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# A road Map for the reconstruction of the old city of Mosul

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**Abstract**— The city of Mosul has suffered as a result of ISIS's occupation of many acts of sabotage and demolition of the urban fabric, infrastructure and services of the city, as well as the human damage caused to the population as a result of internal displacement, killing and torture. The research is concerned with investigating the damage caused to the city of Mosul, with analyzing the real-time plans to monitor the general needs of the population and trying to develop a well-thought-out road map for the reconstruction of the city in several areas, the most important of which is housing, with a future vision for the city's development and adding some new activities to restore Mosul to its prestigious position among Iraqi cities Because of its religious buildings and important historical monuments and its privileged location overlooking the river and beautiful nature. The research problem is the absence of a central administrative strategy that manages the reconstruction process, as well as identifying the parties involved in the reconstruction process with specifying the steps to be followed to achieve a single central plan for all sectors without any intersection between the engineering and technical disciplines involved in the reconstruction process, with a schedule The time frame and funding required for the success of this plan. The research aims to develop a central administrative strategy concerned with the process of achieving reconstruction by determining the timetable for the progress of work while identifying the actors and the role of each party without any intersection between them, relying on modern management mechanisms and techniques.

**Keywords**— reconstruction, liberated areas, road map, interactive management, population displacement.

## 1. Introduction

This research reviews the development of a Road Map action plan to start the reconstruction operations based on real-world data by referring to what was documented before the crisis and to identifying the actors in the reconstruction process and to identifying the donors for funding, by identifying the city's needs and what can be achieved in the future through Developing a new vision for the city, by analyzing the urban fabric of the old city and how to add some new jobs to the city and amend the old jobs, such as adding some tourism and commercial activities to some areas within the city and on its outskirts, as will be mentioned later. The action plan is mainly concerned with the reconstruction of housing and services to facilitate the return of residents to their original areas, and also focuses on expanding the urban fabric of the city to accommodate the increasing population growth, as well as providing new job opportunities for the residents by

adding new tourism, commercial and service activities for visitors, which will restore the city of Mosul. Its historical prestigious position is due to its properties of tourist cities, including historical landmarks, urban monuments, and a distinct nature represented in vegetation cover such as forests on the outskirts of the city and its distinctive sites on the banks of the Tigris River.

## 2. LITERATURE REVIEW:

Many governmental and humanitarian organizations and institutions have intervened to develop quick solutions for the reconstruction of the city of Mosul, including:

**2-1 First: Study - Reconstruction Priorities in Nineveh Governorate - submitted by the Engineering Advisory Team - University of Mosul and members of the Advisory Committee - October - 2017.**

This study deals with the entire Nineveh Governorate and means of linking the governorate with the neighboring governorates. And as the governorate map shows in Figure (1). This study divides the city of Mosul into four regions according to the percentage of destruction that occurred in it, as shown in Figures (2) and (3), and as follows:

Area (A), the eastern side of the city of Mosul (left): the percentage of destruction in this area in separate places, as shown in Figure (2).

Area (B) the western (right) side of the city of Mosul, inhabited or inhabitable: the percentage of destruction in the western side is very large, and it is noticeable from Figure (2) that the areas located in the periphery are the least in terms of destruction.

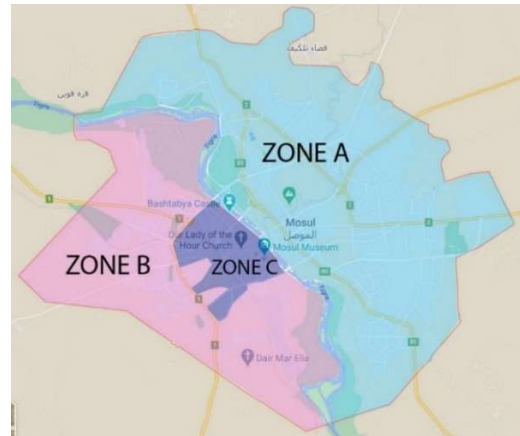
Area (C), the western (right) side of the city of Mosul, which is destroyed in a high rate and is uninhabitable: The area adjacent to the river is the worst in terms of destruction in the western side of the city, as shown in Figure (2)

Region (D), the districts and sub-districts outside the city of Mosul, as shown in figure (3).

The first study was analyzed and the action plan drawn up for the reconstruction of Mosul was determined. Table (1)



**Figure 1:** shows the division of Nineveh Governorate, with an indication of the districts, districts, and sub-districts centers.



**Figure 2:** shows three regions within the city of Mosul.



**Figure 3:** shows the plan for dividing Nineveh Governorate into four regions, including the city of Mosul.

**Table 1:** shows the analysis of the first study.

NO.	Sort	Details
1	Field of study	Reconstruction of Nineveh Governorate.
2	Study method	Preparing a study on the ancient city that includes three scenarios for its reconstruction. The work includes the committee to study the reality of the situation in the city through field visits and the available data, and to meet the gentlemen concerned with the affairs of transport, services and various sectors in the governorate to study the general situation in the governorate after its liberation, and through which the state of the infrastructure in the

		governorate and the damage it was exposed to was assessed and then proposals submitted Suitable for the reconstruction process in the city.
3	Objectives of the study	<p>Return the displaced and the affected people to their (inhabitable) areas as soon as possible.</p> <p>Helping returnees to return to normal life (return to work and study).</p> <p>Finding solutions for those affected by the uninhabitable areas.</p> <p>Preserving the identity, historical and heritage character of the city within the reconstruction plan</p> <p>For this purpose, consideration was given to the presence of populated or inhabitable areas on both sides of the city of Mosul in addition to the districts and sub-districts of the governorate. They discussed how to secure services and transportation methods for these areas, and then move to other sectors.</p>
4	Study plan	Reconstruction of the stages of the years (2018, 2019-2022 and 2023-2027) and the division of the city into four sectors.
5	Study priorities	<p>The security sector.</p> <p>The housing sector.</p> <p>Housing support services sector, such as for banks, departments and the Ministry of Justice, Land Registration, Nationality, Civil Status, Passports and Traffic.</p> <p>The transport sector.</p> <p>The public services sector, such as municipal departments, water, sewage, electricity, oil products, health, education and higher education.</p>

		Other sector sectors such as agriculture, industry, tourism and sports.
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**2-2 Second study: The preliminary re-planning study for the reconstruction of Mosul, submitted by UN-Habitat, 2019.**

The study is concerned with rebuilding the city of Mosul only within the Nineveh governorate, where a study was prepared on the entire city and focusing mainly on the residential aspect, as well as public services supporting the reconstruction of the old city using the 48 Super Blocks proposal: proposed by UN-Habitat and UNESCO provides opportunities for recovery to the city while providing the services and livelihood opportunities necessary to return the displaced to their homes. The proposal is based on dividing the old area into three main areas, Figure (4), and these areas are divided into 48 blocks that have been evaluated by homeowners and supporters with recommendations by the consultant office owners, Figure (5). Each of these areas contains housing and some service establishments, with the main movement routes planned. A total of 48 super-blocks were identified, each containing between 150-450 plots of land, with a maximum of 3,500 inhabitants per mega-area. After the assessments of the regions, the construction of the first two blocks will be started, depending on the urban reality of the city, and the support for the aspects of preparing the water network, sanitation, hygiene, housing rehabilitation, education and heritage will be initiated to facilitate the safe and voluntary return of the internally displaced. Building a community based on cooperative organizations to support the reconstruction process (Community-Based Organization (CBO)), which consists of approximately 150-350 owners of managed lands, where the REFAATO will grant loans in the form of payments depending on the size The building and the income level of the owners of these lands with determining the size of the damage to their buildings while adhering to the necessary conditions in the building guidelines. The CBO designates a person to follow up and supervise the construction work and ensure that they adhere to the terms of the reconstruction of their buildings within the boundaries of the proposed area. The study also focuses on the problem of informal expansion of the city of Mosul and methods of controlling it. Where the study traces the stages of development of the basic plan for the city, which was developed in 1974 AD and ends in 2000 AD, but due to the political conditions of the country, the design process for a new plan faced some problems and obstacles, which led to the random expansion of the city from the right side of the city due to overpopulation. The emergence of many slums on the outskirts of the city, the study also examines how to solve the problem of these slums by owning lands to the transgressors or renting it to them in the event that these slums do not intersect with the basic plan of the city or with the main service lines such as water, electricity, sewage or transmission lines Oil. Note Figures (6) and (7). The second study was analyzed and



the action plan drawn up for the reconstruction of Mosul was determined. Table (2)

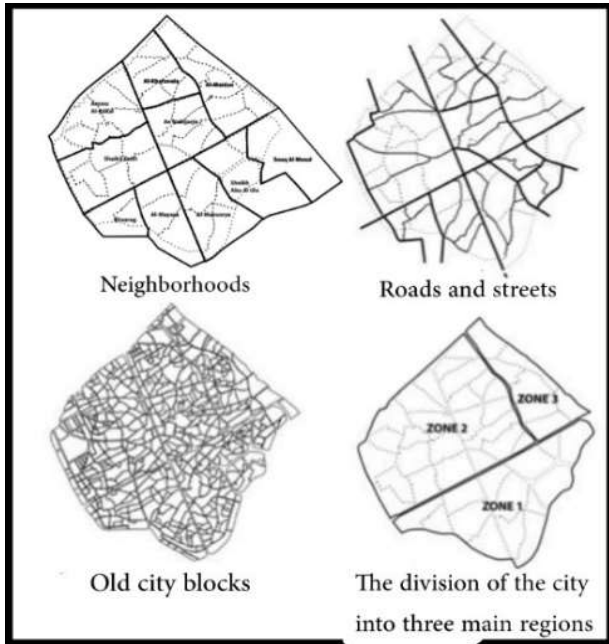


Figure 4: dividing the old area into 3 main areas, with an explanation of the



Figure 5: dividing the old area into 48 main blocks.

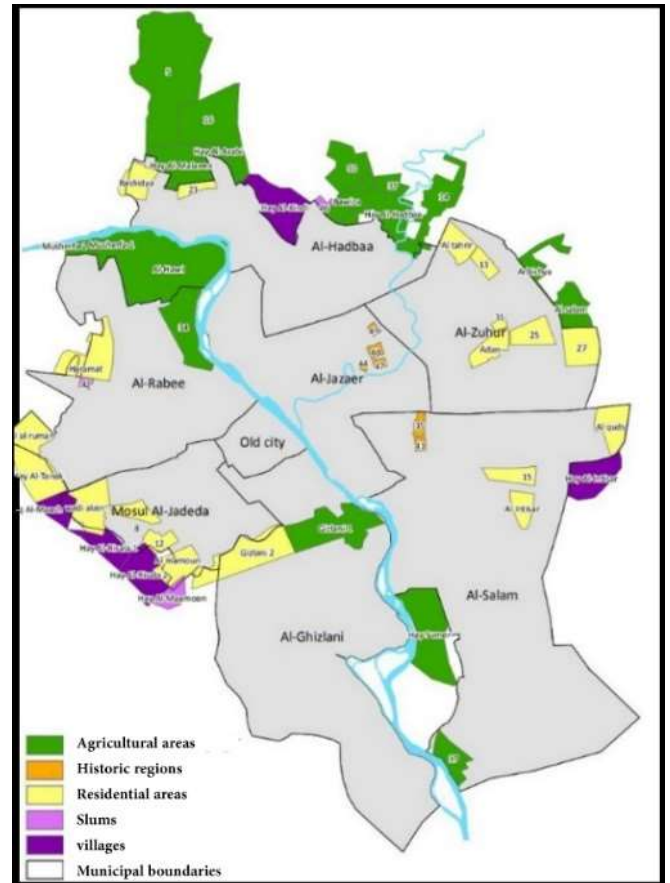


Figure 6: shows the division of lands to the outskirts of the city of Mosul

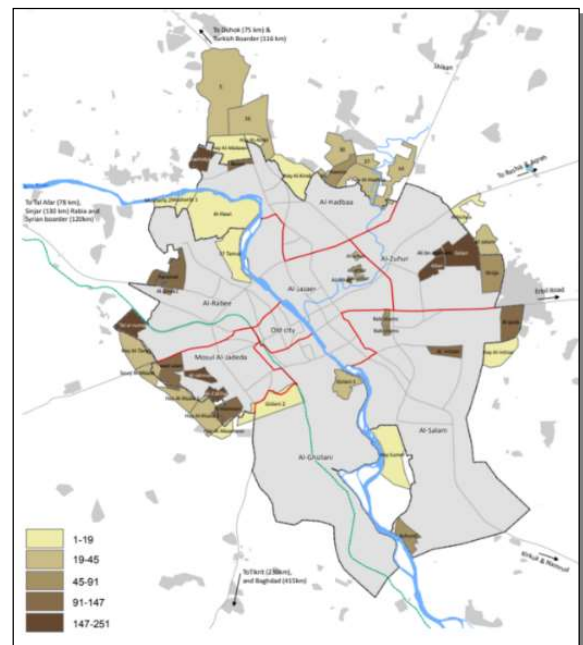
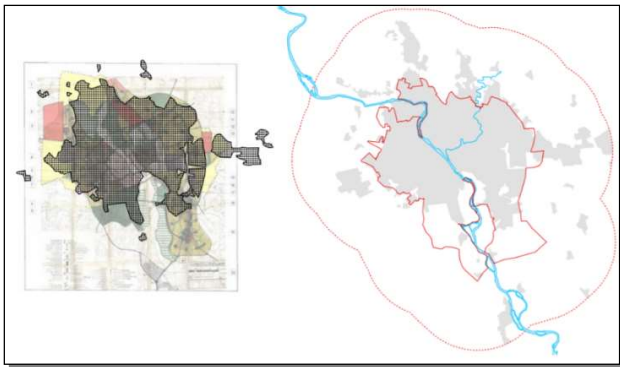


Figure 7: shows the size and number of informal.

The study also sheds light on an important detail in the reconstruction process, which is the start of designing the master plan for the city of Mosul. Over the past eighteen years, the city has developed without a plan. This is why

re-starting planning is essential to ensure equitable and sustainable growth prospects for Mosul. Figure (8) shows the development of the previous master plan for Mosul in 1974 and directed the city's growth for 25 years. By the year 2000, discuss the main obstacles that confused the process of developing the master plan and try to avoid them in the next stages of the Mosul reconstruction process.



**Figure 8:** The left part shows the structure plan based on the reality of the situation for the year 2000 and placed on the master plan for the year 1974. While the right part shows the new master plan for the year 2008 AD, with the emergence of neighborhoods and villages outside this plan.

**Table 2:** shows the analysis of the first study.

NO.	Sort	Details
1	Field of study	The reconstruction of the city of Mosul only.
2	Study method	Preparing a study on the entire city for its reconstruction, focusing mainly on the residential side, as well as the public services that support it. The work includes the institution studying the reality of the situation in the city through field visits and available data, conducting field meetings with residents, studying alternatives that can be provided to housing owners and even tenants to rehabilitate the housing sector, and work on assessing the state of the infrastructure and services in the governorate, monitoring the damages it has suffered and then Submit appropriate proposals for the reconstruction process in the city.

3	Objectives of the study	<p>Return the displaced and the affected people to their habitable homes.</p> <p>Finding the necessary financial support through state institutions or through international humanitarian organizations to rebuild the homes of the owners or from which they are used for the purpose of rent or support the residents who are unable to pay the rent within the city by supporting them with a rent allowance at the city borders</p> <p>Reconfiguring and developing service facilities and public services in the city center and the periphery alike, to reduce disparities and inequality in services between central and peripheral neighborhoods and to ease social tensions.</p> <p>Creating new housing sites inside the city of Mosul, but outside the affected areas, in which it is possible to establish temporary housing, so that later, after the end of the crisis and the return of the displaced to their areas of residence, they can build housing complexes for the well-off. Ages.</p> <p>Control over the informal expansion of the housing sector outside the city of Mosul and on its outskirts.</p> <p>Supporting the role of the law in formalizing informal areas that do not conflict with the city's master plan and preserving heritage buildings by purchasing and transferring their ownership from the original owners to the state in humanitarian and legal ways, and not resorting to forced transfer of property.</p>
4	Study plan	Reconstructing the old city using the proposed 48 giant areas (Super Blocks), which are set within a period of 5 years (a plan in the short and medium term), as well as developing a basic plan for the

		city for 20 years (a plan in the long term).
5	Study priorities	<p>The housing sector.</p> <p>The services sector to support housing, such as banks, departments and the Ministry of Justice, Real Estate Registration, Nationality, Civil Status, Passports and Traffic.</p> <p>The public services sector, such as municipal departments, water, sewage, electricity, oil products, health, education and higher education.</p> <p>The transport sector.</p> <p>The sector of other departments such as agriculture, industry, tourism and sports.</p>

### 2-3 Third study: The Mosul and Nineveh Reconstruction Conference - Vienna, 2019.

This study is concerned with the reconstruction of Nineveh Governorate, including the city of Mosul. The study documents the reality of the existing physical environment and infrastructure to develop a plan for the reconstruction of what was damaged by it, with an attempt to unify efforts by finding international institutions and organizations and trying to create a spirit of cooperation between the engineering and technical specialties, where the parties in charge of the reconstruction process were identified, which include:

The Governorate: It operates almost solely and is funded by the central government.

- Service ministries: such as housing and construction, municipalities, education, education, health, and their financing within the budget (some of the ministries received Nineveh's share and the principle of decentralization was not applied, as not all powers were transferred to the governorate and also as a kind of control over corruption rampant in the local government).
- UN organizations finance the largest of the UNDP's share, and with it UN-Habitat, UNESCO, UNMAS also work
- The Reconstruction Fund for Affected Areas (REFFATO). Central government funding

Endowments. It carried out an unorganized campaign to remove the rubble, knowing that the endowments own

large properties in the Old City, especially the commercial part of the Old City.

- The Office of the Supervisor of the Governmental Effort (Dr. Muzahim Al-Khayyat and the team working with him, and I include him) and works as a supervising authority, but without real powers and without any funding at all.
- International and local civil society organizations, generally their projects are small and supportive only.
- The private sector: Most of the property owners renovate their buildings, and a large number of homeowners are rebuilding their homes, especially on the left side, in addition to individual campaigns to remove the rubble.

Generally speaking, there is no plan that unites the efforts of these parties and there is no coordination between them, and in more than one case a project is started from within the list of projects of another party such as UNDP, and then the allocations are withdrawn in one way or another, and the work is not properly implemented, this is if the work is done.

That is why the study aims to create a unified system that leads the reconstruction processes in a systematic, fast and accurate manner, by defining the role of each of the actors in the reconstruction process, defining areas of coverage and influence for each party, and not to deliver projects randomly by the central administration of the government, but rather through an action plan. Thoughtful and well done.

The study has developed an approved work plan on two administrative sides, the first side, which is the legal side, begins with setting up the administrative frameworks and laws that give to the legitimate plan, in terms of funding and obligating the implementation of the decisions contained in this plan mainly in order for the participating members to work freely and seriously. The second aspect is the technical side, which is concerned with setting time plans for the reconstruction process, which is divided into three plans (the short term is two years, the medium term is 5-7 years and the long term is 25 years). This aspect is also concerned with developing the proposed planning principles for the city in the form of stages such as lifting mines, connecting bridges, and then focusing on the housing and health aspect in an urgent and fast manner.

The third study was analyzed and the action plan drawn up for the reconstruction of Mosul was determined. Table (3).

**Table 3:** shows the analysis of the first study.

NO.	Sort	Details
1	Field of study	Reconstruction of Mosul and Nineveh Governorate.
2	Study method	Preparing a study on the status quo of the rebuilding operations of the city of

		<p>Mosul, including the parties involved in these processes, to clarify the pros and cons of these bodies, and emphasize the identification of a single primary entity capable of taking decisions regarding the development of correct work plans and the selection of appropriate alternatives for all paragraphs. Therefore, the study directed towards studying and clarifying the plans of the common parties to find points of convergence between them and an attempt to avoid the points of intersection in the plans for any one. Such as the completion of the paving work on one of the streets, but without laying down the sanitary or electrical foundations and the extension of the column lines, which must be re-demolished.</p>
3	Objectives of the study	<p>Determine the tasks of each party involved in reconstruction operations, along with setting up an action plan that sets a specific date and place for each party to start implementation work without a conflict with a second party.</p> <p>Organizing administrative reconstruction processes by determining the supreme body that makes crucial decisions for each paragraph. As government agencies work separately from humanitarian organizations and the private sector, as well as the rampant administrative corruption in the state sectors.</p> <p>Paying attention to the housing sector and rebuilding the damaged or destroyed buildings to facilitate the return of residents to their original areas.</p> <p>Finding solutions for those affected by the uninhabitable areas, by searching outside the Old City.</p> <p>Preserving the identity, historical and heritage</p>

		character of the city within the reconstruction plan.
4	Study plan	Developing a short-term plan for two years divided into 6 phases, followed by a medium-term plan (5-7), and then a long-term plan up to 25 years.
5	Study priorities	<p>General planning of the city</p> <p>Lifting the rubble and working on setting up means to transport the rubble and identifying areas for collecting rubble and recycling marble in the construction of heritage buildings.</p> <p>Rehabilitation of the housing sector.</p> <p>Rehabilitation of the health sector with the development of a complete plan for the reconstruction of hospitals throughout Nineveh Governorate.</p> <p>The public services sector, such as municipal departments, water, sewage, electricity, oil products, education and higher education.</p>

### 3 Steps to start reconstruction operations:

In view of literature review that have been put forward, it is possible to reach the conclusion of the Road Map, It is noticeable that before embarking on the reconstruction process for any city that has suffered from crises such as wars or natural disasters, it is to start with the immediate reconstruction stages, which are called (emergency plan) or (Pre-request), which are concerned with restoring life to the city by reconnecting and reconfiguring bridges, removing mines Explosive weapons and removing the rubble of dilapidated buildings to open the way for the reconstruction of the rest of the city and to facilitate the return of the displaced to their areas of residence. After that, reconstruction operations are started by defining the work mechanism and strategies upon which the idea of reconstruction depends, as some cities have erased the effects of destruction in them and the rest of the destroyed cities are removed and rebuilt from scratch, as happened in the Solidere area in Beirut - Lebanon and also the city of Hiroshima - Japan, or it may be rebuilt according to the old master plan of the city, as happened in Warsaw - Poland and Berlin, and many other strategies, but in all cases, the designer needs real-world plans that are referred to in the archive for each city, so any A reconstruction process in which the first stage is to return to the archive, but in the

Iraqi case, most cities lack this archive, and therefore the research is directed to shed light on the processes and stages of archiving and to explain its important role in preserving the shape and characteristics of important historical and modern Iraqi cities.

After the completion of the archiving process, the design process for the reconstruction of any city goes through many stages, starting from the basic idea of the project, then the initial plans, then the detailed plans, and finally the implementation, up to the sequential implementation processes. These operations include the participation of many specialties, which require their interaction and cooperation with each other, so the need to find means and techniques that enable all parties involved in the construction process to cooperate and work in coordination within common determinants is called the management of reconstruction operations. There are many directions and programs specialized in the management of reconstruction operations, which provide a unified platform for the convergence of all specializations in one place that guarantees the right to share and exchange information between the specializations, which in turn provides a station that organizes the role of specializations in the construction process and gives a timetable for the beginning and end of the work of each specialization and provides a unified database. Any engineering or technical specialization can review it and amend it as needed and with the consent of all participating parties.

#### 4 The Road map

And based on the general studies that were presented, the researcher reached a road map for the reconstruction process. It is a strategy that has been developed to manage the process of rebuilding the city of Mosul, in which the reality of the city's condition must be studied with a schedule of work progress indicating the size of work, work responsibility, source of funding, etc, which is the first step in the reconstruction of any city. In this step, the size of the project and the size of the existing work is mainly known to know the number of required cadres and materials, as well as monitoring the correct number of the work budget to avoid the occurrence of problems later, and therefore any defect in the reconstruction process must be diagnosed at this stage.

After knowing the budget required for the reconstruction process, it is necessary to know the size of the existing and required financing, along with determining the sources of financing and the size of the costs for each stage. A schedule is also drawn up for the amount of work accomplished and remaining, with the date of completion of each paragraph included in this schedule.

After determining the basic lines of the reconstruction process, it is necessary to start a recovery plan or the so-called (Pre request) for the city of Mosul, which is as follows:

Building external bridges and main roads destroyed to deliver the necessary supplies to the population and supplies for the reconstruction operations.

Raising mines and unexploded weapons that are abundant in the right part (the old area) of Mosul, and note that most of these mines are near the old urban lineage that suffers from deterioration, so these buildings do not bear any detonation of the existing mines, but an attempt must be made to reach to the specialized cadres capable of removing the existing mines.

Lifting the rubble of the demolished buildings in preparation for the reconstruction operations with the use of these quantities of rubble. As for the filling of lands as a whole, which happened in Beirut after the civil war, where the competent authorities filled the sides of the sea using the rubble to extend the land with a greater area. Urgently, the same method can be used, but in preserving the sides of the Tigris River in the city of Mosul. Or this rubble is used in recycling operations and used in construction operations, where the rubble of the heritage buildings themselves is used in the reconstruction of these heritage buildings.

After that, the stage of developing the considered plans in a sequential manner to start the reconstruction process for the city is as follows:

Developing the basic design of the work plan, it is necessary to know the plans of the reality of the situation as in the GIS program with the plans of demolished buildings that are already in the archives of the Ministry of Planning or other concerned authorities, but in the event that there is no architectural plan, a decree for any building with a demolished mission, then we can refer to the books and sources that are I spoke and described these buildings. But in order to preserve the existing building history, it is recommended that the concerned institutions document the important buildings using the GIS system in general or the 3D Scanning system to ensure the preservation of full details.

Housing: One of the most important priorities for reconstruction operations is to return the displaced to their place of residence, but this process is not completed in one stage, as it is divided into two stages:

Supporting residents with material or materials for families who own a house that only needs restoration and is ready for housing.

Supporting the residents financially for families that own completely demolished housing, to help find a location close to housing, as rent on a temporary basis. New units are built for them and then they are returned to the new housing areas.

Infrastructure: which includes the reconstruction of water, sanitation and electricity networks to create a habitable environment for the displaced.



The commercial axis: The return of the displaced to their areas of residence requires the provision of commercial areas to provide daily sustenance for the residents and to infuse the spirit of life within the city, such as the main commercial streets and commercial buildings that provide job opportunities for the residents and provide the daily needs of food, clothes and necessities for a good life inside the city.

Historical and heritage monuments: Some of the plans that were put in place by international organizations such as UNESCO and UN-Habitat focused on an important principle, which is to revive historical monuments inside the city before reviving housing as a message to residents to return life to the city to want them to return to their original homes and start Reconstruct it.

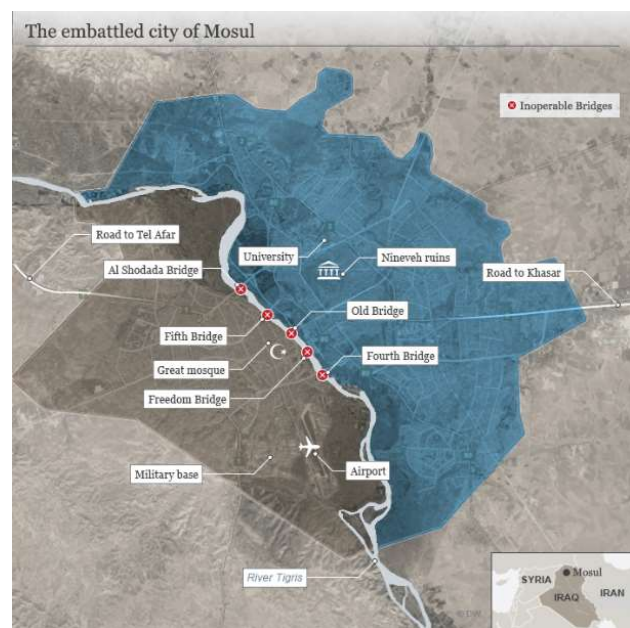
River banks: The process of converting river banks into tourist facilities provides many job opportunities for the city's residents, by rebuilding the river's banks in the form of service and tourist facilities such as restaurants and public cafes to attract tourists mainly, as well as converting some residential buildings near the banks of the river to Commercial facilities such as commercial markets or shopping centers, thus raising the economic value of these buildings and providing additional job opportunities.

## 5 The ancient city of Mosul:

The city of Mosul is located in the northwestern part of Iraq, see Figure (9). It consists of two main sides and is separated by the Tigris River and divides them into two parts, namely the left side and the right side, as shown in Figure (10) There are five bridges connecting the two sides, see Figure (11), the arrangement of bridges from south to north, starting with Al-Hurriya Bridge, then Al-Jouhriya Bridge, then the Iron Bridge (the Old Bridge), then the Fifth Bridge and finally the Shuhada Bridge. These bridges were demolished due to the violence that affected the city in 2017 in the process of liberating the city of Mosul, as these bridges were destroyed either due to aerial bombardment by the Iraqi forces supported by the Iraqi forces or because of the bombing and sabotage acts carried out by ISIS elements, to prevent the arrival of the Iraqi ground forces. From entering the right side and coming from the left side. The search is concerned with the ancient city on the right side of the city, which is located between the fourth bridge and the fifth bridge. [1] See Figure (12).

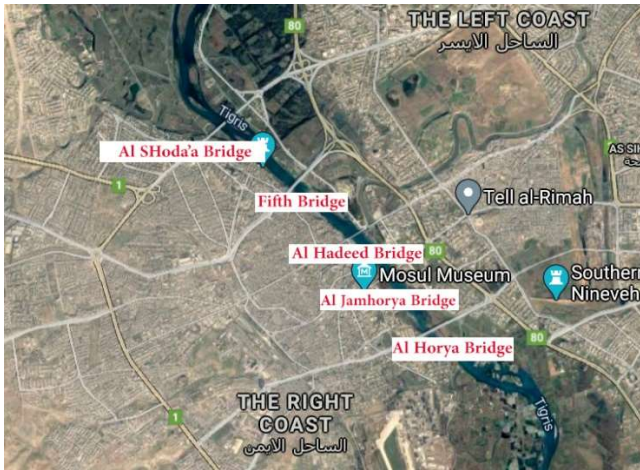


**Figure 9:** shows the map of Iraq and the location of Nineveh Governorate inside the map of Iraq, and inside it is the location of the city of Mosul



**Figure 10:** shows a map of the city of Mosul, with the left and right side of the city.

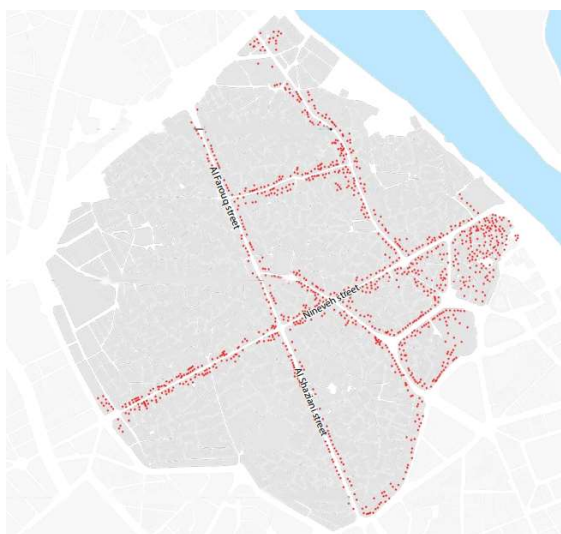
It is noticed that the internal road network of the city consists of main roads perpendicular to Al-Farouq Street and its extension to the old Al-Farouq Street and the main street, which is Nineveh Street and its extension to Khazraj Street, see Figure (13), which divides the city into four different sectors, namely Al-Maidan, Bani Zarzis, and Khatounia in the north, Mosul Market and Sheikh Abu Al-Ela and Al-Mansuriya in the east, Sheikh Fathi and Ammou Al-Baal in the west, Al-Mayasah and Al-Khazraj in the south [2]. See Figure (14).



**Figure 11:** shows the locations and names of the bridges connecting the left and right sides of the city of Mosul. Source Google Maps

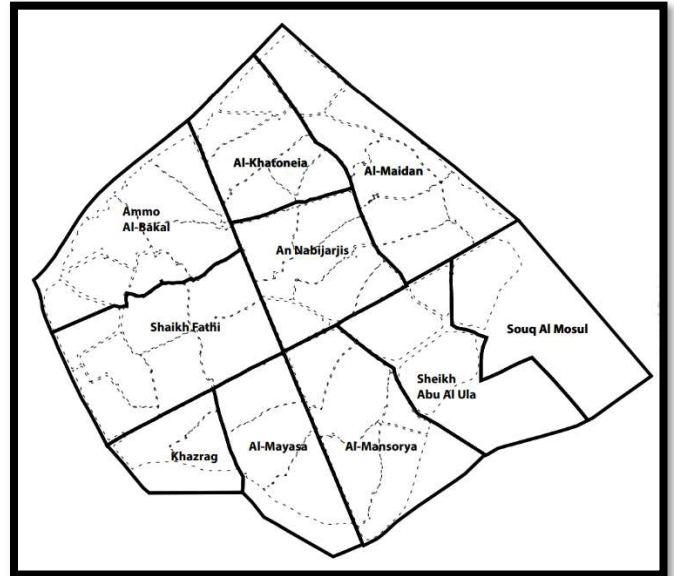


**Figure 12:** shows the boundaries of the old city on the right side of the city of Mosul, as well as the important areas and buildings surrounding the old city. Source Google Maps



**Figure 13:** shows the main roads inside the old city on the right side, which appear in the form of two

perpendicular main roads that divide the city into four regions, in addition to the primary secondary roads of the city.



**Figure 14:** shows the division of the city into four sectors due to the main traffic routes.

## 6 Analysis of the land use of the ancient city of Mosul and the future vision:

### 6-1 Religious buildings and shrines:

The old city contains many 19 buildings between a mosque and a mosque such as the Prophet Yunus Mosque, the Al-Nuri Mosque and the Raghiba Khatun Mosque, these buildings are distributed in the northern and eastern part of the city with the presence of the Ziwani Mosque and the Shams al-Din Umayyad Mosque in the southern part of the city, the Sultan Wes Mosque and the Imam al-Bahir Mosque in the western part of the city, See figure (15). It also contains 14 shrines and shrines such as the shrine of the Prophet Zarzis, the shrine of the Prophet Daniel and the shrine of Sheikh Hassan al-Bakri, which are distributed randomly inside the city except for the western part of the city in which the shrine of the Prophet Daniel is located only, see Figure (16). On the other hand, the city of Mosul contains 18 buildings between a church and an archbishopric, such as a church such as the Church of Al-Tahera and the Church of Maryuhanna, and archdioceses such as the Syriac Catholic Archdiocese and the Dominican Fathers' Archdiocese, which are distributed on both sides of Nineveh Street near the Iron Bridge and near the intersection of Nineveh Street with Al-Farouq Street in the city center. See Figure (17). It is noticeable that the buildings of mosques and shrines exist separately with a close distance between each mosque and another, unlike churches and archdioceses, where there are two or three churches in a congregation, in addition to the presence of archdioceses in the same congregation. The reason for this is the difference in the worship customs of the two religions,

Islam and Christians, as a single mosque or mosque can cover an area of 500-1000 square meters to serve the residents of this part of the city's area because they are of the same sect. As for the churches, we notice that a number of churches are gathered in one place. Because of the multiplicity of sects in the Christian religion, and that every church has its own pioneers from a particular sect. Source (prepared by the researcher).

### **6-2 Tourist markets and hotels:**

The old city contains many markets and khans, which number 12 areas for various goods, as each region contains a number of buildings, which differ in size and number according to the market's need for them, such as the carpenters' market, the goldsmith market, the fish market, and others, see Figure (18). Where it is noticed that the market areas are gathered in the northern part of the city and close to the Corniche overlooking the river in the eastern part on the outskirts of the city, due to the fact that the downtown area and the rest of its spaces are crowded with residential buildings, streets and narrow alleys, which causes additional momentum to residents and merchants because of the difficulty in entering and taking out goods, Also, there are three markets that are outside the city limits, namely, the Spring Market, the Swimming Pool Market, and the Khan Al-Jazel due to the large area there.

As for hotels, we also notice from figure (19) that the city contains within it one tourist hotel in the eastern part of the city and close to the markets, which is the Bab al-Toub Garage Hotel. As for the rest of the hotels, they are close to the city limits, but they are considered outside the city, such as the Baghdad Hotel, the Peace Hotel, the Al-Nakheel Hotel, the Sinjar Mountain Hotel and the Zaytoun Hotel. The lack of hotels inside the city reduces the desire of tourists to enter the city and enjoy its ancient history and heritage. (prepared by the researcher).

### **6-3 Service and educational buildings:**

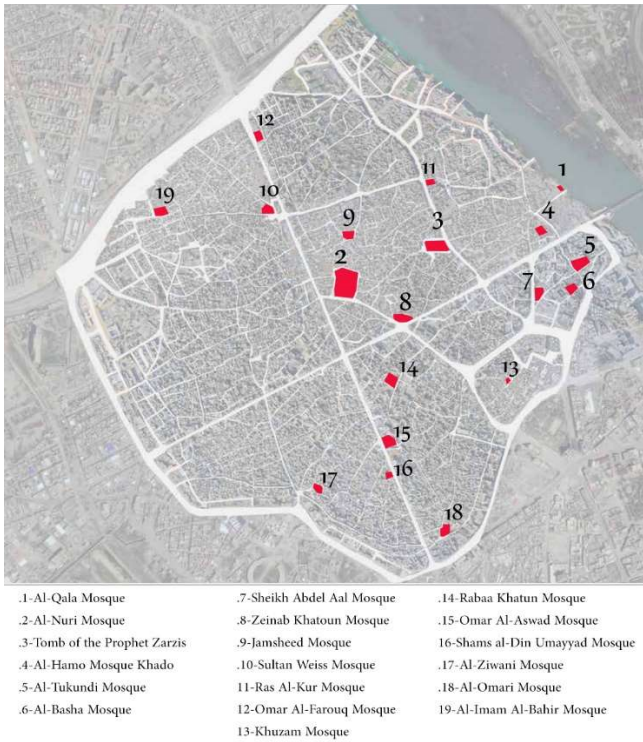
Schools: There are many schools within the old city in three parts, except for the southern part. Most of the schools concentrated in the old city are in the eastern and northern part. See Figure (20) Whereas, the schools located in the old city constitute 70% of them the primary schools because it is an old city that is distinguished by its solid fabric. Therefore, the housing need is concentrated on primary schools for the age groups of less than 12 years because it is dangerous for these groups to go out to the outskirts of the city or outside. We also notice the presence of two ancient schools on the borders of the city outside the southern part, which is the western middle school for boys and the Zahraa prep school for girls, because the age group of the middle school stage has the ability to move freely and out of the city from the age groups for the primary stage.

### **6-4 Hospitals:**

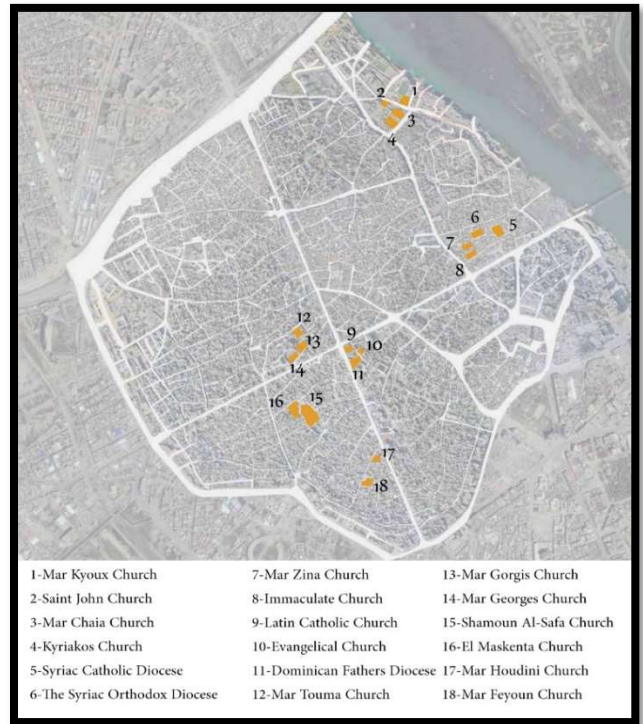
There is no hospital or medical clinic inside the Old City to meet the residents' need for medical needs, as happened during the crisis that affected the city (2014-2017). The nearest hospital to the city is near the borders of the southern part, which is the Right Sector Hospital and Nineveh National Hospital. See Figure (21). Thus, it is necessary when starting to work on reconstruction plans to provide at least one central hospital to serve the residents of the old city.

Figure (21) shows all activities related to land use within the city of Mosul.

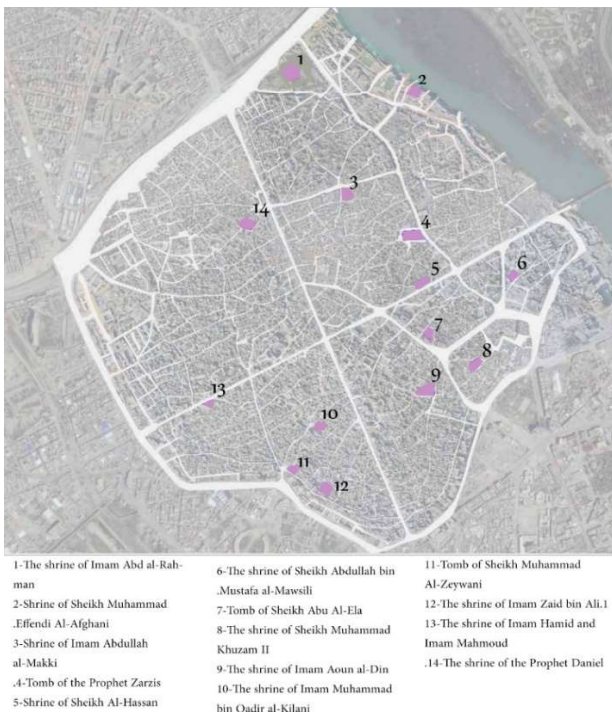




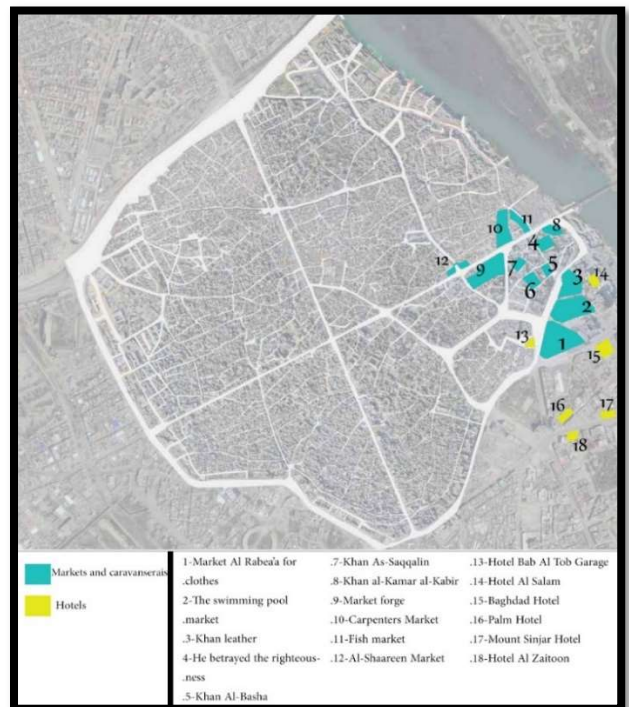
**Figure 15:** shows the distribution of mosques and shrines inside the old city. Source (prepared by the researcher)



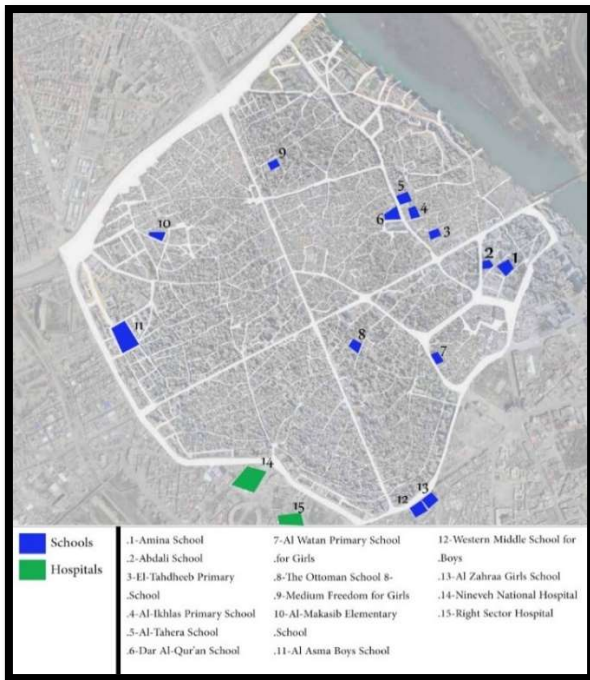
**Figure 17:** shows the distribution of churches and congregations within the Old City. Source (prepared by the researcher)



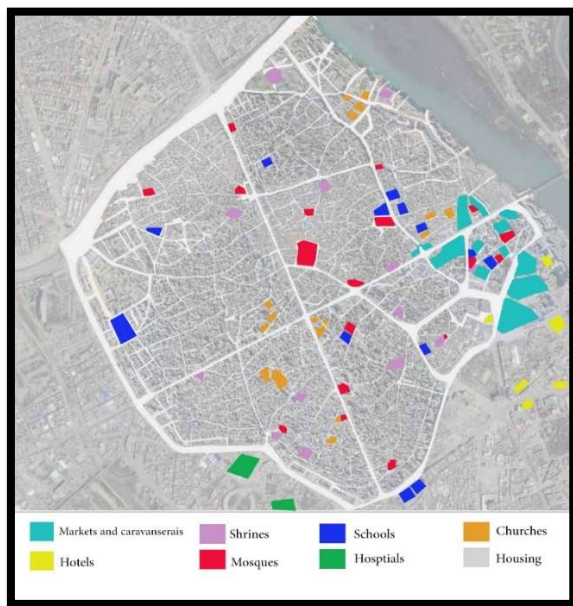
**Figure 16:** shows the distribution of shrines and shrines inside the old city. Source (prepared by the researcher)



**Figure 18:** shows the distribution of markets and commercial cells with the distribution of tourist hotels inside the old city. Source (prepared by the researcher)



**Figure 19:** shows the distribution of schools and hospitals within the Old City. Source (prepared by the researcher)



**Figure 20:** shows the general distribution of land use within the Old City. Source (prepared by the researcher)

### 7 The Implement of Road Map:

The Road Map is to be completed in five phases:

- 7-1 *The first stage: When the action plan begins to re-establish the demolished bridges, the building parts are prepared and manufactured for the pre-fabricated structural systems.*
- 7-2 *The second stage: Preparing the foundations and rules for a residential complex by relying on the rubble of the belt area separating the modern old part of the city as it was completely destroyed, using an architectural pattern that mimics the old and new fabric, and often a pattern will be directed towards a pattern that mimics the conductive stone., To house the displaced from the old section of the area.*
- 7-3 *The third stage: the construction of the new part of the city as a later stage of the residential complex of the separation belt area, using the pre-fabricated building method, but with a modern style in line with the new fabric.*
- 7-4 *The fourth stage: building the main archaeological monuments of the city using the ruins of each building to preserve the identity of the building from extinction.*
- 7-5 *The fifth stage: in which the orientation is made towards the reconstruction of the areas bordering the river bank by using the ready-made system with modification to the modules to create tourist entertainment areas while adhering to the principles of preservation and urban and architectural rehabilitation.*

### 8 Conclusions:

The research is interested in developing a Road Map for the process of rebuilding the Old City of Mosul. Where the reconstruction process begins by applying the emergency management plan to meet the requirements of the Pre-Request, which means providing shelter, food and clothes for the displaced and providing them with safety, and then entering the process management stage of planning and designing a basic plan for the city with the provision of resources and actors and starting work by adopting a system A technical administrative called interactive management, which is based on the principle of constantly rotating information by referring to the initial stages of the reconstruction process during the systematic transition to the stages of the reconstruction plan, stage by stage, and at each stage a return to the basics on which the idea of reconstruction is based. The plan of the old city was analyzed on the right side of the city of Mosul, considering that it is a historical city and possesses valuable cultural and intangible heritage associated with the collective memory of the inhabitants. As well as containing monuments, mausoleums and religious buildings dating back hundreds of years.



After analyzing the city's plan, it became clear that there is a deficiency in providing many basic services to the city, such as health and educational services and even some commercial services, as well as the deterioration of most of the infrastructure and support services networks.

The process of laying the foundations for a new plan for the city with a future vision requires redesigning the general system of the city by focusing mainly on housing. Residential complexes are being constructed on the outskirts of the city using pre-fabricated construction methods in the Al Hizan area separating the old and the new city. These complexes are a point of shelter for the displaced coming from the Old City, pending the reconstruction of their original homes and ensuring their return to their homes in safety, and after the completion of the reconstruction of their homes and leaving them to the ready-made housing complexes, either these complexes are converted into tourist and commercial facilities or residential complexes remain to accommodate the increasing population overcrowding. For the city.

The future vision also proposes transforming the city from a historic residential area to a commercial and tourist area, to make the most of the historical and urban monuments that the city possesses, as well as the untapped river banks. The process of opening new horizons for the city by providing tourist facilities to visitors requires converting many public and residential buildings destroyed by the crisis into commercial buildings such as shopping stores,

restaurants and cafes to serve visitors and tourists, thus providing new job opportunities for the city's residents, which has a greater impact on opening the door for investments to heads Money from outside the old city of Mosul.

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## خطة عمل إعادة اعمار مدينة الموصل القديمة

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**الخلاصة :** عانت مدينة الموصل نتيجة احتلال داعش للعديد من أعمال التخريب وهدم البنية العمرانية والبنية التحتية والخدمات للمدينة ، فضلاً عن الأضرار البشرية التي لحقت بالسكان نتيجة النزوح الداخلي ، القتل والتعذيب. يهتم البحث بالتحقيق في الأضرار التي لحقت بمدينة الموصل ، مع تحليل الخطط الأنبية لرصد الاحتياجات العامة للسكان ومحاولة وضع خارطة طريق مدروسة جيداً لإعادة إعمار المدينة في عدة مناطق. من أهمها الإسكان ، مع رؤية مستقبلية لتنمية المدينة وإضافة بعض الأنشطة الجديدة لإعادة الموصل إلى مكانتها المرموقة بين المدن العراقية بسبب مبانها الدينية ومعالمها التاريخية الهامة وموقعها المتميز المطل على النهر و طبيعة جميلة. تتمثل مشكلة البحث في عدم وجود استراتيجيات إدارية مركزية تدير عملية إعادة الإعمار ، وكذلك تحديد الأطراف المشاركة في عملية إعادة الإعمار مع تحديد الخطوات الواجب اتباعها لتحقيق خطة مركزية واحدة لجميع القطاعات دون أي تقاطع بين الهندسة. والتخصصات الفنية المشاركة في عملية إعادة الإعمار ، مع جدول زمني والإطار الزمني والتمويل المطلوب لنجاح هذه الخطة. يهدف البحث إلى وضع استراتيجيات إدارية مركزية تعنى بعملية تحقيق إعادة الإعمار من خلال تحديد الجدول الزمني لسير العمل مع تحديد الجهات الفاعلة ودور كل طرف دون أي تقاطع بينها ، بالاعتماد على الآليات وتقنيات الإدارة الحديثة.

**الكلمات المفتاحية:** إعادة الإعمار ، المناطق المحررة ، خارطة الطريق ، الإدارة التفاعلية ، النزوح السكاني.