered from negligence.

References

1. Kayed Othman, Abu Sabha, Geography of Cities, Dar Wael for Printing and Publishing, Amman, 2002 p.89.
2. 2 - Hashim Jafar Abdul Hassan, encroaching green spaces in the city of Najaf 1958-2009 A field study based on the basic plans of cities, University of Baghdad / Market Research Center and Consumer Protection, Journal of the Faculty of Basic Education, Volume 19, No. 80, 2009, p.499.
3. 3 - Mulla Hawish and others, Promotion of Contemporary Societies, Journal of the Iraqi Geographical Society, No. 47, 2001 p.78.
4. 4 - Municipality of Rasheed, Planning Division, Planning and Follow-up Department, estimates of the municipal councils for the year 2018.
5. 5 - Municipality of Baghdad, the comprehensive development design of the city of Baghdad until 2030.
6. 6- Municipality of Baghdad, GIS Department, Rasheed Municipality map for 2018.
7. Al-Rasheed Municipality Department, Department of Licenses and Licenses under Modern Numbering 2018.
8. Rasheed Municipality, GIS, Unpublished data for 2018.