

## *Supplementary Data*

# Urbanization and Urban Sprawl Issues on City Structure: A Case of Sulaymaniah Iraqi Kurdistan Region

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# Section A

## 1. Questions in the Interview

Please introduce yourself:

**Q1. What are the main driving forces of urban sprawl that has resulted to significant change in the city structure?**

**(Influence of urban sprawl on city structure)**

**Q2. What is the current pattern of progress that has resulted in the development of the city?**

**(Pattern of Development of Sulaymaniah)**

**Q3. What are the causes and effects of urban sprawl in the city?**

**3a Causes of urban sprawl)**

**3b Effects of urban sprawl**

**Q4. How does the economic and political structure of the city affect urban sprawl?**

**(Influence of economic and political structure on city sprawl)**

### **Note:**

**A. RQ: Interviewer question.**

**B. RES: Respondents.**

## Section B

### 2. Respondents Answers (10 Out of 45)

**RQ 1. What are the main driving forces of urban sprawl that has resulted to significant change in the city structure? (Influence of urban sprawl on city structure).**

**RES 1:** The main driving forces behind Sulaymaniah sprawl can be the big change in the economic state as a result of political events that took place in Iraq generally and particularly Kurdistan region in 2004 when the region got autonomy from the central government. This administrative autonomy resulted in prosperity in the city activities. After that the war in the south and Iraqi central led to substantial migration from those regions to Kurdistan region and this resulted to a huge increase in land value of Sulaymaniah city and its environment and a boom in real-estate business. The aforementioned prosperity reflected in many sectors of the city in areas of industry, agriculture, and commercial and so on. In addition, the prosperity of the city also led to high demand for farmland, establishment of new factories. This encouraged growth, hence, most of the new area sprawled along with the main corridor and city entrance and this led to a significant change in the structure of the city.

**RES 2:** I think the sudden increase of the population in Sulaymaniah a few years ago has led to the growth of the city out of the city boundary, in my opinion the people unbearable situation of the middle and southern Iraq forced residents to relocate towards Sulaymaniah city. The influx resulted in boom in demand for real-estate. However, due to mass shortage in housing in the city center also resulted to people who could not afford apartments in the city center to find a place in the surrounding areas of the city. Furthermore, the huge improvements in the economics of city as a result of safety for tourism, trade, and immigration encouraged foreigners to migrate to the region.

**RES 3:** The alteration in the structure of the city could be as a result of rising population density, increase in demand for residential apartments, rising income of residents, influx of new investment capital from foreign companies. The alteration of due to this mass influx has also led to a big change in the residential complexes and increased rates for residential buildings.

**RES 4:** It is essential for city planners to adopt planning from the roots as the prerequisite for positive and sustainable development of any city. Hence, each country should have a hierarchy of different planning levels that are based upon each other. However, it is unfortunate that the city of Sulaymaniah has neglected to follow this policy suggestions and this has led to the city witnessing an arbitrary structure of urbanization.

**RES 5:** Master planning in developed countries is mostly concerned with few amendments of the existing structure or focuses on new large development projects. In countries where a

dynamic population increase is foreseeable, the structure and control of growth and enlargement of existing structures is important. Not minding this assertion, the city of Sulaymaniah has grown randomly without planning guide and policy, hence, missing the effective urban management tools.

*RES 6:* The development in Sulaymaniah in recent years indicates that a fundamental planning and control of urban development is missing. Additions to and extensions of the existing structure are of piece meal character, which is not coordinated with higher planning levels, e.g. transportation planning, infrastructure or settlement policy. It is therefore important for a city to provide fundamental planning on the basis of which important decisions may be taken, such as the distribution of land uses and infrastructure facilities.

*RES 7:* In my opinion, the reason of city sprawl is due to wide spread uncontrolled building development into the vicinity of the city of Sulaymaniah, especially into the foothills of the surrounding mountains. Building activities are jumping across ring road and are heavily being undertaken in all directions except the East, where proper building grounds are not easily available. Nevertheless, even the characteristic foothills are not being taken out from new settlements and are apt for destruction in the future. By introducing building sites, actually city quarters, and necessary infrastructure on those foothills Sulaymaniah is on its best way to destroy an important part of its setting and neglecting the unique situation it can be thriving on.

*RES 8:* The motorway-like condition and character of the Ring Road (Malik Mahmud) as an expressway enormously relieves the inner-city traffic. This also becomes clear by the load but the recent continuous development of the city and new residential areas has led to the fact that the Ring Road itself more and more becomes a main inner-city road including all corresponding effects. These are, for example: a direct link of all traffic routes connecting the new residential and development areas to the Ring Road as a consequence of this, more traffic flow obstructing speed bumps will be erected along the Ring Road an increase in foot traffic not only along the Ring Road but in particular across it.

*RES 9:* The City Centre area poses by far the greatest problem for the traffic situation. The reasons for the high traffic demand in the direction of the City Centre have increased because of new residential development. Thus, traffic flow converges from different direction in a confined space. Such category of traffic is: high foot traffic, large flow of private cars, large flow of vehicles from public transport, high rate of parked cars. The problem in this is that the traffic areas at this juncture is limited and could not be developed and extended in the same way as the traffic volume has grown. At present, the existing one-way street system still helps to cope with the traffic volume but the mutual interferences between pedestrians and vehicles often cause a stop-and-go traffic situation. Nonetheless, it could be inferred that the city center has reached its upper capacity.

*RES 10:* From year 2000, Sulaymaniah has experienced a very rapid, uncontrolled and unplanned urban growth. This was as a result of series of political and economic events in the

region that caused enormous growth of population because of migrants from neighboring countries as well as the crisis in other regions of the country. Due to this increase in immigration, the number of households also increased unexpectedly outward of the city. The unplanned growth of the cities that involve informal settlement emerging adjacent to center of growth area, such as commercial, industrial and CBD, accordingly, composes the complex city pattern involve mix land use. The unplanned and uncontrolled urban growth have created several problems in various sectors such as economic, social, infrastructure, urban services and transportation. However, considering the aforementioned mentioned issues, the urban environment also has taken its part in the damage caused to the farm land degradation, improper land use, and water and air pollution, lack of services. The city urban policy failed to reach a balance between growth in urbanization and environmental protection. The city master plan faced a big challenge in adapting the concurrent economic development practice. City planners and managers have neglected the prerequisite urban growth strategy that is required to tackle the unprecedented urban expansion. This could have helped to simulate the new practical policy for future development.

**RQ 2. What is the current pattern of progress that has resulted in the development of the city? (Pattern of Development of Sulaymaniah).**

*RES 1:* Through the adoption of foreign construction materials and techniques, the city has lost its traditional identity. In addition, the copycat approach of city planners through the adoption of foreign city structures has made the city environment to lose its original identity. However, imported style of building structure and mismatching of modern building structure lead to the creation and reshaping of different street style. The new roads have also grown to comprise of new sectors and a city totally different from the original one has been created. This could be perceived as among the reasons for the distinct transformation in current city pattern.

*RES 2:* The current city pattern could be described as confusing because it is comprised of a mix between original city pattern which is organic in nature and chaos and rigid new pattern. Nonetheless, two clear areas could be distinguished such as; the original pattern which is commonly found in the historical and traditional area of the city and geometric and rigid pattern found in the boundary areas of the city.

*RES 3:* It is a random grid pattern; the city center is organic pattern but when we go far from the center the pattern changes to a random pattern.

*RES 4:* The main direction of urban extension of Sulaymaniah is North-West - South-East direction. Mountain ranges surround most of the urban settlements within the province of Sulaymaniah. This is also true for the city of Sulaymaniah. The Kouisa and the Azmer mountains, extensions of the Zagros mountain prohibit a large-scale urban extension towards the east and north-east, because these mountains are very near to the urban boundaries, consequently drive

the city expansion to the south and west. There is a small forest area in the same direction which partially serves as wind protection for the city. **RES 5:** Previously, the settlement structure in rural areas consists of village patterns along rivers or irrigation channels. Freestanding individual farm houses are the exception. Even in the mountainous regions with only few agricultural areas, people live in small villages, which they leave during the day in order to work in agriculture. The attacks by the Baath-Regime on rural settlements in Kurdistan and their destruction made people search for a safe haven in Sulaymaniah. Be that as it may, recently due to the massive development of the city and the rural urban migration of the resident of neighboring regions, Sulaymaniah attracts mostly the young population from the country side who migrate for economic reasons and search for job opportunities, as a result, the city structure changed and became more complex.

**RES 6:** Kurdistan region is largely mountainous with rivers, which provide fertility and visual attraction for agriculture and tourism. Sulaymaniah is located at the edges of the mountains towards Turkey and Iran. They have a moderate climate and are attractive for tourists from the south of Iraq and from other countries. Formerly, the settlement area of Sulaymaniah was limited by the traffic ring, but in recent years it grew beyond and is now looking for an organized pattern of extension, which can be followed in the next decades.

**RES 7:** The more one moves away from the quarters along the ring road, the lighter becomes the built-up structure. In the immediate vicinity there are several small villages on the urban border in the south-west, the west and the north-west. South of the city of Sulaymaniah multi-story housing units have been built. The industrial area is located in the south-west of the city along the ring road and at the road leading to Kirkuk. The important industries are textile, sugar, building material and food production. Cement factory and a firm dealing with natural stone processing. In the last years middle sized shops have been established along the ring road (Malik Mahmoud Ring). These shops offer a wider range of goods as the small shops inside the residential areas.

**RES 8:** In the south-east we find currently a fairly uncongested and random building structure. It is quite likely that this structure will soon be densified by the quick expansion of the city. The predominant use is housing, however, occasionally one finds shops along the ring road, that are not yet available in the quarters area wide.

**RES 9:** Evaluating the general and specific bio spherical and ecological qualities influencing Sulaymaniah area should be taken into consideration. Hence, a look at the macro situation and then zooming into the more micro facts of ecological and other important subjects concerning the city of Sulaymaniah is essential. Within the city itself only few large-scale open areas are to be found, either being converted from past regime-serving institutions and buildings into a public park (Azadi Park) or natural hills left out in the former city planning (cemeteries have been indicated as green areas but do not fulfill the requirements of open areas as above). Only one public park in downtown Sulaymaniah is of considerable size being worth mentioning as an

important visitor holding oxygen producing open area. Furthermore, parks in the city are in the planning process.

**RES 10:** The technical Infrastructure is not provided, particularly water supply and sewage disposal. No consideration was given so far to public transport and traffic management in general. A continuation of this settlement policy will undoubtedly create considerable problems. Already today home owners provide themselves with water by drilling wells, which is an encroachment on the ground water tables with negative results. On the other hand, there is the danger that this water is not clean because of defects on the sewage pipes.

**RQ3. What are the causes and effects of urban sprawl in the city?  
(3a Causes of urban sprawl).**

**RES 1:** There are too many reasons behind the urban chaos or sprawl of Sulaymaniah city. Among them could be: missing clear guideline that can drive the city growth to the right path, unexpected and sudden growth of the city, missing policy and laws not implemented, deficiency of the master plan and its implementations, high rate of immigration from the middle and south of Iraq to the north including the city region, immigration from neighboring country to the north of Iraq including Sulaymaniah.

**RES 2:** in my opinion the causes could be due to; change in political administration of the city, change in economic landscape of the city, migration of immigrants and tourists, new investment and projects, trade issues and commerce, misguided planning by city designers and planners of the city.

**RES 3:** the causes of urban sprawl are; increased demand in real estate properties, increased prices in the real-estate properties, increased migration from north to south and central Iraq, in search of safe haven in north, escape from war and political chaos from south and central region, decisions of politicians, rising disposable income, increased in incomes of the people.

**RES 4:** among the causes of urban sprawl in Iraq are; increased demand in real-estate market, high settlement concentration is to be found on both sides of the main road in the entrance of the city in the west and in the high plains in the south. More than two thirds of the population are urban, resulting from rural-urban migration.

**RES 5:** After the fall of Saddam Hussein, the city grew rapidly like an amoeba, but there was no conclusive development planning. New settlements developed in the north, the north-east and in the south, that were planned but not coordinated amongst them. Only after the fall of Saddam it was permitted to build outside the ring road surrounding the city so the city boundary was passed by new development.

**RES 6:** In Kurdistan this was particularly severe because of the expulsion from the villages and their consequent destruction of villages by the Baath-Regime (previous government of Sadam), rising income of the people, migration from south and central Iraq to the north, in search

of safety in the north, escape from war and conflict from the south and central region, demand of more dwellings, politician's decision.

**RES 7:** Until 1921 Sulaymaniah developed without any planning control. This resulted in irregular housing layout and narrow streets, what is still prevailing today in the historic town. Through the master plan of 1957 and its modification in the 80ies that was caused by the unexpected speed of growth, thus, urban development occurred in structured pattern.

**RES 8:** The historic town suffers considerably from too many vehicles and from the fact that no traffic restriction exists. The small roads and passages were not made for vehicular traffic. The historic town should only be accessible for residents and traffic volumes should be restricted. There is also a lack of parking space. In the historic area of Kani-Askan there are large-scale markets that are accessed by Lorries. It would be advisable to relocate such markets to areas of better vehicular access and to relieve the city center from such traffic.

**RES 9:** In the high plain with the separated settlements of Bakrajo, Raparin and Tasluja, outward area (Sulaymaniah boundaries), also the spaces in between the settlements were developed for settlement purposes. Last not least, the construction of the international airport has resulted in more and more agricultural area being used for settlements. While Tasluja developed moderately, Bakrajo and particularly Raparin exploded in the last 3 – 5 years. Between 2003 and 2006 the settlement area of Bakrajo tripled and that of Raparin became five times larger, this development occurred without organized planning.

**RES 10:** The existing structure of the historic town and buildings from different periods relate to culture, art, custom and identity of the people in Sulaymaniah was neglected to further extend. Many of the buildings under preservation order contain special styles that originate from the Arabic-Kurdish history and building pattern. Without preservation order they would disappear from the townscape. If such historic buildings exist in an area that is not under preservation order, only new buildings should be granted permission that adapt to the traditional architecture. The building mass, the size and the plot ratio not carefully controlled. Such rules and considerations have to be followed in order to guarantee the preservation. All such rules should receive legal status. Lack of environmental awareness of the inhabitants of the villages is also a cause of urban sprawl.

### **3b Effects of urban sprawl**

**RES 1:** The city of Sulaymaniah suffers from urban chaos, it is only under the name of the city but actually it has not designed as a city, although it is the center of Kurdish culture and has historical value but there are a billion of deficiencies in the city. Moreover, lack of infrastructure and services.

**RES 2:** confusion in the city pattern and structure, lack of efficient services in the boundary areas of the city, geographic inequality in distribution of infrastructure, geographic inequality in the real-estate, rise in real estate value.

**RES 3:** irregular city growth, inequality municipal services, inefficient public transportation system, outgrowth of the master plan, deformation of the city, missing identity of the city.

**RES 4:** A systematic and disciplined planning procedure in Sulaymaniah was not exercised in the last decades for political reasons. It is therefore important that resident planners, architects and engineers of the municipal administration take part in the planning process in order to get familiar with modern planning methods and tools.

**RES 5:** Blocking the natural wind travel route by non-providing corridors in order to allow wind freely move south/northwards, thus minimizing exchange of air especially in summer time. Uncontrolled building debris next to new building sites all over the city. It appears the inhabited "natural" land is being used as a huge uncontrolled garbage dump. Uncontrolled household garbage dumps especially at the end of some informal settlement.

**RES 6:** Too few and too small open spaces are within the city limits, within the city itself only few large-scale open areas are to be found. Only two public parks in downtown Sulaymaniah are of considerable size being worth mentioning as important visitor holding oxygen producing open area. On weekends crowds of people are fleeing the city to the east into the cooler mountains to find relief of the unbearable climatic situation within the city in summer.

**RES 7:** The non-well-developed line network of the local public transport that cannot cover the whole area and reaches nearly all districts. The demand for transportation is high due to huge movement of population. Amongst other things, this is reflected by the large number of buses to be seen in the city since these are operated according to the respective demand. This is a problem influencing the traffic situation in general: On the one hand, a bus only leaves the terminal stop if an adequate number of passengers according to the driver's estimation is on the bus. Thus after a few stops, the buses are completely full and subsequent passengers often have to wait very long until they find a possibility to get on a bus. On the other hand, in cases of high demand many buses are in operation since the passengers have to take a seat and are not allowed to stand on the bus. This contributes to the high traffic volume on the roads in the city.

**RES 8:** The expansion of these capital cities is huge and currently it is attempted to structure the future of these cities by planning measures. Besides the development measures for the large cities, there are state and regional plans and programs for rural settlements and smaller inequality in the service, the new area suffers from the lack of services. Settlement centers necessary like Koya, Dukan, Chamchamal, Darbandikhan or Zakho. Irregular growth of the city, inadequate transportation, deformation of the city structure and lose of city historical identity. No preservation of historical area.

**RES 9:** inefficient transportation infrastructure, poor planning of transportation system, this means that taxis cruise the streets and further increase the existing traffic volume. This situation might be improved through coordination by a central taxi control office and some taxi stands. The public will have to be sensitized to this issue to ensure their acceptance and co-operation. The fare system also has an indirect influence. Since no tickets exist, the fare for every ride has to

be paid in cash. Thus, the passengers avoid changing buses since they would have to pay again when boarding a new bus. Because the buses are privately operated, each ride on each bus line terminates at the City Centre which is the main destination of all rides within the city and thus influences the traffic volume and the traffic load within the city center.

**RES 10:** Certainly, the ones with winter water flow are being used by the citizens as natural garbage collectors. From the ecological point of view, it is unacceptable because it hints towards non-functioning garbage collection in those (mostly rural) areas. Apart from deficiencies in the introduction of a reliable garbage collection system in the greater Sulaymaniah, it is also necessary to guide the citizens towards a sound environmental awareness. Both topics can be dealt with in the master plan preparation, but environmental awareness certainly is a scope which only can be handled by municipal and/or political institutions. Consequently, the only road to the east ascending the mountains is overused and, at a first glimpse, might lead to the assumption that a new road that is capable to carry the heavy traffic needs to be built. Thus, this is an assumption that is not necessary since the traffic problem is “homebred” and can be solved within the city’s closer vicinity. All those busses can be a hindrance to the smooth flow of traffic. Whenever many busses approach at once, there is not sufficient room for all of them in the existing bus stops (bus bay) so that the vehicles waiting at the end of the line block the road.

**RQ4. How does the economic and political structure of the city affect urban sprawl?  
(Influence of economic and political structure on city sprawl)**

**RES 1:** Yes, the series of political activities that took place in the region has greatly impacted on the economic status of the city. This impact has positive influence on economic development of the city in general among which is through the establishment of private sector businesses in different industry. This has led to increase in income and purchasing power of the people. Therefore, the real-estate market encountered increased prosperity in addition to the fact that several new investment and project have been implemented. This is true in Kurdistan region generally and Sulaymaniah city in particular have witnessed such unprecedented growth and development that has never been experienced in the past. Nonetheless, the sudden and unexpected growth of the city has invariably resulted to an uncontrolled growth otherwise referred to as urban sprawl.

**RES 2:** as a result of the turn in political autonomy granted the region, there have been massive economic development that has resulted in growth in the surrounding environment of the city center. The growth has occurred due to rise in commercial activities, travelling and tourism, education and telecommunication and new technology.

**RES 3:** Yes, both the economic and political turn of events is the two most powerful reasons that drive the city to explode.

**RES 4:** Yes, the foreign oil companies became state-owned, a land reform was initiated and economic and political relations with socialist countries were established. Political parties, vocational organizations and the free press were installed and enabled.

**RES 5:** The political orientation of Iraq was in opposition to the Western countries, which in turn produced pressure from outside, therefore, the changing the political environment in Iraq create a type of political, economic and social flourish and surely is the main reason behind such growth and development. **RES 6:** Kurdistan is today that part of Iraq with the greatest dynamics in its development, because of its share in the oil revenues and the relative security in the region. Foreign investors are being attracted and the building boom in Sulaymaniah and other cities of the region is obvious.

**RES 7:** Erbil and Sulaymaniah are equipped with international airports connecting with Middle East and Europe. Austrian Airlines were the first established European airline to operate regular flights to Erbil, thus, affects the city growth and development and flourish of Sulaymaniah. **RES 8:** Surely, in 2006 the first drilling for oil in Kurdistan was executed by a Norwegian firm. Further firms from Canada and UK have already got agreement on oil production with the Kurdish government. Besides the oil, there are other minerals to be discovered as well as commerce and trade.

**RES 9:** Yes, the past economic mismanagement in the country made large population of the citizens jobless. However, the recent economic reforms led to sporadic growth of the city. Also, the turn in political events attracted more investments from far and wide.

**RES 10:** The continuity in the fights between the central government and the Kurds led to the delayed growth in the development of the region. However, as they Kurdish are now in control of the north of the country, the region has witnessed unprecedented development. And more investment has poured into the country region. These factors increased significantly to the growth of the city and have extended beyond the city boundaries and defied the new requirement of the urbanization process.

# Section C

## Coding Process

| Research Question   | Main Themes                                 | Coding Categories  | Key Factors   |
|---|---|--|---|
| Q1/ What are the main driving forces of urban sprawl that has resulted to significant change in the city structure? | Influence of urban sprawl on city structure | big change, economic state, political events, regional autonomy, central government, administrative autonomy, city prosperity, city activities, substantial migration, huge increase in land value, boom in real estate, industry, agriculture, commerce, high demand for farmland, establishment of new factories, new area sprawled, main corridor, city entrance, city structure, sudden increase in population, growth of the city, outside city boundary, unbearable situation due to war and crisis, high relocation, influx of people, shortage in housing, city center, unaffordable housing, surrounding areas, huge economic improvements, safety for tourism, trade and commerce, high immigration, alteration in city structure, rising population density, high demand for apartments, rising income of residents, influx of new capital from abroad, increased in prices of properties, sustainable development, hierarchy of planning levels, neglect of policy guidelines, arbitrary structure of urbanization, amendment to existing structure, large development projects, population increase foreseeable, structure of growth, control of growth, enlargement of existing structure, not coordinated with planning levels, transportation planning, city infrastructure, missing effective urban development tools, random growth, no planning guide, no planning policy. Control of urban development, distribution of land uses, settlement policy, infrastructure policy, provide fundamental planning, infrastructure facilities, city | <b>Regional autonomy</b><br><b>Migration</b><br><b>Political Conflict</b><br><b>Investment inflow</b><br><b>City Safety</b> |

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sprawl, uncontrolled building, building across ring road, building into foothills, surrounding mountains, building in all directions, characteristic foothills, new settlement, apt for destruction, introduce building sites, city quarters, necessary infrastructure, motorway-like condition, inner-city traffic, new residential areas, inner-city road, traffic routes, new development areas, more traffic flows, obstructing speed bumps, increase in foot traffic, city center, traffic situation, traffic flow converges, different direction, confined space, high foot traffic, large flow of private cars, large flow of public transport, high rate of parked cars, growth of traffic volume, one-way street system, traffic volume, mutual interferences, pedestrians and vehicles, stop and go traffic situation, upper capacity of city center, rapid urban growth, uncontrolled urban growth, unplanned urban growth, political events, economic events, enormous population growth, migrants flee from crisis, increase in immigration, number of household increased, emergence of informal settlement, center of growth areas, complex city pattern, mixed land use, created problems, urban environment, farmland degradation, damage to farmland, water pollution, air pollution, improper land use, failure of city policy, urban policy failure, inadequate municipal services, future development, practical policy, unprecedented urban expansion, urban growth strategy, city master plan, city planners, planning managers, growth in urbanization, environmental protection.

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Q2/ What is the current pattern of progress that has resulted in the development of the city?

**Pattern of Development of the City**

Adoption of foreign construction materials, foreign building techniques, loss of traditional identity, copycat approach of planners, adoption of foreign city structures, lost original identity, imported style of building structures, reshaping of street style, new roads, grown as new sectors, distinct transformation, organic in nature, geometric pattern, random grid pattern, urban settlements, city extension, small forest area, wind protection, settlement structure, sub-urban pattern, rural areas, village patterns, along rivers or irrigation channels, freestanding farms, mountainous regions, agricultural areas, work in agriculture, rural settlements, search for safe haven, massive city development, rural urban migration, neighboring regions, city attracts young population, migrate for economic reasons, search for job opportunities, change in city structure, complex, fertility, visual attraction, agriculture, tourism, edges of mountains, moderate climate, attractive for tourists, settlement areas, traffic ring, organized pattern of extension, built up structures, immediate vicinity, small villages, urban border, multistory housing units, industrial area, textile industry, sugar industry, food industry, building material industry, cement production, precious stone processing, middle sized shops, small shops, residential areas, uncongested structures , random structures, densified, quick expansion, quarters area, bio spherical ecological qualities, macro situation, zooming, micro situation, large scale open areas, public park, institutions, building, natural lifts, former city planning, planning process, parks in the city, technical infrastructure, water supply, sewage disposal, public transport, traffic management, settlement policy, considerable problem, drilling wells, encroachment, ground water tables, negative results, unclean water, dangerous, defects, sewage pipes.

**Organic Pattern**

**Geometric Pattern**

**Village Pattern**

**Random Grid Pattern**

**Sub-Urban Pattern**

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Q3/A) What Are the Causes of Urban Sprawl in The City?

Causes of Urban Sprawl

Urban chaos, drive city growth, right path, unexpected and sudden growth, non-implementation of plans, change in political administration, change in economic landscape, influx of tourists, new investment and projects, trade issues and commerce, increased demand in real estate, increased prices, increased immigration, in search of safe haven, escape from war, escape from political crisis, decisions of politicians, increased in income, high settlement and concentration, high plains, population is urban, rural urban migration, city grew rapidly, uncoordinated planning, expulsion from villages, demand for more dwellings, politicians decision, too many vehicles, no traffic restrictions, small roads and passages, lack of parking space, large scale market, accessed by lorries, agricultural areas, developed moderately, exploded, settlement area, without organized planning, existing structure, historic building, culture, arts, customs, identity, further extend, neglected, city preservation, under preservation, special styles, building pattern, townscape, historic buildings, new building, granted permission, traditional architecture, building mass, building size, plot ratio, carefully controlled, rules and regulations, guarantee preservation, legal status, inadequate environmental awareness, village inhabitants.

**Non-implementation of master plan**

**Expulsion from villages**

**Unaffordability of city center**

**Political decision**

**Unexpected urban growth**

**Population explosion**

Q4/ B) What Are the Effects of Urban Sprawl in The City?

Effects of Urban Sprawl

Kurdish Culture, Historical Value, deficiencies, inadequate infrastructure and services, confusion in city pattern, confusion in city structure, lack of efficient services, geographic inequality, real estate, rise in price, increase in value, irregular city growth, unequal distribution of municipal amenities, inefficient transport services, deformation of city, missing identity, disciplined planning procedure, systematic planning, non-providing corridors, free movement of winds, minimize exchange of air, uncontrolled building debris, new building sites, uninhabited natural land, uncontrolled garbage dump, household garbage dump, informal settlements, small open spaces, large scale open areas, public parks, downtown, considerable size, visitor holding, collier mountains, crowd of people, unbearable climate, local public transport, demand for transportation high, huge movement of population, large number of busses, traffic situation, bus terminal, estimation time of travel, estimation waiting time, passenger waiting time, long wait, no standing policy, high traffic, planning measure, development measures, large cities, regional plans, state plans, rural settlements, smaller inequality in services, lack of services, settlement centers, irregular growth, historical identity, loss of identity, poor planning, increase existing traffic, taxi cruise, central taxi control office, bus tickets, taxi stands, improved coordination, public sensitization, fare system, cash payment, boarding a bus, private operation, traffic load, garbage collectors, bus destination, ecological viewpoint, garbage collection system, sound environmental awareness, political institutions, municipal agencies, heavy traffic, homebred traffic problem, flow of traffic, hindrance to traffic, insufficient room, existing buss bay, block the road.

**Increase in value of properties**

**Urban explosion**

**Unequal distribution of public amenities**

**Distortion of master plan**

**Missing Cultural Identity**

**Environmental degradation**

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Q5/ How Does the Economic and Political Structure of The City Affect Urban Sprawl?

Influence of Economic and Political Structure on City Sprawl

Real estate market, increased prosperity, new projects, new investment, new capital, unprecedented growth, political autonomy, rise in commercial activities, economic relations, political relations, vocational organizations, free press, political orientation, social prosperity, oil revenues, relative security, foreign investors, attract investors, building boom, commerce and trade, economic mismanagement, jobless citizens, large population, economic reforms, delayed growth, slowed development, urbanization process, unprecedented development, regional control.

**Political  
Structure  
Economic  
structure**