



Impact of Migration Resulting from Ethnic and Racial Armed Conflicts on Accelerating Urban Sprawl

Nabil T. Ismael*, Samaan Majeed Yas, Abdul Hussain Ali Hussain

Department of Architecture, College of Engineering, University of Diyala, Diyala 32001, Iraq

Corresponding Author Email: nabiltaha2001@uodiyala.edu.iq

<https://doi.org/10.18280/ijdne.170304>

ABSTRACT

Received: 18 March 2022

Accepted: 6 June 2022

Keywords:

urban sprawl, migration, ethnic armed, racial armed

After 2003 (as a result of the absence of state authority and the spread of anarchy and post-war military operations), the urban sprawl has increased significantly in the Baghdad city, after that, terrorist acts and the period of the civil war started (2006-2009), this has exacerbated the problem and led to the emergence of population settlements. Especially The outskirts of Baghdad with a low level of urban, economic, educational, and cultural levels. It caused an increase in the size of the problem, reaching 92% during a study prepared in 2013. Thus, the research problem is determined: The lack of a clear vision of the impact of the civil war in Iraq (2006-2017) on accelerating the urban Sprawl in Baghdad. One of the most important findings of the research is that the rate of growth of Urban Sprawl that started in 1958 has maintained a near-constant rate until 2009, which witnessed an unprecedented acceleration and reached its peak in 2017. The essential research conclusion and recommendation can be summarized that the impact of civil wars on the exacerbation of the urban sprawl phenomenon differs radically from that of conventional wars in terms of quantity and quality, and it needs planning and social solutions that differ significantly from the type of solutions that were previously adopted to reduce the problem.

1. INTRODUCTION

One of the most critical types of migration is based on classifying migration as voluntary or involuntary, given certain sociopolitical factors (e.g., the fear of ill-treatment attributed to race, religion, political affiliation, or belonging to an ethnic or national group; fleeing from war zones; armed conflicts; civil war; natural or artificial disasters; or famine) or for reasons related to the spatial development on a national level (e.g., substantial infrastructure projects, including the airport, the road, the dam or the port construction; or administrative clearance for urban projects; mining and natural resource exploration projects and deforestation; the creation of conservation parks/reserves and other biosphere related initiatives [1]. Town planners were concerned with constructing both a physical environment and a type of citizenship that stressed moral and physical health, and to do this; they had to tackle the problems of the slums. About the slum conditions of cities, the planner Stanley Ramsey drew on the discourses of the city as unhygienic when he argued that 'ugly towns [were] indicative of ugly methods of living [2].

Urban sprawl is one of the distinctive phenomena in cities undergoing rapid urbanization processes. The driving forces of urban land sprawl have been classified into direct and potential factors: the direct factors referred to settlement expansion, industry development, and infrastructure construction. In contrast, the potential factors involved the natural factors, policies, population, economy, and technology [3].

Urban sprawl is a multi-dimensional phenomenon about which causes, conditions, and consequences are difficult to

identify, disentangle and quantify [4].

Many environmental problems generated by the expansion of our cities create economic and social implications. Urban sprawl and the demise of social infrastructures, such as local shopping, have a negative impact on the urban economy of the cities. Furthermore, environmentally degraded urban areas are less likely to attract new enterprises and services, posing a significant impediment to further local investment. This, in turn, causes reallocation and the further exacerbation of urban sprawl. Environmental degradation also reduces house prices in the urban core leading to concentrations of socially underprivileged groups and aggravating social exclusion [5].

In Damascus, the beginnings of Arab Spring impacted urban dynamics: foreign investment dried up; however, monetary and inflation risks initially boosted construction, and as of the first weeks, informal settlements expanded rapidly [6].

In Iraq, the first Gulf War left about a million victims; about 40% of the adult males of both countries were recruited for military service on the frontlines, while nearly a million people were displaced [7].

Usually, large Human migration waves occur due to civil wars to live peacefully in safer areas of the world, which exacerbates the refugee problem. This problem emerged strongly at the beginning of the twentieth century and reached its climax when the conflict intensified in the Middle East, especially since the Lebanese civil war and the wars and siege of Iraq Down to the Syrian crisis [8].

Most Arab cities suffer from Urban sprawl problems to accommodate the population increase in those cities, as this type of settlement is compatible with the culture of Arab

society. In contrast, they do not accept settlement in other ways, especially vertical expansion. The phenomenon of urban sprawl causes a lot of urban problems. The most important of them is overtaking gardening land and agricultural fields and sensitive ecological regions, as well as increasing the lengths of the transportation network and infrastructure accompanied by pressure on natural resources and increased consumption and pollution. Moreover, the city's urban fabric has been disintegrated and dispersed with distortion and loss of architectural identity [9].

The growth acceleration process and spontaneous expansion of the Baghdad city, Make it one of the biggest cities. Instead, its growth rate is one of the largest known in the region, accompanied by broad political, social, and economic changes taking into consideration the natural determinants of the city with the urgent need to absorb the population increase while providing a suitable urban environment for these new residents [9].

2. URBAN SPRAWL PHASES OF BAGHDAD

The phases of the urban sprawl of the Baghdad city passed through two major phases.

2.1 The pre-war phase of 2003

This phase included several distinct periods:

(1) The early period from 1936-1979: Most of the immigrant population, during this period, settled on the outskirts of Baghdad (They lived in shelters called Sarif, an Iraqi accent) Where the population of Al-Sarifah in 1958 was about 184 thousand people (They occupy about 26,285 of housing units). They represent about 18.4% of Baghdad's population at that time. They are distributed according to the southern provinces from which they migrated as follows: 73% of them are from Maysan Governorate, 10.5% are from Wasit province, and 10.2% from Dhi Qar, Qadisiyah, and Babil provinces, 50% of the residents of Al-Sharifa have settled in Baghdad since 1936 ,while the other 50% settled in Baghdad after that date [10].

The reasons behind the cities migration of many residents of central and southern Iraq to the Baghdad city are:

(a) The concentration of various facilities and activities (educational, commercial, industrial, and entertainment) in Baghdad.

(b) The increasing demand for labor in various commercial, industrial, and other sectors and the availability of employment opportunities result.

The largest percentage of random expansion was concentrated on the Rusafa side (east of Baghdad) more than on the Karkh side. Most of these settlements are located on the outskirts of Baghdad (Figure 1).

(2) First and second Gulf War period 1980- 1990: The phenomenon of slums began to reappear in the outskirts of Baghdad during the Iran-Iraq war; it seems self-evident that the emergence and spread of slums in vacant spaces within the city or its outskirts, As the population of the slums (according to the census of 1987) reached (156,753), (They occupy about 24,115 of housing units) Distributed over more than 117 random neighborhoods. The largest of these populations expand within the administrative area of Al-Kadhimiya municipality, where it constitutes 79% of the western side of Baghdad (Karkh), As it includes agricultural land. Because of

its proximity to the brick factories, which is a magnet for many of these immigrants, the eastern side of Baghdad (Rusafa), the municipality of April 9, makes up 34% of all immigrants. For the same reasons that relate to the municipality of Kadhimiya.

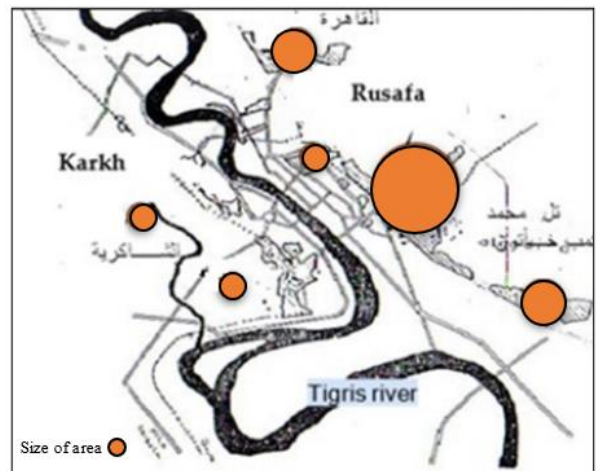


Figure 1. Random expansion sites in Baghdad city for the period 1936-1979 [10]

(3) Period of international economic sanctions (1991- 2003): After the 1991 Gulf War and the comprehensive economic blockade, which caused a rapid collapse in the economic and social conditions of the country, which inevitably led to the emergence of slums again in different parts of Baghdad and its outskirts, whereby 1998 the number of these random settlements reached twenty-five, where about 12500 houses were built randomly (Figure 2) [11].

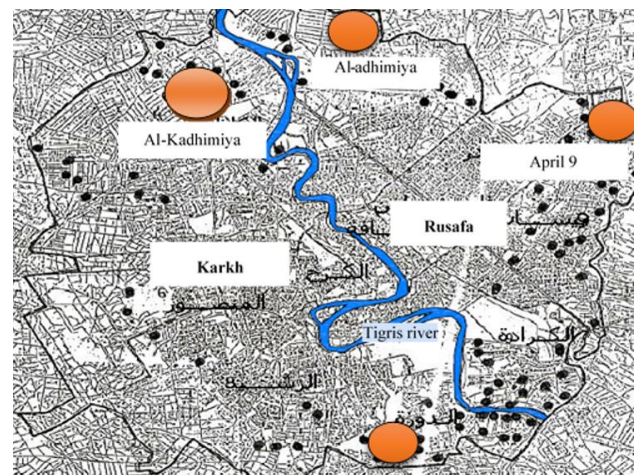


Figure 2. Random expansion sites in Baghdad city for the period 1980-2003

2.2 After the period of 2003

This phase is considered the most influential in the urban expansion of Baghdad. It occurred randomly due to the street war effect on the city's neighborhoods, accompanied by increased violence and forced displacement. As the number of slums increased continuously, as follows:

(1) Baghdad Municipality Study - Urban Planning Department (2008), "Random Housing": The Municipality of Baghdad conducted an inventory of the numbers and locations of slums in the Baghdad city, as shown in Table 1.

Table 1. The number of residential homes in the municipalities of Baghdad in 2008 [12]

Municipality	Number of houses	Percentage%
Ghadeer	4617	25.6
New Baghdad	4187	23.22
Al Shoula	2855	15.83
Sadr City 1	2068	11.47
Al-shaab	960	5.32
Dora	794	4.4
Rusafa	666	3.69
Karrada	412	2.28
Al-adhamiya	415	2.31
Al-kadhimiya	372	2.06
Sadr City 2	256	1.42
Al-Rashid	219	1.21
Karkh	150	0.83
Al-Mansour	65	0.36
Total	18036	100%

It is clear from the table that the most significant number of informal settlements is within the municipality of Al-Ghadeer, where it reached (4,617) houses, representing almost a quarter of the number of informal housings in almost all of Baghdad.

They were followed by the municipalities of New Baghdad, AlShoula, and Sadr City 1, which are respectively (23.22%), (15.83%), and (11.47%). In contrast, the lowest percentage of random housing was placed within Al-Mansour municipality boundaries, only 65 homes, at a (0.36%) ratio. Then the municipalities of Karkh followed, with a percentage of (0.83%) and Al-Rashid (1.21%), respectively.

The number and size of slums in each municipality (Al-Ghadeer, Sadr City 1, AlShoula, and New Baghdad) represent the largest size of spatial Overtaking as the number of these houses reached (13727) out of (18036) which represents the total of overtaking homes in the Baghdad city, representing more than three-quarters of overtaken housing stock for the entire capital, Baghdad. There are several reasons for this:

(a) The above districts are considered the safest Among the rest of Baghdad, especially the events that followed the US invasion in 2003. As a result, many families were displaced to these areas from the hot spots inside and outside Baghdad city because of the difficulties of buying, renting, or building a house. Most of the immigrant population has taken advantage of the untapped lands to build a house because many future planned lands have not been used (Lands were designated for activities such as parks, services, green belt, or even former army camps). Most of them are government-owned.

(b) These districts are the poorest standard of living among the rest of Baghdad, as there is a causal link between random housing and poverty at the urban and social levels.

(c) The weakness of monitoring procedures and enforcement process for municipal laws from all municipalities.

(2) Baghdad Municipality Report (2011): An inventory of the Baghdad Municipality showed the following (Table 2):

(a) The number of settlements: Table 2 shows about (316) random settlements located in the Baghdad city. The largest number of settlements is concentrated in Al-Rashid municipality, where the number reached (63), then the municipality of Al-Ghadeer (46) settlements, then the Municipality of Al-Dora (32), and finally the municipality of Al-Shaab (27). According to the Municipality Report of

Baghdad in 2011, the judgment criterion for this represents the number of settlements that depends on the site of these settlements in Baghdad city. Thus, the settlements overtaking them (Although the number of plots overtaking in Al-Shaab Municipality is (58 plots), and some plots are connected; accordingly, it was considered to constitute approximately 27 separate settlements [13].

Table 2. The number of slums in Baghdad city in 2011 [13]

Municipality	Number of settlements	Number of housing units	Total area (Donum)
Al-shaab	27	5340	3490.64
Al-ghadeer	46	4860	3146.44
New Baghdad	26	1775	1905.47
Karrada	27	4300	1257.84
Al Shoula	15	1483	1239.65
Dora	32	1133	1089.08
Al-adhamiya	15	2490	965.92
Sadr City 1	6	2990	751.53
Al-Mansour	11	1550	305.56
Al-Rashid	63	2301	213.95
Al-kadhimiya	8	524	162.5
Sadr City 2	19	644	91.38
Karkh	7	355	36.4
Rusafa	14	431	23.6
Total	316	30176	14680.02

Note that the largest number of slum locations is within the Rashid municipality, the municipality of Al-Ghadeer, the Municipality of Dora, and the rest of the municipalities. It noted that Al- Rashid municipality has the largest number of sites in a small area. Thus, this indicates that these sites have a small population density, which also applies to Dora municipality.

(b) The number of housing units: The largest number of Overtaking houses is located in Al-Sha'ab municipality, amounting to (5,340) houses, followed by Al-Ghadeer municipality (4,860) houses, followed by Al-Karrada municipality (4,300) houses, then Al-Sadr1 municipality (2990) houses [13].

(c) Slum site areas: The results showed that the total area of overtaking plots is about (14680) (Donum). It is clear from the Table 2 that the largest area of overtaking plots is located in Al-Shaab municipality, amounting to (3491) Donuts, followed by Al-Ghadeer municipality (3146). The percentage of the slums area in New Baghdad municipality (1905) represents 4.16% of the total area of the Baghdad city. The population of Baghdad is approximately 6,670,538 people [14], while the population of the slums is 251,000 or 3.74% of the total population of Baghdad, based on the estimates of the Baghdad municipality. But This estimate appears to be unrealistic compared to the results of the 2011 UN report, which estimates the number of families about 48000 Distributed by 116 slum sites in various regions of Baghdad [15]. Note that the report excludes agricultural areas and all Overtaking of land uses.

We noted that the largest rate of random areas is located within the municipality of Al-Shaab and Al-Sadr, and this shows that the random areas in these two municipalities occupy the most prominent area and the highest population density with a few sites.

Table 3. Slums in Iraq and the Baghdad province [16]

	Number of settlements	Percentage%	Number of houses	Percentage%	population	Percentage%
Iraq	1552		3466881		2418864	
Baghdad province	335	21.6	115739	33.4	752304	31.1
Baghdad Municipality	251	16.2	111249	32.1	723120	29.8

Table 4. Slums in Baghdad city [16]

	Number of settlements	Percentage%	Number of houses	Percentage%	Population	Percentage%
Karkh	199	68	97722	87.8	635194	87.8
Rusafa	92	32	13527	12.2	87926	12.2
Total	291		111249		723120	

Table 5. Population, housing, and random settlements in 2017 [17]

	Number of settlements	Percentage%	Number of houses	Percentage%	Population	Percentage%
Iraq	3687		521947		3292600	
Baghdad	1022	27.7	136689	26.2	711203	21.6

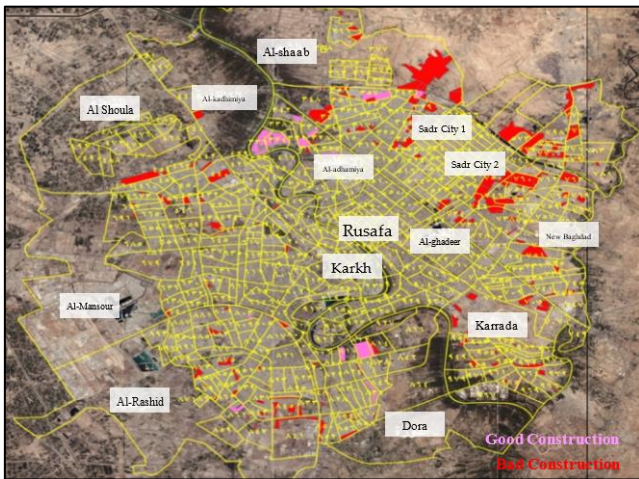


Figure 3. Slums in the Baghdad city [14]

Figure 3 shows the distribution of slum areas by municipalities in Baghdad city. It was noted that most of the slums are mainly distributed in the municipalities of Al-Sha'ab, New Baghdad, and Al-Ghadeer cities and with large conglomerates that are close to each other. These slums mainly exploit future urban spaces within the master plan, especially in state-owned lands, gardening lands, and former Iraqi army campsites. The most significant percentage of these slums are located in the eastern and northeastern part of Baghdad city, and the slums on Karkh side are distinguished by their spacing and small size. They are located in the south and northwestern part of Baghdad.

(3) The Iraqi Ministry of Planning completed a study in 2013 and mentioned that the Ministry of Planning accomplished a comprehensive survey of slums in all cities of Iraq (See Table 3).

Table 3 shows that the number of slums in Baghdad city is 251. It represents 16.2% of the total slums in Iraq. At the same time, the number of houses in the slums within the municipal administration of Baghdad is about 111249 (32.1%). At the same time, the population of the people is about 723120 (29.9%). It means that 12.6% of the population of the municipality of Baghdad live in slums. Moreover, 28.2% of the slum population in Iraq live within the Baghdad Municipality, which means that the phenomenon is concentrated in the Baghdad city.

Table 4 shows that the slums are concentrated on Rusafa side, especially on the outskirts of Baghdad, where the residents of those areas suffer from low economic, cultural, and educational levels. It is also noted that the population density rate in Rusafa side slums is 3192 people per settlement, compared to the slums of Karkh side, which did not exceed 956 people per settlement. In addition to the high rate of residential density at Rusafa side slums, which reached 491 houses/settlements, compared to the rate of residential density at Karkh side slums, which did not exceed 147 houses/settlements.

(4) Report of the Iraqi cabinet in 2017: This study was prepared by the Council of Ministers in cooperation with the ministries of Planning, Construction & Housing, Municipalities & Public Works, and Baghdad Municipality, including a study on Poverty Reduction Strategy in Iraq, Table 5 shows the following:

Table 5 shows the concentration of slums in the Baghdad city with the highest number of houses and settlements in Iraq, and its continued expansion on the outskirts of Baghdad (Figure 4).

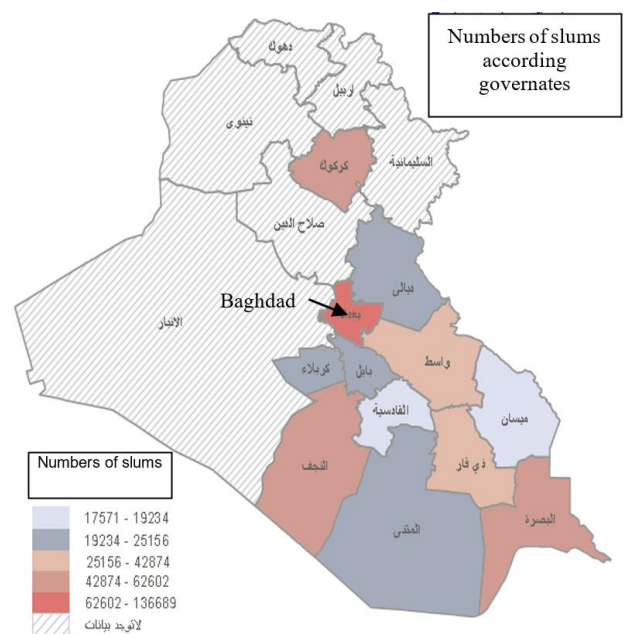


Figure 4. Slums in Iraq [17]

3. RESULTS AND DISCUSSION

Table 6 and Figure 5 show that the period before the American invasion in 2003 is characterized by increased random spread due to migration from the southern governorates to the Baghdad city, especially after 1958. This problem was dealt with a comprehensive plan through which they would be resettled in planned housing units for low-income people (such as Al-thawra city - Today, it is known as Sadr City 1&2- In addition to housing projects in the same style for people with low income in different areas of Baghdad).

In the period of the eighties of the last century, the phenomenon of migration returned after the first Gulf war. Many residents of the border cities near Iran were forced to migrate to the safe areas, especially the capital Baghdad. The harsh living conditions and the chaos of war forced them to settle in the slums. At the end of the last millennium, the wave of immigration to Baghdad has receded under the pressure of continuing economic sanctions imposed on Iraq [18].

After the 2003 invasion, the phenomenon of immigration has reappeared, and with an increasing frequency in the number of housing units in slums dramatically, the period from 2003 to 2011 witnessed the emergence of more than 30,000 housing units on the outskirts of Baghdad, mostly state-owned plots, or sites of former Iraqi army camps, which became easy to rape its property because there is no government control over it. Starting from the year 2013, the number of these houses has more than tripled, and subsequent terrorist operations and the occupation of ISIS for many Iraqi cities led to a wave of displacement seeking to find shelters, which led them to live in slums on the outskirts of cities, especially Baghdad.

Table 6. Chronology of slums in the Baghdad city

Year	Number of houses	Growth rate
1958	26285	-
1987	24115	- 0.3%
1998	12500	- 5.8%
2008	18036	3.37%
2011	30176	18.72%
2013	111249	92.01%
2017	136689	5.28%

Authors based on tables (1, 2, 3, and 4)

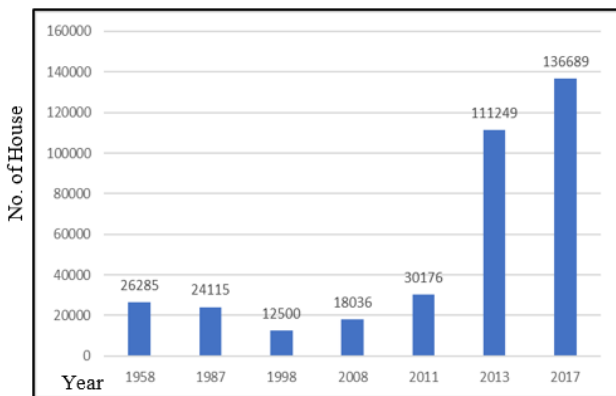


Figure 5. Phases of the urban sprawl in Baghdad

Table 6 shows that the growth rate of slums and the increasing number of urban sprawl in the Baghdad city began in 1958, but then the government began to address the problem.

Also, it presents a decrease in the growth rate of about (-5.8%) in 1998 due to the government's ability to implement plans to organize the city and control urban expansion.

After 2003, the phase of weak application of laws by the government began, and the encroachment on vacant lands by citizens and immigrants increased the number of slums and urban sprawl in Baghdad city, especially after 2006 as a result of civil wars and the control of ISIS over large areas in Iraq, and thus we note an increase in its percentage to 92% in 2013.

4. CONCLUSIONS

(1) This study concludes that traditional wars don't have a major impact on the phenomenon of urban sprawl. On the contrary, civil wars have a significant impact by increasing and accelerating urban sprawl. Civil wars lead to a demographic change in the population and the attraction of groups of similar economic, social, cultural, and ethnic levels, increasing the city's urban sprawl.

(2) The most important reasons that forced the migrants to the Baghdad city to live in the slums are:

(a) The primary reason:

- The temptation of immigrants to Baghdad to live in the slums for the lowest prices of land and houses.
- The concentration of investments in the Baghdad city made it an attractive center for the population of the cities in the provinces that suffer from weak economic activities.
- Decline the standard of living as a result of Low-level income
- Increasing the prices of residential plots and the high prices for renting residential properties in Baghdad.

(b) Secondary reasons:

- They are increasing the number of population and families and migration from other Iraqi governorates to the city of Baghdad.
- Lack of political will to solve the problem of urban sprawl and slums in the city of Baghdad and other cities.
- The ease of encroachment on government property resulting from growing feelings of greed for some Individuals and the spread of chaotic conditions.
- Procrastination and delay in implementing the proposed future development vision in the master plan, especially for open and agricultural areas.
- Weak municipal control and the lack of its ability to monitor Overtaking the state-owned lands, and the lack of seriousness in following up the procedures for Accountability of violators and law enforcement.

(3) Deterioration of the security conditions and the escalation of forced displacement and Ethnic violence contributed to the increase and spread of slum sites, And the permanent need to provide housing for immigrants, where these factors combined to find a black market to sell the slum houses.

(4) The phenomenon of the urban sprawl of Baghdad began in its first phase (before 2003) as a result of population migration from central and southern Iraq during the period (1979- 1936) due to the availability of economic attractions in the Baghdad city. In comparison, the impact of the first and second Gulf wars was evident in the urban sprawl of Baghdad during the period (1980-1990). Therefore, they migrated from the provinces near the Iraqi-Iranian border to Baghdad city because they wanted to escape from the war (most of them with low income). As a result, they settled in the empty areas

and built homes with low standards and a deteriorating residential environment.

(5) Most of the informal settlements were dealt with during the above period by enforcing the law and the state's power in implementing its plans by providing alternatives and setting the appropriate strategies to solve the problem and prevent random spread.

(6) The post-phase of 2003 represents the worst stage for expanding Baghdad city on the most enormous scale due to war operations, terrorism, and forced displacement. Escalated in many cities occupied by terrorist gangs led to the emigration of many residents of these cities, especially those with low incomes, and pushed them to settle on empty, unused lands in illegal ways, which was helped by weak municipal control by the responsible authorities.

(7) The authors suggest the following:

- Setting a plan for disaster management, especially in cases of mass displacement resulting from civil wars and terrorist operations, to organize the process of settling migrants and preventing the overtaking of urban land uses according to the master plan.

- They were finding solutions and treatment of urban sprawl areas in the city of Baghdad resulting from mass immigration cases using sustainable approaches.

- Prepare suitable alternatives to occupy vacant lands on the outskirts of Baghdad with suitable urban land uses that can be developed to make it a source of economic prosperity for the city.

ACKNOWLEDGMENT

This work is supported by the University of Diyala – College of Engineering.

REFERENCES

- [1] World Economic Forum. (2017). *Migration and Its Impact on Cities*. Geneva, Switzerland.
- [2] Page, A. (2019). *Architectures of survival: Air war and urbanism in Britain, 1935-52*. In *Architectures of survival*. Manchester University Press.
- [3] Jarah, S.H.A., Zhou, B., Abdullah, R.J., Lu, Y., Yu, W. (2019). Urbanization and urban sprawl issues in city structure: A case of the Sulaymaniah Iraqi Kurdistan Region. *Sustainability*, 11(2): 485. <https://doi.org/10.3390/su11020485>
- [4] Cho, S.H., Lambert, D.M., Roberts, R.K., Kim, S.G. (2010). Moderating urban sprawl: Is there a balance between shared open space and housing parcel size? *Journal of Economic Geography*, 10(5): 763-783. <https://doi.org/10.1093/jeg/lbp048>
- [5] European Environment Agency, EEA. (2006). *Urban Sprawl in Europe: The Ignored Challenge*. No. 10. Copenhagen, Denmark: EEA. <https://www.semanticscholar.org/paper/Urban-Sprawl-in-Europe-The-Ignored-Challenge-Ludlow/02ec70e5d7064698c12a089216f466b9081b9aae>.
- [6] Clerc, V. (2014). Informal settlements in the Syrian conflict: Urban planning as a weapon. *Built Environment*, 40(1): 34-51. <https://doi.org/10.2148/benv.40.1.34>
- [7] Willett, E. (2004). *The Iran-Iraq War, War, and Conflict in the Middle East*. Rosen Pub Group; 1st edition. <https://www.amazon.com/Iran-Iraq-War-Conflict-Middle-East/dp/0823945472>.
- [8] Ashour, A.S. (2016). *Architecture and Crises: The Impact of War Subsequent Crises on Architecture and the Urban Environment Baghdad City (2003-2016)*. History of Iraqi Architecture and human Heritage.
- [9] Al-Shamri, A.H., Ismael, N.T., Hamza, S.M. (2019). Urban sprawl feature of Arab cities: Riyadh and Baghdad city case study. *Journal of Engineering and Sustainable Development*, 23(1): 39-56.
- [10] Al-Badrawy, Adnan Makki. (1985). *The Phenomenon of Exchange Housing Around Baghdad (1940-1977)*. Urban and Regional Planning Institute for Graduate Studies, University of Baghdad, Iraq.
- [11] Al-Ansary, Basem Raouf. (1998). *Socio-Economic Assessment of the Urban Environment in Illegal Settlements in the Baghdad Region*. Iraq.
- [12] Baghdad Mayoralty. (2008). *Slum Housing*. Baghdad: Urban Planning Department, Iraq.
- [13] Baghdad Mayoralty. (2011). *Report of The Committee for Finding Radical Solutions to Housing Abuse*. Baghdad: Design Department, Iraq.
- [14] Iraqi Ministry of Planning. (2010). *Results of Sorting and Statistics For 2009*. Baghdad: Central Statistical Organization, Iraq. http://cosit.gov.iq/images/census/listing_and_enumeration/houses%20and%20buildings/report_1.pdf.
- [15] UN Habitat. (2011). *Urban Areas of Baghdad*. UN. <https://unhabitat.org/iraq-urban-issues>.
- [16] Iraqi Ministry of Planning. (2013). *Report of the results of the preliminary survey of slum settlements and housing for the year 2013*. Baghdad: Central Statistical Organization, Directorate of Population and Manpower Statistics, Iraq.
- [17] Executive Management of the Poverty Reduction Strategy. (2017). *Fixing the Sites of Informal Housing Gatherings*. Baghdad: the report of the Iraqi Council of Ministers, Iraq. <https://mnpd.gov.iq/assets/files/poverty/%D9%85%D9%86%D9%87%D8%AC%D9%8A%D8%A9%20%D8%A7%D9%84%D8%B9%D9%85%D9%84.pdf>.
- [18] Najim, S., Alslam, N.A., Albazzaz, I.A. (2021). Environmental influences on the settlements patterns of communities in the marshes of Iraq. *International Journal of Design & Nature and Ecodynamics*, 16(6): 657-663. <https://doi.org/10.18280/ijdne.160606>