



The Impact of Bad Urban Design on the City Environment

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Abstract

Over the past decades, there has been a growing interest in environmental issues realizing that humanity depends on the environment and that this environment has been constantly exposed to processes that could threaten the future of humanity. Cities emerged as the most important cause of pollution because they are the place where most industrial goods are produced and consumed. It was also found that a large percentage of the problems of environmental pollution was the result of the failure of the planning authorities in the implementation of the master plan originally laid out to control and control the city. We do not see a reaction from the residents of the region, despite the obvious problems in the study area, which include social and economic problems as well as environmental problems. On the contrary, many people want industrial activities to improve Value of their properties.

The best way to solve urban areas' problems is at the planning stage

Keywords: Urban planning , environmental pollution ,land use, Master Plan

1. INTRODUCTION

That there is a concern that threatens humankind is the characteristic of contemporary environmental problems. This concern includes both the loss of resources to maintain lifestyles and the environment's degradation [1]. Our actions are primarily focused on the quantity and quality of natural resources on the planet [2]. Environmental attrition is one of the factors that conflict with sustainable development; therefore, we need scientific knowledge of natural resources management for many years to obtain encouraging and interrelated methods with the management of the ecosystem to prevent increased pressures, especially from extensive urbanization. Land use and environmental change are closely related, and land use planning is one of the oldest and most influential environmental protection tools [3]. The problem of the research is that the environment in Iraqi cities in general, including the city of Kut, has been subjected to severe damage to the environment, and a large part of it is due to not following the correct scientific approach and commitment to design dimensions in the development of the city. The research aims to shed light on the relationship between urban design and environmental pollution, and to clarify the most important negative environmental effects resulting from neglecting the determinants of urban planning and design, and to provide planning and design treatments that can solve or reduce the negative effects of pollution. As well as raising awareness of the problems resulting from the ineffective urban design of the city. The research assumes that there is a link between urban design and city pollution, and that ignoring and non-compliance with the standards and determinants of urban planning and design causes significant pollution in cities. The study included the two sites of Huquq and Dhubad sites in the Damok sector within the boundaries of the master plan for the city of Kut in Iraq. The research relied on the analytical descriptive approach through a field study that included a field survey of land uses and the analysis of its results to some conclusions and recommendations.

2. ENVIRONMENTAL POLLUTION IN CITIES

The impact of urban development on the basic environment for supporting life extends from local to regional and global [4]. Environmentalists who use environmental footprint as an indicator of overall sustainability. They say that development and urbanization lead to increased demand for resource-intensive goods such as luxury cars and homes and the use and disposal of these goods will require increasing resources constantly and generating growth amounts of pollution and waste. As a result, environmentalists fear that cities are bleak in a dark world [5].

The concepts of modern urban planning, which carry a number of dimensions, environmental, social and economic, based on the development of plans, designs and regulatory laws for that process in order to achieve the objectives of the planning process to provide a suitable environment for human life, Economic and social impacts and to reduce the negative environmental impacts resulting from various human activities [6]. Based on the fact that the environment is a moral responsibility to be borne by all, any planning process must take into account environmental aspects in order to achieve sustainable development that preserves the right of future generations

3. PLANNING AND LAND USES

Land use planning reflects functional effectiveness, and the spatial identification of city-level operational functions is called the master plan [7, 8]. The importance of this land and the need to respond to meet its needs within the best distribution of functional effectiveness within the city, as we find that there is a set of problems that may determine the functional relationship between the city's residents and the various functions in the city, When land-related problems, such as congestion, economic problems and environmental problems, support is clear and serious in thinking about solving these problems [9].

However, when these problems, such as inflation, unemployment, poor social services, and support are significantly reduced [10], due to poor social pressure to solve these problems, they lack clarity of their leading causes.

The conflict of opinion on the land leads to views in land use planning. Environmentalists are demanding more restrictions on land use. Investors do not favor these restrictions that restrict investment limits. Industrialists also argue that environmental regulations restrict industry, raise costs and reduce processing [11].

4. MASTER PLAN AND LAND USE

The master plan is the sum of the theoretical and field studies and research necessary to form the necessary background to identify and rationalize the urban needs of the urban land in general, within the framework of the spatial dimension of the plan's investments in different sectors. It regulates and defines the spatial distribution required for land use in the city, And the functional relationship between them whether residential, commercial, industrial, service or recreational [12].

The plan outlines the city's future structural structure through the signing of activities and residential and housing densities in urban areas, road networks, and transport systems needed to link events and facilitate communication between them [13].

The basic design is prepared in 20-25 years, which is the longest period for planners to show their vision of any city's future development stages.

It defines the urban form, and the spatial organization of the land uses and avoids the city any waste in the urban land uses. The current land uses of any city are a reality that affects how the adoption of land use controls [14].

Abrams has set five general goals that require the use of land use controls for the public good [15]

- Promote the use of land for development favorable to society (protection of housing, trade, industry and other uses)
- To prevent or deter the misuse of the land so as not to affect society
- Avoid the abuse of land
- Organizing cases of non-use of the land and neglecting the land
- Direct reuse of land for more appropriate purposes

The above objectives are implemented by adopting government laws that regulate land use through adaptation to the various land uses. In this process, the city is divided into sectors according to activities to control and direct the land uses.

5. HIERARCHY AND FUNCTIONALITY OF THE STREET NETWORK

Each type of street has its function within the structure of the city. The hierarchy achieves the connection between the parts of the city, which means the degree to which the road is connected with other parts of the network, and from the other side with the different uses of the land [16].

The movement between the centre of the city (the beginnings of flight generation) should be secured through a network of arterial routes that distributes the main traffic to the job sites (outskirts of the city) ending with a gradual network of local roads.

The hierarchy of roads determines the absorptive and speed of roads (as shown in Figure 1). The capacity is the number of cars per hour to move at a specific point, ranging from highways to local streets, and between them, collectors, arterial, and arterial arteries. Each has its advantages and disadvantages. Some provide traffic, and some provide better accessibility [17].

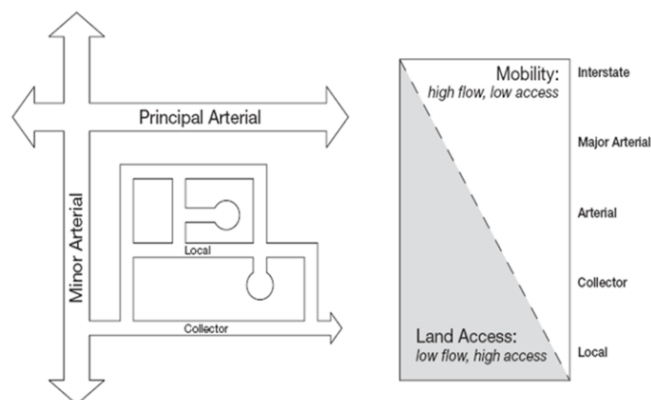


Figure 1: Hierarchy of road density by function [17].

Street varieties vary according to the diversity of urban uses and functions.

- Freeway roads These roads are designed by large standards aimed at achieving high speed and long distances in trips where the traffic from outside the city, and is used at the entrances to the roads leading to the city, and the number of lines between 4-8 lines and the speed of the actual 80 -120 km / h as in Table (1)
- Expressway: the streets of the fast means to serve the size of the largest and high speed and is used between the sectors of the city, which are isolated roads intersecting, and connect the outskirts of the city in radial ways of the center and a ring around the city, and the lines of traffic between 4-8 lines and quickly Operation between 60-80 km / h
- Primary arterial roads: also called arterial roads, and the link between the centers of neighborhoods and the city center should be intersections spaced and do not allow direct entrances on both sides. (Operating speed between 40-60 km /h).
- Minor Arterial streets: also called the streets of the pool, which is composed of an internal network linking the residential cells in the centre of the urban unit in the city to discourage transit and a practical speed between 30-50km / h.
- Local Streets: It is intended to serve short transport trips to reach the residential area at a low speed (20-30km / h), and a capacity of between 500-700 vehicles/hour, described as the lowest class of urban traffic streets.

Table (1) The hierarchy of the network of streets

Specifications	Free streets	Streets are fast	Streets of arterial	Streets grouped	Local streets
Design speed	120 km / h	100 km / h	80 km / h	60 km / h	40 km / h
Practical speed	80-140 km / h	80-140 km / h	80-140 km / h	80-140 km / h	80-140 km / h
Absorption vehicle / hour	1800-2000	1000-1400	800-1200	600-900	500-700
Number of main street lines	4-8 lines	4-8 lines	2-6 lines	2-4 lines	1-2 lines
Street settings	30m-100m	30m-80m	15m-60m	10m-20m	8m-12m

The streets in the cities are classified for the land uses prevailing according to the Municipal Administration Law in Iraq as follows:

5.1 Commercial streets

The streets offer many functions for the city and its inhabitants [18]. These roads aim to benefit the places and specialization in specific jobs. Some of them serve commercial activities. Business owners prefer to choose a location for their establishments along the street facades for easy access in different modes of transport. , So it is one of the most congested streets to pass.

5.2 Residential streets:

These are the streets that serve the residential neighborhoods, which are suitable for the residential function's nature. Furthermore, linked to the streets at various levels. The different dimensions from one location to another, and that some of these streets may perform other functions as well as the service of the residential area, corridors of movement or commercial service and the other section of these streets (alleys) to serve a purely residential function.

5.3 Entertainment streets:

The streets overlooking the rivers, or that penetrate the logic of green, or that are multi-use recreational purposes and spread on the faces of cinema, theatre and showrooms

5.4 Industrial streets:

These roads surround the industrial zone and connect it with the rest of the neighboring areas. The roads within the industrial zones are the basis of their function to facilitate movement within the industrial zone. They have the street capacity and efficient infrastructure services. Their pavement and paving materials are specially treated due to pressure in use, and the movement.

6. PLANNING OF INDUSTRIAL ZONES

The industrial activity is one of the most important events in the city, which is often the basis for the growth of the movement of the city, and varies depending on the type of city and the size and basis of composition, size of the type of industrial activity, there are industrial activities heavy, light, polluted, non-polluting, and service. The volume of industrial activity within the city is determined by the type of industry and the required areas, as well as the availability of that city of facilities for the growth of this activity

The types of environmental pollution caused by industries are not limited to gases, dust, dust, and the emitted and the noise, but from the solid materials, fats, dyes and acids that go through the drainage outlets to the rivers and areas adjacent to the industrial sites. But what distinguishes the service industry complexes that the effects of pollution are few and confined within the narrow areas of neighboring uses, and the most polluted here is pollution and noise pollution of the soil, because through the design of industrial service complex can minimize its adverse effects, and the way we can put it near Other city events

Industrial zones shall be divided according to the laws of the municipalities, industry and environment in Iraq according to the parameters of the distance and the degree of seriousness to five sections:

- Industrial zones without risk, with a distance of (50) m. (Dyes, sweets and milk).
- Low-risk industrial zones with a distance of (100) m (manufacturing meat, flour and preparations).
- More dangerous industrial areas with a distance of (300) m. (Concrete blocks and cable production).
- Industrial zones (non-heavy factories) with a distance of 500 m (leather, batteries and asbestos).
- Industrial zones (heavy) with a distance of (1000) m. (Energy and oil).

However, in addition to the distance limit, the areas should be surrounded by industrial green belts, which is the protection of the city or the neighboring residential area from any pollution that may result from the industrial zone.

7. MAIN POWER LINES AND THEIR DETERMINANTS

There are two types of power transmission lines, either through special towers called "aerial cables" or buried in the ground and called "ground cables".

The most relevant problems related to electromagnetic pollution are the transmission lines of electric power called the high-pressure lines that are spread everywhere in today's world (400 thousand volts, 220 thousand volts). These lines are supposed to be in sites between cities and outside urban communities. High-pressure lines shall be isolated from populated areas in order to avoid any disaster that may occur and passing over the industrial zones can cause major disasters as a result of the use of machines and equipment that may interfere with these lines or due to high temperature and emissions (As shown in Figure 2 & 3)

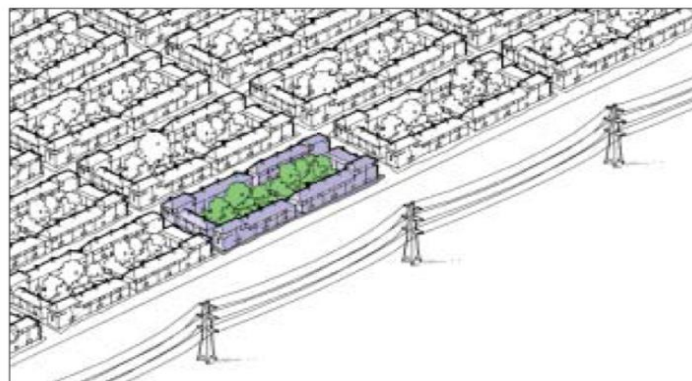


Figure 2: Parallel High-Pressure Lines and Urban Boundaries [19].



Figure (3) is an excellent example of the integration of high-pressure lines with urban areas [18].

The studies confirmed that the risk of exposure to the electromagnetic current high on all members of the human body was included in the parameters of the distance that is supposed to distance the activities from these lines. Many countries indicated that the minimum 50 meters should be left around high voltage lines 400 KV as a safety zone Free of activities. The Iraqi Ministry of Electricity adopted this according to the instructions issued in 1999 [19].

8. PLANNING DAMOK AREA IN AL-KUT

8.1 An overview of Al-Kut city and the study area

The geographical location of the most important natural phenomena affecting the characteristics of the urban area of its direct relationship with the lives of the economic population, and its important role in the current city plan by planning the various uses that require the provision of social services on an economic basis and reduce the growth of random [20].

Al-Kut city is located between two latitudes (32° - 33°) north and two longitudes (44° - 46°) east [21]. The built-up area covers about 60 square kilometers (6000 hectares), and is located in an essential location in the branch of the Gharraf and Dajili rivers of the Tigris River [22].

In terms of spatial location and its relation to neighboring areas, Al-Kut city is connected to the capital, Baghdad, which is about 180 km away. As the center of the governorate, Al-Kut is linked to its administrative units and other governorates[23],

The neighborhoods Dubad and Huqok that located to the northern part of the city, are the subject of this study. They bordering the south by the muddy road to southern Iraq (towards Amara and Basra cities). It is the industrial district of the city. The two neighborhoods were built in the 1980s, where it was a distribution of land plots to categories of employees indicated by neighborhood units' names[24].



Figure 4: Study area within the boundaries of Al-Kut city with high-pressure lines (Researchers)

8.2 Hierarchy of a network of roads in Al-Kut and its impact on the study area

Fig. 5 shows the hierarchy of the road network in Al-Kut city, and we notice that there is a defect in the hierarchy and the lack of correlation gradient to the city center.

As for the study area, the dividing road between the two neighborhoods is of the arterial type according to the classification of the Directorate of Urban Planning in Wasit, which is an effective and important street linking the industrial district with Zahraa and the external transport garage (which needs the services of the industrial district), so this street must be designed to ensure the large traffic flows of vehicles[25]. Fig5.



Figure 5: The Hierarchy of The Road Network in Al-Kut City



Figure 6: The Hierarchy of The Road in The Study Area

8.3 Industrial zone, commercial activities and pollution

The main industrial zone in Al-Kut city lies along the eastern side of the city. It is a large industrial area containing many warehouses, concrete factories, food industries, maintenance, car repair, washing and lubrication. The total distance that includes the arterial street and the service streets and there is no green belt surrounding it, this distance is less than 30 meters between the industrial area and the martyrs district, but the economic activities are not limited to the industrial area, but extended to the opposite side in the two areas (Fig.7).

The most considerable industrial activity in the two squares is in the dividing street between them (the part between the intersection of the industrial district and the intersection of Dubad - Huquk). The change in the use of this street from residential to commercial has played a significant role in the transfer of activities from the industrial neighborhood to these areas, allowing the activity other than housing in this street opened the door to sell accessories of industrial activities first and then the exercise of industrial activities later, Car maintenance and repair, these activities are carried out with other commercial activities because of the lack of parking on these streets, owners of vehicles stop in the internal sections in front of the residential units, causing discomfort to residents of these areas, the presence of workshops for the repair of cars caused congestion nearby, in addition to the dirt and dirt causing, as well as the negative environmental aspects that Residents on both sides of the street are exposed to noise from the traffic flow in the streets that no longer accommodate the momentum of cars and air pollution caused by exhaust gases that are increasing as the speed of cars accelerates.

8.4 High-pressure electricity lines in the study area

Figure (5) shows the high-pressure lines that penetrate the city. These lines were constructed outside the city limits; then the city extended and crawled over them.

Figure (10) represents the high-pressure lines passing through the study area.

It was committed to the high-pressure barrier, which is 50 meters on each side, and was appropriately treated. The area in which it passes and the width of 100 meters, the type of use is the gardens and the arterial street. However, when it reaches the study area, these criteria are exceeded. The housing logic is crawling along the pressure line. This was done in a formal and planned design and not exceeded, the cause of this problem of transport, pollution, and other dangers.

8.5 The impact of urban planning on environmental pollution in the study area

Through the above analysis, we have noticed the overriding of the determinants and criteria of urban planning. This exceeded the standards of street planning and high-pressure lines and the determinants of industrial and commercial zones, but what worsened the situation is all these problems concentrated in one area, Damuk street commercial (the dividing street between the two study areas) has decreased significantly from 100 meters to 25 meters and in a line and two lines and became a commercial street and infiltrated the industrial activities as well as the passage of high-pressure electricity poles, and less in the street between the neighborhood (Huquk) and (Hurriya) of the city, which was less than 30 meters and two to 12 meters in one line and commercial activities of the movement of vehicles.

The following are the main effects of urban planning on the environment in the study area, which have a significant negative impact on the environment and all types of pollution:

8.5.1 Air pollution

Air pollution occurred due to the industrial district's proximity and the absence of a green belt separating the industrial zone from the rest of the activities. The high traffic congestion resulting from the imbalance in the street hierarchy and the presence of commercial, industrial activities, and the presence of high-pressure electric poles, led to increased air pollution resulting from vehicles.

8.5.2 Solid waste

These activities caused the presence of waste on these streets because of the remnants of industrial activity - commercial, and the attendant harmful environmental effects on the residents near those streets, as well as the proliferation of dust and pollutants due to the heavy movement of cars, most of the activities in this street does not adhere to the limits of the earth Which is allocated to it, but to the sidewalks and the street basin and to block the sidewalk in front of the pedestrians and are forced as a result to use the street basin and their participation in cars in the movement.

8.5.3 Water pollution

There is no network in the governorate of Wasit, including Al-Kut city integrated sewerage network, is currently operating. However, there are networks of sewage streams exceeded. In the study area and the result of industrial activities are discharged oils and fats are insoluble in water and materials contain solid materials such as sand wood, Glass, plastic and other material and directly received into the Tigris River. These materials cause damage to the sewage project [26].

8.5.4 Electromagnetic pollution

This type of pollution resulted from non-compliance with the standards of the Ministry of Electricity regarding the distance separating activities from the high voltage lines of electricity. As a result, residential, commercial and industrial activities are very close to these lines and sometimes operate under the lines. The hazards resulting from the accidents that affect these networks, such as cutting lines or falling towers due to storms and winds.

8.5.5 Noise pollution

The large congestion in traffic resulting from the reasons described above has caused noise pollution due to the sound of motor vehicles and sounds of alarms. The industrial and commercial activities in the residential areas have also dispelled the calm needed by these areas.

8.5.6 Visual pollution

The presence of workshops for the repair of cars and caused by congestion and the conversion of the facades of the residential houses to warehouses for spare parts and dirt causing them have adversely affected the visual pollution, the manner of building these shops and workshops is not studied, and some of them are non-permanent materials. All of them are unanimous in their lack of commitment to the standards of building commercial premises. High voltage lines also contribute to distorting the landscape of the city. All these factors damaged the aesthetics of the study area.

9. CONCLUSIONS

Urban planning, which does not adopt a proper method that adheres to planning standards and limitations due to the lack of awareness of causal relations between urban planning and environmental pollution, will cause environmental damage, economic losses and major social impacts in the near and long term. .

Therefore, any proposal to remove some structures for the application of standards and planning determinants will impose high costs and legal difficulties, so we will focus on procedures that are necessary to adhere to urban planning standards and determinants during planning, design and implementation. And seriously studying the proposals in all aspects, especially the change in land use, changing the route of high-voltage lines from within the city to uninhabited areas, and removing public transport lines that pass through the study area to (Al-Shuhada) neighborhood, which can pass through the streets of other areas such as (Amal) and (Military) and linking the arterial (Al-Shuhada) road. And prevent the establishment of industrial activities in residential areas. In addition, the activation of laws that prevent any activities that harm the population and the need to surround the industrial area with a green belt to reduce all types of pollutants resulting from these activities

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