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Developing a Strategy for Post -war cities Reconstruction

"The West side of Mosul as a Case study"

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بسم الله الرحمن الرحيم

اللَّهُ نُورُ السَّمَاوَاتِ وَالأَرْضِ مَثَلُ نُورِهِ كَمِشْكَاةٍ فِيهَا مِصْبَاحٌ الْمِصْبَاحُ فِي زُجَاجَةٍ الزُّجَاجَةُ كَأَنَّهَا كَوْكَبٌ دُرِّيٌّ يُوقَدُ مِن شَجَرَةٍ مُّبَارَكَةٍ زَيْتُونَةٍ لَّا شَرْقِيَّةٍ وَلا غَرْبِيَّةٍ يَكَادُ زَيْتُهَا يُضِيءُ وَلَوْ لَمْ تَمْسَسْهُ نَارٌ نُّورٌ عَلَى نُورٍ يَهْدِي اللَّهُ لِنُورِهِ مَن يَشَاء وَيَضْرِبُ اللَّهُ الأَمْثَالَ لِلنَّاسِ وَاللَّهُ بِكُلِّ شَيْءٍ عَلِيمٌ

صدق الله العظيم

سورة النور

SUPERVISOR CERTIFICATE

I certify that the preparation of this thesis entitled" **Developing a Strategy for Post -war cities Reconstruction**", was done by (Ghadeer Watheq Nassar) under my supervision at the Department of Architecture, College of Engineering, University of Babylon in partial fulfillment of the requirements for the degree of Master of Science in Architectural Engineering.
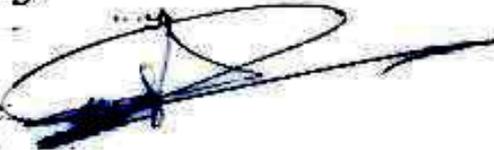
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COMMITTEE CERTIFICATION

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Acknowledgements

Dedication

To everyone who taught me a letter, nourished me with knowledge, and made it easy for me to get here

To the most beloved of creation, God and the most expansive of them, as well as the knowledge of our Prophet Muhammad *(God's blessing and peace be upon him)* and his tribe, to whom I never went without and felt that I was in heaven, and I only went to him and touched the ecstasy of the one who patted her in one way or another, the master of martyrs and the learned of our master Hussein*(peace be upon him)*.

To the luminous lanterns in my sky, to those who burned themselves to light my way, To those who carried me on their shoulders and overcame obstacles to get here. Loved souls (Mom and Dad)

To those who tried, by all means, to provide me with comfort and ease my worries, to those who encouraged me to continue on my path and tightened the hands of my dear brothers (Bahaa, Hadeer, Noor al-Din).

To the one whose smile is a cure for me, and whenever I grieve, I go to her to forget Mabe. For years of her life, she reminds me of my architectural journey, my dear niece (Ruqayya)

To my first and last partner, my friend and companion on my long journey and years of struggle, and witness to all the bumps, pains, and tears (Rafel)

To all passersby I dedicate this effort .

Research

Abstract

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Wars and armed conflicts are among the most important dangers that threaten social, cultural, economic and political structures of the countries affected by them, and thus cause damage at all levels. In the foreground comes the destruction of architecture and urbanism associated with the community, which represents the memory and identity of this community, as well as the destruction of infrastructure, education and culture, as well as other damages such as displacement, dead, wounded, orphans, environmental pollution with weapons, explosives, and so on. So there must be plans to rebuild these cities.

Therefore, this study stems from the problem of the lack of clear strategies for the reconstruction of cities after the war under the current circumstances.

The aim of this study is to develop an urban reconstruction strategy for the urban reconstruction of a post-war city. This study first reviews the literature on post-war reconstruction. The study relied on several approaches. It relied on the historical approach by reviewing a group of international and Arab experiences. And it adopted the descriptive approach by explaining the reality of the city of Mosul after the liberation operations through maps, charts and statistical figures that showed that the western side of the city is the most affected. Where the damage to the old city in the western side reached (85_90%) in terms of area. The methodological framework used in the study covers four steps including problem identification, goal formulation, indicator formulation, and indicator selection and ranking.

A set of indicators were extracted and then arranged to suggest a strategy for post-war reconstruction. This strategy can then be evaluated in the urban area on the western side of Mosul as a case study, since it is the main war-torn city in Iraq.

This study effectively contributes to one of the most important problems of humanity, which can be useful for future research dealing with urban and environmental degradation caused by wars.

key words: Strategy, Urban fabric, Post-War cities, Reconstruction, Mosul

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Chapter One

Introduction

1.1.Introduction

Many cities and urban areas fall within the scope of natural disasters or within the scope of industrial disasters, and in light of the increasing complexity of urban areas, and the complexity of the social, economic and political components, the effects of these disasters and wars have become more complex and worse than before, and the disasters have affected all aspects of life, causing The most horrible effects such as loss of life, displacement of population, damage to property, destruction of buildings and damage to the environment, in addition to the economic, social, cultural and psychological problems that it leaves behind (UN-Habitat ،2004 ،p. 2), and its effect multiplies if it is not dealt with properly according to scientific methods and strategies. Therefore, it is necessary to have approaches and strategies for disaster management and post-reconstruction operations, as much of the damage occurs due to lack of management practices for these disasters, insufficient planning to solve the resulting problems, and the lack of clarity of a systematic strategy for post-reconstruction.

The implementation of reconstruction concepts, especially in post-war cities, faces various challenges due to the large damages and the need for rapid rehabilitation and the provision of adequate urban infrastructure to meet the increasing leap of urbanization after the war. The reconstruction of post-war cities is particularly challenging because of the complexity and uniqueness of the interactions between the set of variables involved. If there is no plan strategy, the reconstruction process will be unpredictable and partial. Post-war reconstruction strategy includes a whole range of activities from addressing humanitarian needs, physical restoration and reconstruction, political restructuring, economic renewal, dealing with reconciliation and trauma, and laying the foundations for sustainable development (Barakat & Ginty, 2002). The western side of Mosul in Iraq was chosen as a case study, due to its regional, social, political and historical role in the region. The results of this study will reveal the most important post-war city relocation strategies that urban planners and authorities must consider.

1.2.Research Questions:

As discussed, there is an urgent and clear need for strategies to be adopted in the reconstruction of post- war cities, but there is a clear lack of research and frameworks that are successfully applied to cities in general and to Iraqi cities in particular that have been exposed to war. This raises the main problem of developing a clear strategy for the process Urban reconstruction of post-war cities, which raises the question of "How to develop a strategy that can be adopted in the reconstruction of post- war cities"

This basic research question is required for a systematic work to find these strategies to facilitate the reconstruction process. This study raises secondary questions:

-Are there current strategies for the reconstruction of Post-War cities?

-to what extent can a framework for strategies be structured and built?

-To what extent can these strategies be applied?

-How can these strategies be applied to Iraqi cities that have been exposed to war?

1.3. Problem Statement:

The city of Mosul is witnessing severe damage, especially the old city of Mosul, the destruction of parts of its urban and heritage fabric, and damage to its social and economic structure in the absence of clear plans for reconstruction. Reconstruction operations are individual and piecemeal. Thus, the research problem is the lack of clear strategies for the reconstruction of post-war cities under the current circumstances.

1.4. Aim and Objectives

This study aims to develop an urban reconstruction strategy for urban reconstruction in a post-war city, which can then guide assessment and action to improve the rehabilitation and rebuilding of post-war cities.
To reach this aim, several research objectives have been developed:
1. To explore and explain the concept of post-war cites
2. To explore and explain the concept of cities strategies
3. To develop practical strategies which could be used as a tool and mechanism for the reconstruction and rebuilding of post-war cities
4. To test the proposed new strategies in a selected case study in the city of Mosul, Iraq.

1.5. The importance of the research

The importance of this study lies in the fact that it deals with the issue of post-war reconstruction, as this region is in a spatial war situation that led to complete or partial destruction at the level of the urban components of cities and thus suffers from the effects of destruction, and affected its authenticity and identity, as well as the bad conditions of human life that it has become suffering from it, so the importance of this study in trying to find specific strategies for the reconstruction of cities after the war.

1.6. Research Methodology

To achieve the objectives of the study and find answers to its questions, the historical method and description of post-war reconstruction were followed by collecting and discussing theoretical information related to the subject of the research and conducting a survey of foreign Arab sites for international and local institutions to gain a better understanding of the subject of the study.

As for the historical approach, it was used to study Arab and international experiences in the field of rewriting eras by reviewing Arab and international affairs after the war. The research dealt with the process of reconstruction in Haret Al-Hreik in Beirut after the Israeli attack on Beirut, Mostar in Bosnia and Herzegovina, as well as the reconstruction of Warsaw in Poland after the bombing of the city by the Nazis and the destruction of its cultural and urban heritage.

This study relied to reach its objectives on 4 main steps represented by the first stage by identifying the problems of reconstruction and its obstacles in addition to defining priorities for reconstruction through the general needs of post-war cities and then the local needs of the area under study through field visits to the case study of West Mosul, finding out its problems through sources of files and reports, conducting personal interviews with focus groups to find out what the city suffered from after the war and what people need. The second step is setting goals to ensure addressing the problems identified at the first step and setting goals in a way that solves these problems. This will provide a clear indication for the development of an appropriate strategy for the reconstruction of post-war cities. To establish clear indicators for achieving this strategy, problems and needs that were extracted and developed in the first step will be used. To reformulate these statements or goals with the help of experts will be the main issue of step 4. Responding experts will be able to rate the importance of each indicator provided in the questionnaire. Experts will be asked to choose categories that best explain their reactions to the indicator. These can then be evaluated using a logically organized set of categories. Likert scale is one of the most popular classifier scales that simply creating, administering and understanding the respondent. The objective of this stage is to prioritize the indicators so that a final set of indicators can be determined. Experts participating in the questionnaire will be asked to show the relative importance of each of the indicators listed on a scale of 1 to 4 where 1 is "not significant"; 2 "less important"; 3 "important" and 4 "very important". An average score for each indicator will then determined. As a result, the average score will be the average value of importance associated with each indicator. The number of participants in the survey will be 40 experts from the city of Mosul (Alwani, 2014, p. 71)
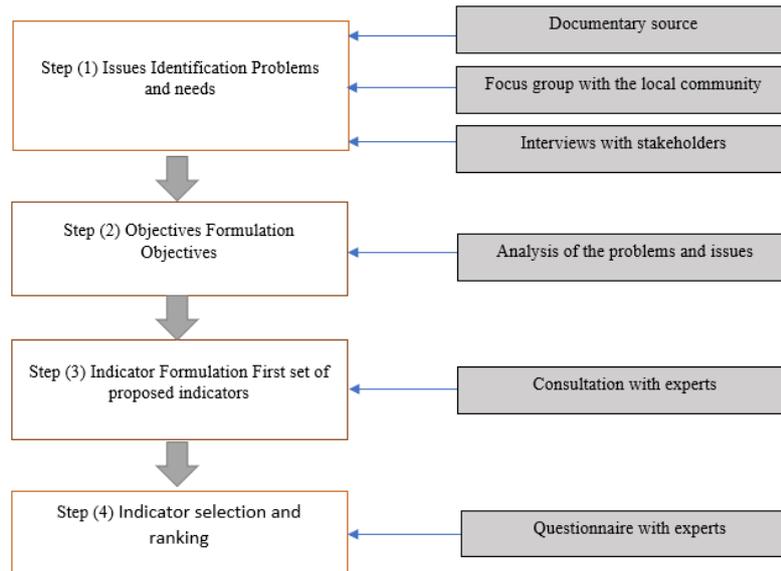
Figure (1.1) detailed Scheme of the methodological framework process

1.7. Research Organization

Chapter one: explains a background about the topic of the study, problem statement, research aim and objectives and methodology.

Chapter Two:This chapter studies the previous literature on wars, their causes and impact on cities, the concept of reconstruction and its components, standards and objectives for reconstruction, as well as reviews the most important Arab and international experiences to benefit from them.

Chapter Three:This chapter presents the study case that will be applied to the research methodology represented in the city of Mosul, where it deals with a historical and geographical overview of the city, as well as the damage and destruction that the city has suffered on several levels as a result of the war (ISIS) and then applying the research methodology to it

Chapter Four:In this chapter, the exhaustive research methodology is applied to the case of the study represented in the western city of Mosul, and then the data is analyzed and the results are extracted.

Chapter Five: In this chapter, the results from applying the research methodology to the study case represented in the west of Mosul are explained and discussed, and then come out with a conclusion and recommendations from the research that can be followed in the future.

Chapter Two

Literature Review

2.1. Introduction

Recently, wars and the dangers resulting from them have increased and resulted in great losses on the entire, especially in poorer nations, the urban environment, and their impact is increasing on aspects of life in terms of loss of life and population displacement, and also affected the economic, social and cultural level.

They are mitigating their effects, limiting the damage they cause and making the reconstruction process more successful, efficient, and less costly later on. Wars and armed conflicts are among the most critical threats to the centres of historical cities. They cause physical and moral destruction threatening to erase the memory of humanity as a whole. One war is enough to destroy what society has accomplished in many years of human creativity at all levels of civilization.

Therefore, this chapter will discuss the literature on wars, their causes and impact on cities, strategies for reconstructing cities after the war, and the impact of the reconstruction of historical cities. We will discuss Arab and international experiences of reconstruction.

2.2 . The City

The emergence of cities was linked to the Neolithic era when man transformed his profession from gathering to producing food through agriculture and the domestication of animals. This dates back to between five and seven thousand years BC. These developments have caused the Middle East the settlement of man and his gathering in groups that formed villages, and with time, the villages grew and turned into cities. The first cities appeared and their appearance in the river valleys in the early fourth millennium BC.

In general, the city has grown dramatically, and an increase has followed this growth in the availability of food and time. The rise in food means that some individuals have been allowed to leave farming and go to other work, and the increase in time means that they have been allowed to meditate, think and produce.

2.2.1. City Definitions

O'Sullivan, in his book "Urban Economy" (2009, p.11), indicates that the city is "*a geographical area that contains a large number of people in a relatively small area*".
City: a societal fabric of architecture, factories, economy, schools, universities and other institutions,Which indicates the presence of a human environment in a region, and is considered

a picture of cultural development, and an important element of human society.((Al-Ash'ab, 1989, p. 81)

The concept of the city: The city is the epitome of the history of urban life. It is the living organism as defined by Le Corbusier. It is people and transportation. It is trade and economy, art and architecture, connections and emotions, government and politics, culture and taste. It is the truest expression of the reflection of the culture of peoples and the development of nations. And his defeats, which is a picture of strength, poverty, deprivation and weakness.(Kabbani,2007,p.2). Christopher Alexander defined the city as engineering entities of various sizes and sizes, including buildings, designs, windows, doors, streets and alleys (Christopher Alexander, 1979, p. 167)

City complexity of growth trends that generate diverse patterns and conditions, as well as the uniqueness of urban form, the fragmented and interstitial fabric of cities, the spatial and functional blur between urban and rural areas, and complex growth trends that generate diverse patterns and conditions have made it difficult to delimit city expanses and coin a single and universally applicable definition. Currently, many different definitions vary by country and region. These definitions range from those that use only one criterion (such as a population threshold) to those that use a mixture of criteria (e.g. combination of population size, density, administrative delimitation, economic occupation etc.) (UN-Habitat,2016,P3).

Oxford dictionary clarify the city as is a large and densely populated urban area. It may include several independent administrative districts. On the other hand, Wiechmann and Wolff (2013, p.2) defined the city criteria as below:

-The size of the communities, both from the point of view of population and area

-The economic aspect

- The degree of technical urbanization, infrastructure and construction.

- Busy people.

-People components

-The level of public services provided.

2.2.2. Challenges facing cities:

As urbanization grows, particularly in Asian and African countries, here are five of the most pressing difficulties that cities will face in the future (Neo, 2018):

1. Environmental threats

Environmental dangers are being exacerbated by rapid urbanization, which puts a strain on basic infrastructure and more frequent and catastrophic weather events linked to global climate change. Flooding, tropical cyclones (especially in coastal areas), heat waves, and illnesses are significant environmental hazards.

2. Resources

Cities require resources such as water, food, and energy to be viable. While increasing energy consumption, urban growth reduces accessible water catchment areas and agricultural fields. While the increased technical application can boost agricultural productivity and improve electrical transmission efficiency, many cities will continue to struggle to provide these resources to an ever-growing urban population.

3. Inequality

When it comes to both the provision of basic resources and resilience against environmental threats. As the number of urban super-rich grows, many cities will also see increased numbers of urban poor.The widening gap between the haves and have-nots will be accentuated in the megacities of the future.

4. Technology

Technology will play an increasingly important role in the building and operating of future cities. Solar energy may be harnessed in housing estates, and manufactured wetlands can be created for ecological balance, thanks to Singapore's thoughtful planning. In many regions, innovative mobility technology has the potential to reduce traffic congestion.

Future cities will benefit from environmental technology that can more efficiently cool buildings or run fewer polluting autos. Sensors placed in the homes of older individuals who live alone can link them to the community and summon help when they are unwell or hurt.

5. Governance

Future cities offer immense possibilities to enrich the lives of their inhabitants even as the challenges are stark. Making the most of inevitable urbanization, good governance is imperative. Cities will increase in size, and their populations will become more diverse. Governing these cities will, therefore, be progressively complex and require the most dedicated of minds.

2.3. Strategy

The first use of the term strategy is a military use that deals with the arts of leadership and focuses on achieving victory. Strategy is of great importance in the work of the departments, including the management of cities, as some departments operating without a strategy broke out on a ship that lost its rudder (David, 2011, p.3). The beginning of the twentieth century witnessed the entry of the strategy for administrative sciences (Maarouf, 2009, p. 15)

The strategy in city planning is defined as a set of determinants constituting the path that those responsible for managing cities should take in their quest to achieve long-term goals. (Abdul Aziz, 2019, p.12)

Strategy is a word with several connotations, which are significant and valuable to people responsible for developing corporate, commercial, or organizational strategy. The following are some concise definitions of the strategy presented by various authors between 1962 and 1996.

Chandler, the author of Strategy and Structure (1962, p.18) the classic study of the relationship between an organization's structure and its strategy, defined strategy as "*the determination of an enterprise's basic long-term goals and objectives, and the adoption of courses of action and the allocation of resources for achieving these goals.*"

2.3.2 Strategic Urban Planning

The general objectives of strategic urban planning (SUP) include clarifying which city model is desired and working towards that goal, coordinating public and private efforts, channelling energy, adapting to new circumstances and improving the living conditions of the citizens affected.

Strategic planning is a technique that has been applied to many facets of human activity; we have only to mention Sun Tzu, Arthur Thomson or Henry Mintzberg; however, the application of strategic planning to urban contexts, or cities, regions and other metropolitan areas is a relatively recent development whose beginnings were eminently practical and artistical: a mixture of thought, techniques and art or expertise. (Encyclopedia2022 ،)

Strategic urban planning focuses on setting high-level goals and determining desired growth areas for a city or urban area. The result of the planning process is a strategic plan— also called the development plan, core strategy, or comprehensive plan. The strategic plan's goals may include easing transportation throughout the city, creating more community spaces, improving citizens' quality of life, or encouraging people to visit or move to the city.

Strategic planning is a process that proceeds from determining organizational goals and determine strategies and the policies necessary to achieve them, which is a continuous process due to the changing environment in which it operates (steiner, Gorge,1979,P14)

Strategic planning is a continuous process of making decisions based on available information about the future, gathering the necessary efforts to implement those decisions, and continuously estimating the results through feedback (Jafar, 2007,p.297).

strategic urban planning (SUP) includes clarifying which city model is desired and working towards that goal, coordinating public and private efforts, channelling energy, adapting to new circumstances and improving the living conditions of the citizens affected (encyclopedia)

Hence, strategic planning is distinguished by its characteristics (Al-Sakarneh, 2015,p.54).

1. Long-term effects: Strategic planning's ultimate purpose is to bring about fundamental changes, which take time and money.

2. Broad participation: Strategic planning requires the involvement of everyone, from governments to the public.

3. Flexibility: The strategic plans must be characterized by flexibility due to the dynamic nature of cities, thus changing circumstances from time to time, which requires a permanent adaptation to that circumstance.

4. Comprehensiveness: Since strategic planning attempts to draw a future vision, this should be The perception is integrated and comprehensive as it is familiar with all aspects and behaviours. (Al-Kilani, 2007,p.18)

5. Organizing options and priorities: One of the essential features of strategic planning is that it sets the options that departments take in their implementation plan and arranges the executive program according to importance and priority.

6. Strategic planning has key goals whose achievement depends on secondary and interim goals.

7. Long-term goals: strategic planning is defined by its long-term goals, which make its operations sustainable.

2.4.The War

Wars began when Cain attacked his brother Abel and killed him before the dawn of all those rising and falling civilizations. After that, the concept of war expanded to include groups and tribes until the idea of the state appeared, and wars became long and dry from roots to fruits, and the emergence of weapons and technological development helped to expand the concept of war on the ground and its effects significantly (Kelly, 1996).

The war may be waged for different motives by those concerned with it, and therefore the war has acquired a unique nature resulting from the mobilization of other explanations. In every war, all parties claim that the motives of war are nothing but a claim of morality, security and protection. Wars are also the economic factor of reasons, power, pride and love. These are personal reasons and ideological, religious and other reasons.

According to Oxford defined, "war" is a state of armed conflict between different groups within a country or a state of competition or hostility between different people or groups.

War is an armed struggle between two or more asymmetrical entities to reorganise geopolitics to achieve desired and self-designed outcomes. They are "constant processes of political relations, but based on diverse means," as Prussian military theorist Carl von Clausewitz put it in his book On War. War is a "clash of desires" between two or more opposing forces, and the term is frequently used as a symbol for non-military conflicts, such as class warfare. (Codevilla, 2006,p.77)

War is an intense armed conflict between states, governments, societies, or paramilitary groups such as mercenaries, insurgents, and militias. It is generally characterized by extreme violence, aggression, destruction, and mortality, using regular or irregular military forces. Warfare refers

to the common activities and characteristics of war types or wars in general. Total war is warfare that is not restricted to purely legitimate military targets and can result in massive civilian or other non-combatant suffering and casualties. (International Committee of the Red Cross.,2008, p.4.)

2.4.2.Effects of War

2.4.2.1 Economic Effects

The economic effects on countries that suffer from internal civil wars lead to a halt in the development process due to the lack of internal investments and their flight, and the flow of foreign investments into the country due to violence and insecurity, which led to the destruction of the basic economic structures for the development of the country's economy (Reconstruction and prevention of conflict(CDR) 2003,p.21)

2.4.2.2.Damage to Physical and Urban Structures:

1-Destruction of residential architectural structures and gatherings: which include private properties such as housing and public service properties such as government departments, factories, hospitals, places of worship, technical institutions, agricultural and scientific areas, and cultural and educational institutions, which need the reconstruction of these facilities to avoid their shortage in the balance of cities. (Hague Convention, 1954)

Figure (2.1) The destruction of the urban fabric after the war in Mosul

2- Destruction of historical architectural structures: The buildings considered to be of historical or special value, or that have an architectural, artistic, urban or social value important to the cultural heritage of the peoples, and which are in the form of fixed movable or immovable property, which are either in the form of the urban fabric in the form of a group of buildings that give value by their collection, or buildings designated for the protection of movable cultural properties and their presentation as major book houses, museums, manuscript storage and archives. (Hague Convention, 1954)

Figure (2.2) Destruction of archaeological sites

3- Destruction of the infrastructure represented in electricity and communication stations and networks, whose destruction leads to the outbreak of random and dangerous fires, as well as water, irrigation and sewage networks, the destruction of which leads to an increase in the looseness of the soil and its slump, and consequently the collapse or cracking of facilities.

Figure (2.3) destruction of public facilities

2.4.2.3 Social Effects:

Social Impact: In times of disasters, social problems exacerbate, poverty spreads, in addition to the lack of basic needs and deterioration of living conditions, which leads to the emergence of deep social problems, which must be resolved and dealt with very quickly, giving them the attention they deserve. These effects are not visible in a physical way that can be noticed, such as the demolition of buildings, but they are invisible, and their effects on society appear in a large and profound way (Kousa,2015 ,p20). As happened in Mosul, thousands of families were displaced to other cities when ISIS took control of their city.

2.4.2.4 political Impact: disasters and wars are characterized by confusion, dispersion, and instability, which leads to severe weakness or collapse of governments at various local, regional, or national levels. One of the most important components in the success of reconstruction efforts is the return of life and rebuilding and the restoration of political stability. (Goldstone, 2009).

2.4.2.5 Cultural impact: In times of wars and disasters, cultural and historical evidence is destroyed, as a result of the disaster or deliberately as in wars, whether these cultural evidence is physical, built, such as cultural centers, historical cities, religious monuments and symbols, or it is a moral culture in customs and traditions. Or history in books taught in schools, with the aim of changing the visual image in the urban environment, falsifying history, and imposing a new identity for the place. As happened in Mosul, those managing heritage and archaeological sites, destroying libraries and burning books

The impact of wars on the urban environment

physical effect	Social impact	Economic impact	cultural impact
-structure destruction substratum. -Destroying facilities and groups -architectural and related the value. -Destroying slums in and out of range urban fabric and the opportunity to return Building styles based on methodology correct.	- caused by displacement displacement and tension secret mode. Destruction of the installation civil society. The increasing number of deaths And a great loss in Young most vibrant in the society	-cause stagnation -Great economist. - Declining flow investments internal and external. - Increased burden economic to the state.	- Changing features of civilizations through the ages. - Destroying historical sites and installations. Destroying the human history of society.

The reconstruction process is linked to political stability

Architectural thought and post-war reconstruction strategies

Figure (2.4) The impact of wars and disasters on the urban environment(Kousa,2015,p.21)

2.5. Post-War Cities:

The main current in the literature indicates that a devastated or destroyed city is a specific geographical area that has been severely affected by a natural disaster such as an earthquake, flood and storm, or an industrial disaster caused by radiation leakage, for example, or protracted military conflicts such as wars and violent riots, in a way that makes That city is damaged. Its

conditions change in the post-damage phase compared to before, in cities, industrial or commercial sites, ports, coastal areas, and archaeological neighbourhoods (The future centre for advanced studies, 2020).

2.6. Reconstruction

In this paragraph, we will discuss the nature of the concept of the reconstruction as a long path that includes a variety of economic, social and security processes and aims to create a stable security environment after any conflict and eliminate chaos. It needs a comprehensive, multi-track strategy that rebuilds state institutions to guarantee the return of the state to perform its basic functions and guarantees security, which is the goal of the reconstruction policy.

2.6.1 Historical Background of the Concept:

The emergence of Reconstruction in American history is related to the period between, which witnessed the outbreak of the American Civil War and the destruction of the infrastructure and economics of the American South, along with the extermination of 40 per cent of the livestock. The cost of government expenditures in the war reached 3.3 billion US dollars as most of the population migrated to the cities.

There, US President Abraham Lincoln embarked on implementing the plan for the reconstruction and unification of the nation.

The term appeared again and more effectively in the period following the Second World War, which was characterized by the development of the global economy and a great trend towards international cooperation in the aftermath of 1950.

Europe and Japan witnessed a budget deficit and infrastructure sabotage, and the necessity required reconstruction, which the United States of America provided. It called for establishing the Burton Woods system, which established the Marshall Plan to help Europe, from which the International Monetary Fund was established (Ibtissem,Hamoum,2020P, p.226-238) .

2.6.2 Reconstruction concept:

In the Cambridge dictionary, the action of reconstructing is the act or process of rebuilding, repairing, or restoring something Linguistically, Reconstruction refers to both the

act of rebuilding or reconstructing cities and societies and the product that has been reconstructed and rebuilt after being damaged or destroyed by disasters or conflicts.

Jambia, (2006, p.6) said that reconstructing is a comprehensive set of measures that seek to meet the needs of post-conflict states, including those of affected populations, prevent conflict from escalating, prevent relapses into violence, address root causes and foster sustainable peace. The World Bank defines post-war reconstruction as rebuilding society's social and economic framework and re-create the conditions conducive to the establishment of a community that works in peacetime, particularly government and the rule of law, as the two most essential factors in the construction of this civilization (Sirubtmwil, 2017, pp.3-2).

This means that the concept of reconstruction of devastated areas does not depend on the economic aspect alone, such as rehabilitating the production sectors of agriculture, industry and services. It does not mean only rebuilding networks of roads, bridges, tunnels, water and electricity networks, etc., which have been extensively destroyed but rather concerns people. The most affected by this conflict are the wounded and the family of the dead, the refugee, the displaced and the detained, and the process of pacifying, ensuring stability and not relapsing the situation again, and leading a new phase that establishes the post-conflict.

Within the broad definition of the word architectural preservation, whose specific meaning varies depending on its use, the Burra Charter defines reconstruction as restoring a damaged building to a known initial state by introducing new elements into the fabric.

According to Baradan (Center for Arab Unity Studies, 1999,p.1), Reconstruction is the interplay of complex social, technological, and economic components and procedures that differ from what they are in normal conditions and circumstances because they are concerned with meeting requirements in abnormal and unstable scenarios.

All of this suggests that reconstruction is concerned with the large-scale reconstruction of countries following wars and disasters (at the urban and infrastructure levels) to ensure that needs are met in abnormal and unstable conditions and that this represents an opportunity to lay the foundations for long-term development through reform, improvement, and innovation, or conservation for the current situation to achieve (Al-Samuraia & Al-Qaraghuli, 2021, pp.1-16):
• Human recovery
• Establishing a social framework and relying on community involvement.
• Restoring economic capacity and self-sufficiency.
• Governance and the rule of law and institutional and legal reforms.

The African Union, at its Ninth Ordinary Session in 2006, described it as "a comprehensive set of measures seeking to meet the needs of post-conflict states, including the needs of the affected populations, to prevent the escalation of conflicts, to avoid a relapse into violence, to address the root causes and to promote sustainable peace. Thus, the process of post-conflict reconstruction. Conflicts are based on renewable and sustainable development and on the stages of transition and emergency short-term, medium-term and long-term (African Union, "Report on the status of the policy of reconstruction and development for the post-conflict period", 2006)
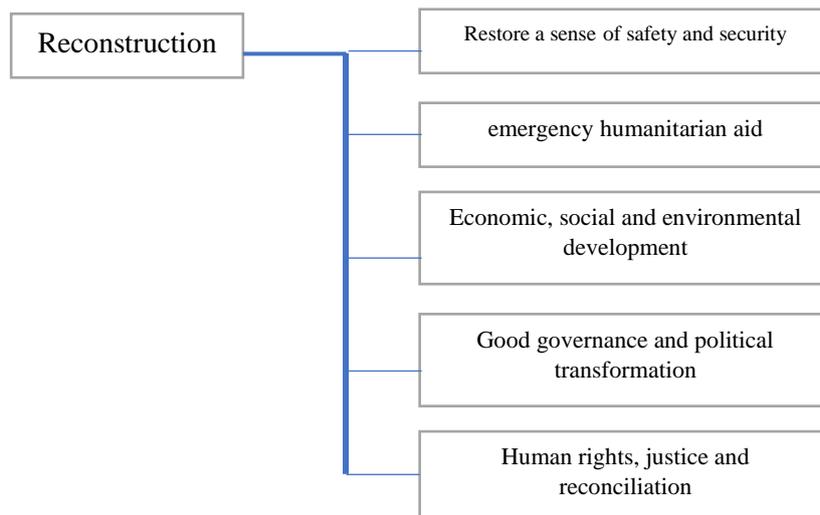
Figure (2.5) Scope of the reconstruction process as defined by the African Union in the year (2006, p.25)

2.6.3 Strategic criteria for reconstruction

Alsuwaydani and Ahmed, (2017, pp.1183-1197) refer to several key criteria that must be revived in the strategic axes on which strategies should be built. Reconstruction and development of these cities and the most important of these criteria are :

1 - Preserving the Arab identity of the urban areas, whether historical or not, within the stricken cities.

2 - Improving the humanitarian and social conditions of the residents of those cities.

3- The extent of its contribution to supporting the economic bases of cities, through which urban assets can be accumulated.

4 - The reflection of strategic directions on the vocabulary of the natural environment of those cities and their urban areas.

2.6.4 Reconstruction goals

There are many goals for post-war reconstruction, including:

2.6.4.1 Strategic goals :

The strategic goal of the reconstruction and peacebuilding process is to direct the energy generated by the conflict toward constructive and productive directions.

Positive change restores the urban and social fabric to a better state than before the devastating war. In other words, employing the reality of destruction to rebuild places in a better space and buildings with high-quality specifications, introducing what can be improved and addressing some gaps which the region previously suffered, within the vision of an integrated architecture, engineering, social and environmental. (Ruitenberg , Helsloot, 2004, p. 101)

2.6.4.2 The Main Goals:

Consolidation of peace to avoid a return to conflict. By building the infrastructure and structures that help the parties to the conflict cross from the conflict phase to the positive peace phase, which aims to revive civil society, rebuild infrastructure, and restore institutions that were destroyed by wars or civil strife to prevent the outbreak of war again.

2.6.4.3 Detailed Goal :

This level of objectives is determined by each country's situation and the extent and type of devastation caused by the war, as well as its causes, which can be centred on the following: (Ruitenberg , Helsloot, 2004,P 101):

-Resettlement: To ensure the rapid return of people to their places of residence and work so that their return constitutes a natural continuation of their lives and communication between them on the one hand and with their surroundings on the other,reviving civil society, rebuilding infrastructure, and building and renovating institutions that were destroyed by the war.

-Rebuilding the health sector, providing psychological and community care programs.

- Protecting, restoring and managing primary sites and rebuilding educational and recreational facilities
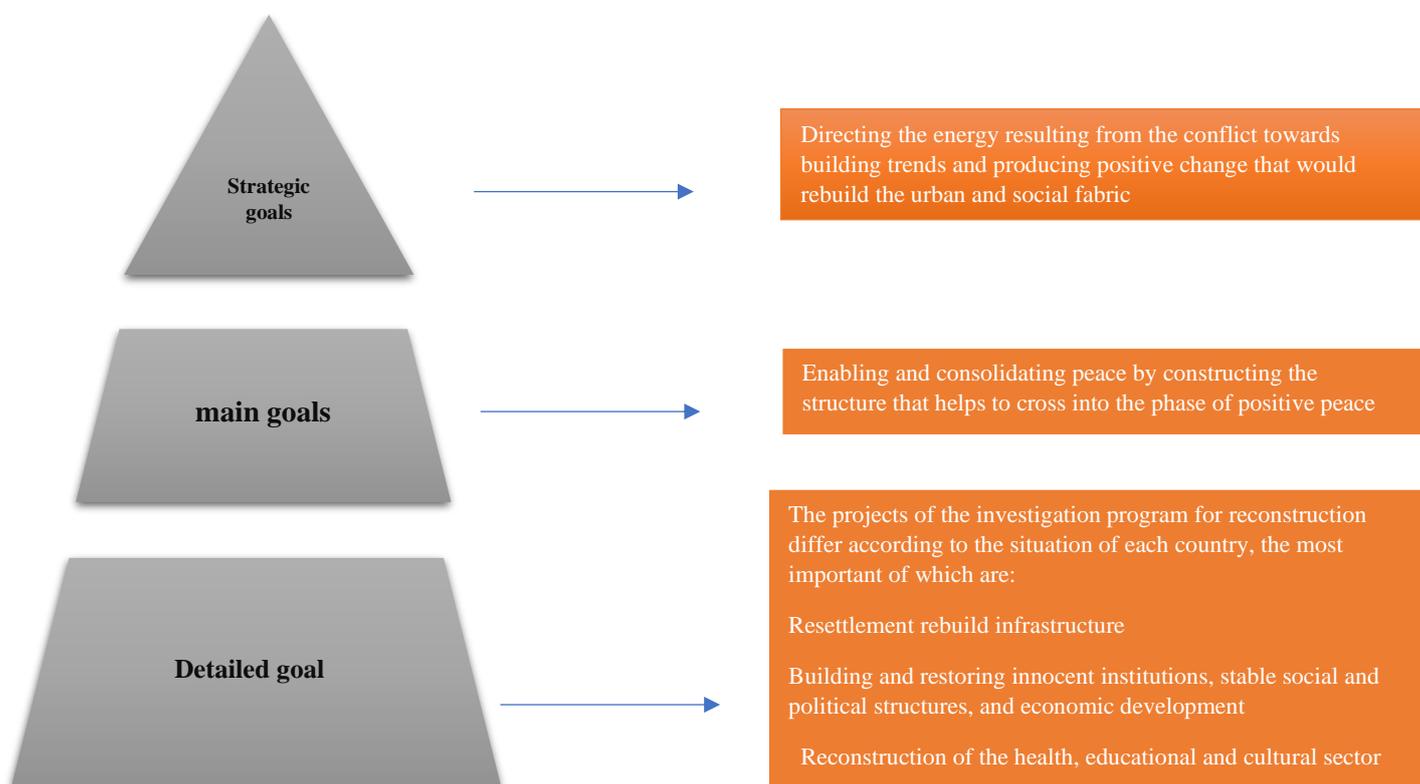
Figure (2.6) Reconstruction goals (Al-Suwadani, ,Ahemd ,2017)

2.6.5 Principles of Reconstruction Strategies

Any post-disaster reconstruction strategy is founded on four concepts that are considered determinants of the process and work to drive it (Al-Taher, 2011,P18):

1. Preventive: Developing plans not merely to deal with the aftermath of a disaster but also to implement preventive actions to avoid tragedy as much as feasible

2. Comprehensive: Addresses all of the disaster's repercussions on all levels and with various aspects, whether social, cultural, economic, or political.

3. They are incorporated into development plans: This approach is part of the development and urban development plans, as catastrophes can occur anywhere; thus it must be implemented. Keep this in mind when making future development plans.

4. Sustainability: This method is able to re-run the cycle of life and maintain its continuation on its own, as well as strive to strengthen society in the face of tragedies.

5. Adaptable: Capable of fast adapting to changes and developments on the ground.

2.6.6. Stages of Reconstruction

The Center for International and Strategic Studies published a framework of action in 2002 on the reconstruction of post-war countries; and this framework consists of three stages of reconstruction, and despite the instability of these stages and their overlapping, it helps in defining the priorities of reconstruction and peace requirements(alsuwaydani,ahemd, 2017,pp. 1183-1197):

The first phase: Initial response: it comes immediately after the end of the war, and this focuses on the two sides of the first: providing emergency humanitarian services and supporting stability and the state of peace

The second phase: the transitional period: we focus this phase on strengthening and developing the legitimate capabilities of the local community, whose support is expected to take the most critical role in the reconstruction process. It is also concerned with economic reconstruction and economic and political stability by establishing mechanisms for governance and local community partnership.

The third stage: strengthening sustainability, which is the movement in which reconstruction plans are activated, especially long-term goals, and the parties of a military nature withdraw, and the role of the local community begins, whether the government or civil society, as this stage depends on consolidating and strengthening everything necessary to prevent the return of war again.

2.6.7 Preparing and Implementing a Reconstruction Strategy

Al-Taher(2011, pp.18-19) said the process of preparing a strategy for reconstruction includes a set of operations that must be carried out in the various stages of time to transfer the strategy from the theoretical level to the level of application on the ground and the most important of these processes:

1. Policy making: It is prepared in the pre-disaster stage.

2. Organization: Because these operations fall under the category of preparedness and prevention., they are also carried out during the pre-disaster period.

3. Application and policy modification (modification & implementation): These operations are carried out after the occurrence of the disaster.

4. Assessment and follow-up (up follow & evaluation): It's a never-ending procedure, primarily during the post-implementation phase. The processes are evaluated and lessons are taken to amend policies, avoid mistakes, and boost performance.

2.6.8.The main Pillars of Reconstruction

2.6.8.1.Security:

This pillar includes the security of the population and establishing a safe environment with the establishment of a legally stable security institution. The security of the population consists of the general security of the regions and the security of individuals.(Majid, 2021, p.44)

2.6.8.2.Justice and Reconciliation

This pillar is based on the existence of a humane legislative and legal system that guarantees justice and human rectification, with formal and informal mechanisms for overcoming the suffering and pain caused by conflict. This brace also includes Regular and added efforts in methods of dealing with both offenders and victims .(Majid, 2021, p.44)

2. 6.8.3. Social and Economic Well-being

The pillar is built on satisfying social and economic needs and, in particular, providing Basic services, sustainable urban construction, and foundations for sustainable future economics. (UN policy for post-conflict employment Creation , 2009, p.28)

2.6.8.4.Judgment and participation

This pillar is for political and administrative institutions and joint operations, in particular Establishing a participatory constitutional structure, strengthening the private sector, ensuring effective participation from society, and laying the foundations for decision-making. (UN-Habitat, 2007, p.34).

2.6.9. T he General time Frame of the Disaster Management and Reconstruction Strategy:

The management of disasters and reconstruction strategy can be separated into four phases. They are the pre-war phase, the immediate relief phase, the rehabilitation phase, and then the reconstruction phase. These phases are viewed in an integrated manner with each other within one chain that leads one to the other (preparation, relief, mitigation, rehabilitation, reconstruction): (Hils,2016,p.16)

1-Pre-war Period: It is the most important stage, in which information is collected, expectations and possible scenarios are set, and based on this information, policies, plans and strategies are developed. Before the disaster, the nuclear shelters in Switzerland, where articles in the law related to citizen security and civil defense stipulate that every citizen must have a shelter close to his place of residence and that he can reach it within a short period if necessary, and any

owner who wants to build a unit must Equipped with shelters and supplies.(Alhaliba ,Qisab, 2018, pp.99-107)

2.Immediate Relief Phase:in which attention is paid to the basic needs of people, losses and damages are estimated, and information is collected to adjust policies and plans to be compatible with new data on the ground (Hils, 2016, p.17)

3- Rehabilitation period: In this phase, all aspects of normal life are restored, and it begins at the end of the relief phase and may continue for several years.(Alhaliba ,Qisab, 2018, pp.99-107) 4- Reconstruction period: During this period, reconstruction projects (building housing and repairing the physical environment) are applied and implemented. Follow-up and evaluation of all reconstruction projects takes place, in which information is collected, strategies are modified and new plans are prepared based on them (Al-Taher, 2011, p.22) .

2.6.10 The most Important Actors in the Reconstruction Process:

1. The government (the government at the national level): plays the primary role in preparing Strategies for disaster reconstruction and management, and it also guarantees sufficient means and processes to complete these processes, both in the initial stage, preparation and preparation of mitigation strategies, and then the implementation and reconstruction processes. (Aldibek, 2007, p.44)

2. Society: The community's role is considered one of the essential functions in disaster preparedness and reconstruction, and the successes of these projects depend on the community's part. (Aldibek, 2007, p.44)

3. The private sector: The private sector is critical, particularly in post-disaster or post-war reconstruction programs. The private sector has skills, talents, employment, and resources and a high degree of flexibility and adaptation to changing conditions. (Aldibek, 2007, p.45)

4. Local authorities: These authorities are represented by municipalities, governorates or village councils, and usually, these authorities bear the burdens and responsibilities of preparedness at the local level to confront disasters and then implement the national strategy in coordination and cooperation with all actors, in addition to the role they play in the implementation processes during the disaster and its management or management of operations and reconstruction programs (Aldibek, 2007, p.45)

5.Non-governmental organizations and civil society organizations:Non-governmental organizations, in particular, play a critical role in disaster preparedness and recovery. They help and relieve the burden on official institutions, and the importance of this role increases whenever the political authority is weakened or absent. These institutions play a role Important in the social, economic and cultural field, providing humanitarian and urgent relief aid, and carrying

out evaluation and examinations in the field. These institutions fill the gaps that may have appeared in a lack of government involvement. (Aldibek, 2007, p.45)

6. External actors: External assistance is represented in two main forms of assistance, either financial or technical aid or a combination of the two. The United Nations represent these entities with its various programmes; among the organizations involved are the World Bank, the European Union, regional banks, governments, and other countries. (Barakat, 2003, p.7).

2.6.11.Obstacles to Reconstruction

Reconstruction programs face a set of challenges and obstacles that should be studied and discussed in various ways to confront them and then identify the main determinants that should be taken as a basis for directing the procedural moves of the various forces participating in activating the strategy. Perhaps one of the most important obstacles that constitute a major challenge facing the Arab reconstruction operations: (Al-Basha, 2003) :

First - Achieving stability at the political and security level: It is considered one of the most important of these challenges, as the evidence indicates that in all Arab experiences that have achieved remarkable success in the field of reconstruction and peace-building in cities destroyed by armed conflicts, this success was contingent on achieving political and security stability In the aftermath of those conflicts, as evidenced by the reconstruction experiences in the Canal cities in Egypt and Beirut in Lebanon, as the crisis of political stability threatens countries with the danger of relapse and returning to the stage of war again. Political tension is also a significant obstacle, particularly in the presence of illegitimate regimes that may jeopardize the progress of reconstruction projects, as in Iraq, where reconstruction programs were viewed as a drain on national resources by parties whose legitimacy was questioned.

Second - Finding Adequate Funding Sources: One of the primary obstacles facing the completion of reconstruction projects is finding appropriate funding sources, particularly for infrastructure maintenance projects that demand high quality and efficiency to fulfil their mission and aid relocation. On the other hand, given the broad scope of destruction left by contemporary armed conflicts due to the development of military technologies, the resulting human, urban and environmental losses are enormous, which requires huge investments to finance reconstruction projects that the limited resources of the affected countries are unable to bear, and this also constitutes financial support for the community The international community had presented a significant challenge in the emergence of financial corruption problems in light of the institutional absence of post-war countries in addition to the requirements imposed by international donors for financial support or in light of their interference in the ways of distributing aid in a way that contradicts the respect for the sovereignty of these countries over their territories (Galtung ,Tisne,2008,p.14).

2.7. Architecture Trends after Disaster or War

In post-disaster or post-war reconstruction projects, several directions to deal with architecture after a war or disaster, some of these technologies focus on functional practicality, and some are more A symbolism concerned with collective memory and national identity,

and in general, every case has its reconstruction Its strategy in an application, specifically in the detai.

2.7.1. The Direction of Modernization and Renewal:

This movement is about developing a new architecture that has never existed before, and it has nothing to do with it. This type of building is not closely related to the history and identity of the community, this type of building is widespread after wars andls disasters. To meet the needs of efficient, rapid, low-cost and mono-modal housing for the homeless Following World War II, this concept grew in popularity to provide shelter to people in European countries. (Okasha, 2004,p.29)

Figure(2.7) Le Corbusier in Marseille(https://ar.wikipedia.org/wiki/)

2.7.2 Revival trend:

This direction is concerned with the reconstruction of historical buildings destroyed by a disaster or war and previously intended to preserve their occurrence (formal revival of historical architecture). Their preservation, the place's memory and identity, and this type of reconstruction need prior and detailed documentation of the historical buildings as it was, reconstruction, which

is primarily a focused trend in historical areas and areas of legal and symbolic significance. (Al Aloul,2007,p.29).

Figure(2.8) The main square in the Old Town of Warsaw, Poland

(Source:https://www.wattan.net/ar/news/262185.html)

2.7.3 A Tendency to Confuse Old and New:

In this movement, there is the process of coupling ancient building methods with style revival. In addition to use modern construction methods to conserve ancient architecture, keeping up with the spirit of the times, and satisfying immediate and pressing needs, the development and the using historical procedures and patterns in their entirety is challenging. (Al Aloul,2007,p.40)

Figure(2.9) German Parliament – Berlin (Source:https://ar.wikipedia.org/wiki/)

2.7.4 A Symbolic Direction Witnessing the Events:

This tendency emphasizes the event's significance and symbolism rather than the building's significance as it works on the occasion.

It preserved the state of the building where it observed the damages that occurred to keep the memory and show some ugliness. Wars committed against human and historical value. This direction is only suitable for application in some buildings with special symbolism and an excellent reason to keep them as they are, and many specialists choose them and experts from different fields and directions (Okasha, 2004, p.30)

Figure(2.10) Hiroshima - Japan (Source:https://ar.wikipedia.org/wiki/)

2.8 .Case studies on Post-war Reconstruction

2.8.1 Haret Hreik – Lebanon

It is located in Beirut, the southern suburbs of Lebanon, northwest of Rafic Hariri International Airport. Haret Hreik is considered one of the beautiful areas with its streets and distinctive architecture. In July 2006, Israeli jets damaged residential dwellings and administrative and commercial buildings.

In addition to the destruction of its infrastructure (in what is known today as the July war), and currently this region is witnessing better-than-expected reconstruction efforts, and this area has been targeted because it is a centre for the Lebanese Hezbollah, being the other party in the Israeli war on Lebanon (the July war).(http://en.wikipedia.org) (2006).

2.8.1.1.The results and Effects of the July war on Haret Hreik in Beirut

The Israeli attack on Lebanon caused great destruction in numerous parts of Lebanon, particularly the southern suburbs and Haret Hreik, where the environmental, commercial and residential structures were severely damaged. According to the municipality's statistics, nearly 265 buildings were completely destroyed or severely damaged. It had been completely demolished. with 3119 dwelling units and 1610 units of commerce, and in general, it was estimated that over 20,000 displaced persons have lost their houses and are now homeless. (Fawaz and Ghandour, 2007,p.6)

Figure(2.11) Aerial photo before destruction in Haret Hreik (Fawaz and Ghandour, 2007,P10)

Figure(2.12) An aerial view of the destructionin Haret Hreik (Source:https://ado-world.com/2010/01/)

Figure(2.13) Haret Hreik after the war(Source:https://ado-world.com/2010/01/)
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2.8.1.2.Reconstruction and preparation of plans

The reconstruction process began with a detailed analysis of the area, which included a historical research of the area, sorting neighbourhoods according to chronological history, and analysing components (elevations, recorded history, uses, street movement ...). In addition to the study of reality and social and economic elements, the advantages, opportunities, milestones, problems, and weaknesses of the past were identified during this analysis to obtain a clear picture of the region that would better help in developing better plans, improving validity, solving past problems, and preserving history and identity.

Then there's the process of creating drawings and designs and offering proposals and visions for resurrecting the destroyer most efficiently and cost-effectively possible, all while adhering to the accepted terms and requirements. It must be taken into account when preparing the final plan, such as public safety, aesthetic, and environmental aspects, improving the quality of public and private spaces, taking into account a variety of spatial, social, legal, political, and public facilities factors, providing parking spaces, re-examining and developing construction law, and developing it. Examining and attempting to remedy earlier concerns. Such as previous building

violations, land and property ownership, lighting and ventilation problems, general view and vehicle traffic) (www.jihadbinaa2006.org. 2009).

2.8.1.3 How to work and implement it.

A set of general policies have been developed that the project implementers adhere to, namely: (www.waad-rebuild.com)

1. The greatest efficiency in project completion.

2. Adoption of the idea of concern for public safety.

3. Full commitment to the legal aspects.

4. Principle adoption of integration government and municipalities agencies.

5. Preserving the commercial aspects of the owners of establishments.

6. Staying away from administrative routine and complications and managing the project tight, transparent, and clear.

The use of information systems and the selection of efficient, honest and reputable staff.

2.8.1.4 Schematics preparation

1. Use analysis: Preparing historical analysis maps: Initially, a historical analysis of the buildings and historical periods in the region was prepared, and this analysis was clarified in charts in in order to gain a deeper understanding of the region's history and culture

Figure(2.14) Plan showing the analysis of uses in the Haret Hreik area(Source:Fawaz and Ghandour, 2007,P12)
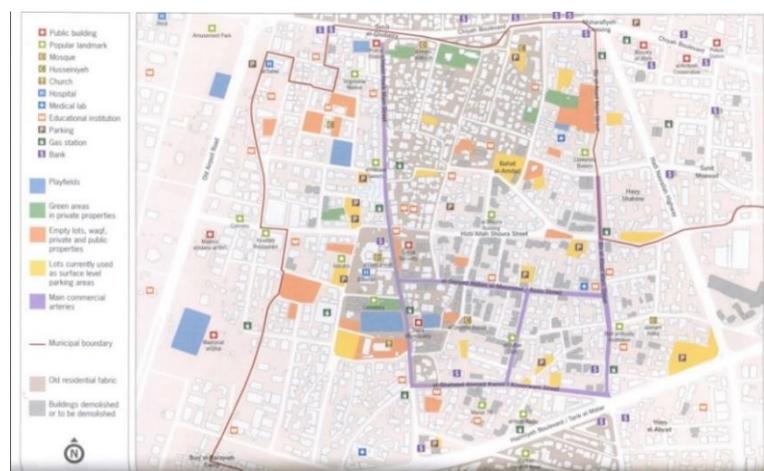
Figure(2.15) Plan showing the history of the buildingsand the eras to which these buildings belong(Source:Fawaz and Ghandour, 2007,P18)

2. Natural Lighting and Ventilation Analysis:

Before 2006, the density of buildings in the area was very high, and the high height of the buildings led to an impact on the quality of lighting and natural ventilation, whether in public or private spaces. Therefore, an analysis was made showing the change in lighting in the area during the seasons and months of the year:
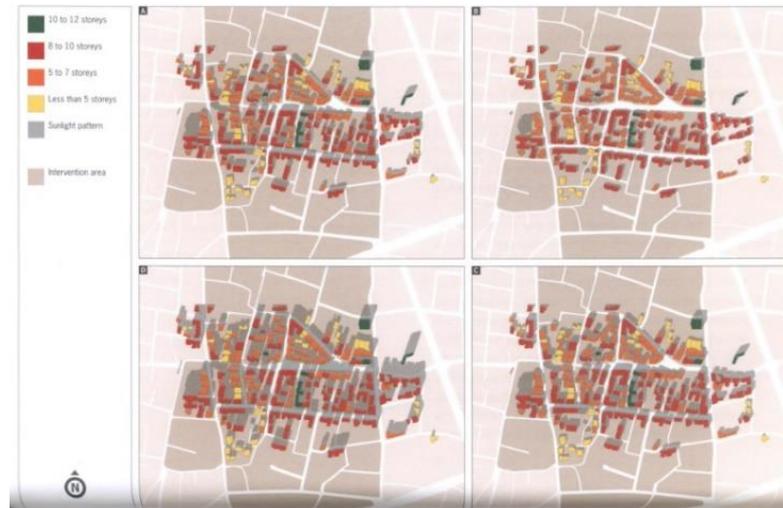
Figure(2.16) Plan showing the change of lighting in the area at different times of the year
(Source:Fawaz and Ghandour, 2007,p.22)

3. Plan of intervention in the area and re-design

1 - Changing traffic patterns and redirecting traffic out of the area so that traffic inside residential areas, and huge commercial trucks, is reduced, so the streets in the area have been re-studied, organized and classified. (Al-Taher, 2011)

Figure(2.17) Plan showing the new distribution and classification of street degrees
(Source:Fawaz and Ghandour, 2007,p.34)

2- Creating public squares and green streets is part of a green open spaces network. that is completely designated Partially for pedestrians and wooded buildings; this network consists of a central green axis.

Figure(2.18) Plan shows the green areas that have been developed
(Source:Fawaz and Ghandour, 2007,p.56)

3- Improving parking conditions by securing multiple parking spaces so that unique parking spaces for residents have been established under the buildings being reconstructed, basement parking under streets and public squares, or large plots of land designated as parking lots or street-level parking spaces. Dedicated to cars crossing the street and equipped to suit people with special needs, and parking spaces with street-level meters.

4 - The process of re-designing streets and public spaces, redistributing street furniture elements and distributing green parts in these streets, and reorganizing street-level car parks, their identification and shapes.

5 - The network of utilities and the region's public places have been redistribed so that they are distributed fairly to all areas and achieve some balance in this distribution.

Figure(2.19) A group of pictures and maps that show the types of parking lots that have been created, whether they are under streets, public squares or under buildings(Source:Fawaz and Ghandour, 2007)

2.8.1.5 Evaluation (and results) of the Reconstruction of Haret Hreik

1. The significance of public engagement, particularly among experts, in stimulating discussion and contributing to the development of strategies.

2. The importance of working on preparing conscious and responsible maps and studies that take into account the past, present and future and include human social and cultural needs as well as material needs.

3. Work on resolving earlier issues and then finding solutions in the planning and reconstruction processes.

4. The importance of preparing studies and strategic analysis that identify opportunities, strengths and opportunities, as well as threats and weaknesses, to enhance the positives and avoid and override the negatives in the new reconstruction processes.

5. Work on preparing principles for reconstruction that serve as guiding principles within its general framework to achieve comprehensive reconstruction processes that take care of all aspects in a holistic manner.

6. Managing re-implementation operations to succeed the most excellent effectiveness in the least time to alleviate the suffering of people without dropping the psychological, social and cultural needs (due to the lack of time and work pressure).

2.8.2. Mostar reconstruction- Bosnia and Herzegovina

2.8.2.1 Mostar

Mostar is a city and municipality in Bosnia and Herzegovina. It is the largest and most important city in the Herzegovina region and the centre of the Herzegovina-Neretva Canton in the Federation of Bosnia and Herzegovina. Mostar is located on the Neretva River and is the fifth-largest city in the country. The name Mostar is derived from the local word meaning "bridge keeper" (local: Mostar) about the Stari Most (Old Bridge) across the Neretva River. In the Ottoman era, the bridge was built, and it became one of the city's symbols.

2.8.2.2 Master in war

Between 1992 and 1995, around 5,000 citizens of Mostar, Bosnia-Herzegovina, died due to interethnic conflicts, including fighters and non-combatants. Approximately 40,000 prewar people evacuated the city entirely to flee the bloodshed, about 10,000 male residents were forcibly held in local prisoner camps, and more than 30,000 remained in the city but were forced to leave their homes over the same period. Between 1993 and 1995, eastern Mostar's food, heating fuels, and medical supplies were constantly low and erratic, resulting in a predictable set of health concerns. Pedestrians crossing bridges and traversing wide spaces on necessary errands were also at risk of sniper fire from the surrounding hills as they collected drinking water along the river's eastern bank. Though the exact number of residents who were physically harmed or badly traumatized by the violence is unknown, it is reasonable to infer that only a

few Mostarian families survived the war with all of their members alive and in their pre-war homes.

Figure(2.20) the High Representative (Calame,2009) (https://www.marefa.org)
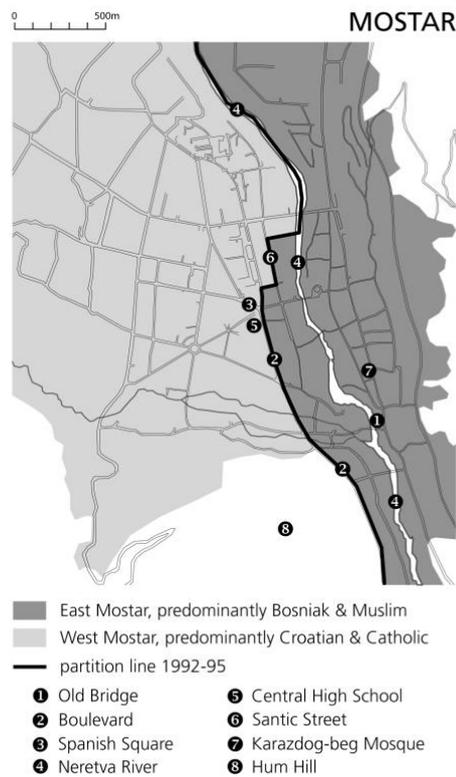
Figure(2.201) Mostar after bombardment: aerial of historic core, Old Bridge(Calame,2009,p.7)

2.8.2.3. Mostar city reconstruction policy

2.8.2.3.1. Economic field

With the beginning of the project for the reconstruction of the historic city, the people of the region were dissatisfied with the tasks that contributed to the treatment and rehabilitation of the destroyed historical structure, ignoring the improvement of economic conditions and the spread of unemployment. With the achievement of national reconciliation and the flow of revenue, they began to work on several axes to achieve economic development:

First/ Economic recovery: A preliminary economic strategy has been prepared that covers the next ten years. It is built on five principles: Partnership, Transparency through Consensus, Intra-Projects, and Equal Opportunities .The old souks (with a total of 200 commercial buildings) were rehabilitated, hotels and restaurants were opened, and the city museum was established to encourage tourism and raise the level of the economic vitality of the area.

Second / Attracting investments: Through the development of land and real estate, the provision of infrastructure (such as the water network, electricity, gas and sewage services), the rehabilitation of the train station, the railway network and the main airport of the city, and the effective re-use of some abandoned. The unused and vacant buildings and lands to complete the rehabilitation of degraded areas and ensure the provision of residential building services and the restoration of historical buildings to be a focal point for attracting investments and stimulating the economic growth of its urban neighbourhood (Al-Murtaza, 2021,p.12)

Third / Residents of Mostar have solely relied on international funds and skills to begin their post-conflict recovery process., so the organization Mostar in Pride was set up to find funding to speed up the redevelopment process. European, UNESCO, Child Protection, Aga Khan Trust for Culture, Global Impacts Fund, World Bank and other donors (Pobovac, 2006,p.10).

2.8.2.3.2. Social field

Mostar experienced various social changes after the war ended, including the persistence of sectarian hate and a shift in the city's demographic composition and the housing crisis caused by the loss of 75% of the city's housing and service infrastructure. The reconstruction plan at the social level took action in several directions.
which is next:
First, the pursuit of social reconciliation: since 1996, all international donors have sought to achieve social reconciliation, restore unity in Mostar, and spread the concepts of non-alignment, balance and neutrality.
Second / Preserving the memory: The reconstruction strategy in Mostar focused on restoring the basic historical urban structures (the bridge - the towers - the clock tower - several mosques and churches - the Archbishop's Palace), which served as a source of inspiration for the city's residents over the years, which would overcome the phase of frustration that prevailed after the war, healing wounds and raising the morale of the population (Popovac, 2006,p.12.)

Third / housing, improving the standard of living and social empowerment: Temporary housing and two camps for housing, north and south, were established outside the old city limits. Developing the number of fields and rebuilding gymnasiums with funding from the World Bank in terms of social reconstruction, but the return of the indigenous people to the city was very slow, and the documents state that more than 60% of the city's residents are no longer, most of them are educated, and the funding remains insufficient to modernize all infrastructure (Al-Murtaza, 2021,p.13)

2.8.2.3.3.Urban field

The project focused on the archaeological and historic city of Mostar as the most damaged part of the war. The archaeological centre of the city was reconstructed, its historical surroundings rehabilitated, and more than $15 million was spent on the reconstruction.

First / a plan for preservation and dividing the city into several working areas

Second / Rebuilding the archaeological heart of the city:

The first focus in the project for reconstructing the archaeological city was on rebuilding the ancient Ottoman bridge (Most Stari). It is an important social symbol of the city and its reconstruction will help heal wounds and raise the morale of the residents. The restoration process of this bridge represented the focus of the restoration and preservation operations of the city(Popovac,2006,p.13)

Figure(2.22) Mostar after the war (Source:https://ar.wikipedia.org/wiki/)

Third: Rehabilitation of the historical surroundings:

An approach has been adopted to revitalize Historic Mostar based on making the city a mixture between the modern and the old while excluding the idea of rebuilding all or most of the historical fabric to its original form according to a proposal adopted by the Aga Khan and the World Monuments Fund in which it combines the physical and functional aspects of the city and included plans for the restoration of the historic city as well as detailed regulations and guidelines for the protection of character in the region and the fabric, among which we mention the following (Popovac, 2006,p.14).

• Focusing on reconstructing a specific number of essential landmarks in separate locations according to their original form.

• As for the rest of the buildings, they have been excluded from reconstruction operations in case they were destroyed or rehabilitated in the event of its physical condition was relatively acceptable to return it to its original form

Figure (2.23) Mostar historical places **(Source:**https://ar.wikipedia.org/wiki/**)**

Fourth / Developing master plans for development: These plans depended mainly on reactivating the main energies affecting the old city and the vital movement paths of exceptional importance in terms of historical buildings overlooking them and linking them with the surrounding areas to form a historical chronological sequence that expresses the history of the city and its architectural, urban and cultural originality in a way real and to promote economic growth inside and outside the old city (Al Aloul ,2007,p.44)

2.8.2.5. Evaluation (and results) of the reconstruction of Mostar

1- Dealing with the city's architectural heritage, a powerful tribute to the suddenly divided community's shared history, is also critical. Even history, though, is debated. The restoration of the historic city center, including the "Stari Most" (Old Bridge), has come to symbolize reconciliation, international cooperation, and the peaceful coexistence of various cultural, ethnic, and religious communities; however, it has had little impact on local conflicts, despite having had the desired effect in the global political arena. Rolling out a reconstruction plan in Mostar, like in many other post-conflict cities, has proven to be a double-edged sword: the new "Old Bridge" belongs more to the international community than to the city it was supposed to reconnect.

2-"Third spaces—Other Real-and-Imagined Places" play an important role in overcoming the division of post-conflict cities: spaces that relate to the city as a cluster of contested areas, whether physical or imaginary, real or virtual, permanent or temporary, but that, most importantly, both adopt and adapt the symbolism of contested space. New techniques of charting and understanding the city (in this case, Mostar) open up new views, to name just one example.

3-Planners, architects, artists, and civil society activists face a significant task in giving contentious spaces new and positive meaning(s). Architectural and design disciplines and spatial planning in its broadest sense (land use, urban, regional, transportation, and environmental

planning, as well as related areas of economic and community planning) must collaborate in post-conflict cities to meet the overarching needs of diverse communities.

2.8.3. The experience of the reconstruction of the historic city in Warsaw - Poland.

The history of Warsaw is linked to the history of Poland and goes back to the ninth century AD, where it was the beginning of its establishment, and since that time and the years that followed, the city witnessed many disasters and wars, as the city was invaded, invaded, and destroyed several times, and the city was famous for rebuilding it after every destruction and vandalism that happened to it until it became The city is like a phoenix rising from the ashes because it has risen from the ruins of war again

The city was severely destroyed in the Prussian-Swedish war in the years 1151-1155 AD, when it was occupied by Sweden, and it was subjected to another war in the beginning of 1922 AD, and in 1974 AD the city was attacked when the Russians attacked the city, but the city's greatest suffering was during World War II, as shown in the picture No. When the Germans systematically destroyed the city and its cultural heritage, where 84% of the city was destroyed - the destroyed areas in red
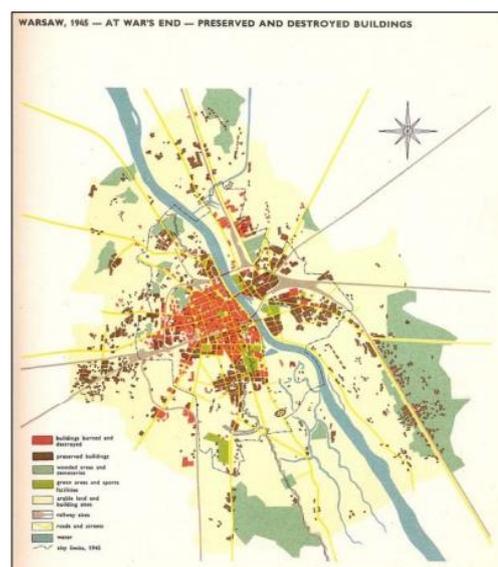
Figure (2.24)A map showing the destruction that took place in Warsaw after World War II (the destroyed areas in red).

In the aftermath of the war, people in Warsaw took it upon themselves to rebuild the city and its cultural heritage as a kind of silent and symbolic resistance, to restore the destroyed history and preserve identity by rebuilding historical and cultural monuments, to assert themselves

and their pride in their heritage and prove their identity in the face of attempts to destroy the
city and its cultural heritage(Alaloul,2007,p.37).

2.8.3. 1. Reconstruction in Warsaw

People in Warsaw lived through the war and witnessed the programmed destruction
of their city, and thus they felt fear for their city and their identity from destruction and loss,
and thus uprooting their roots from their land, and in an attempt to save the treasures of the
city and its urban and cultural heritage as much as possible. Architects, planners, historians,
teachers and all intellectuals who appreciate the meaning of the city and identity, and who
look forward and into the future, took the initiative, where they collected and collected pieces
of art of special value (such as pieces of furniture from palaces and museums, historical doors,
columns and wall fireplaces) and smuggled them away from the targeted areas, in order to
preserve them.

The people of Warsaw worked before and during the war to document the architecture in the
city, hoping that a time would come when it would be rebuilt. For an abandoned city, and the
School of Architecture was in the middle of the destroyed city, a group of academics obtained
a permit to visit the university, and there they brought important plans and documents, and
they were returned hidden outside the city in Peterkov Monastery inside coffins. (Bevan,
2006,p 181) the dead monks. After the end of the war, the documents were taken out, which
were in good condition and intact, and were used as a basis for rebuilding the city between
1945-1966. During this period, about 85% of the destroyed city was built. There was an
insistence on rebuilding Building the destroyed city as it is, a detailed construction of all
buildings, elements of legal value, distinctive signs, symbols, churches, houses and markets.
During the construction process, the original building materials were used, if any, such as old
building stones, which were taken out from among the rubble and repaired, and from Then
trying to identify its original places and return them to them, and all the evidence and
witnesses that indicate the past have been collected to be used in reconstruction so that it is
true to the original, whether it is private pictures with people or in the archives or pictures and
documents in books or plans or testimonies of people, and returned Building the city as it was
with its history and past, and ancient building materials, to be a witness to the history and
identity of Warsaw, the suffering of its people and the destruction it was subjected to (Kousa,
2015, p.50)

Figure (2.25) The main square in the old town of MedinaWarsaw after reconstruction.

Figure (2.26) The main square in the Old Town of Warsaw after the war.

.3. 2. Strategy for the reconstruction of the historic city of Warsaw

In 1980, the historic center of Warsaw was classified as a world human heritage. Its recognition by UNESCO as a prominent example of a complete reconstruction of a period of history (UNESCO 1980). The most important features of the reconstruction strategy were(AL-Taher, 2011, p.46)

1-Preparation and planning for the future: one of the things that helped to rebuild the city in its original form was their anticipation of the Nazi attack on Poland, and thus preparation for it. It is safe, in addition to a comprehensive architectural and urban documentation of the city by the students of the School of Architecture, in order to preserve the urban heritage in case it was subjected to destruction, and this documentation was the basis for reconstruction.

2-Preserving the identity: Reconstructing the historic city as it was with all its features and symbols confirms the importance of the cit, history and heritage of the inhabitants, their authenticity, the depth of their roots in their land, and their refusal to assimilate with any new identity imposed on them. For its people, the city is a complex of accumulated history memory
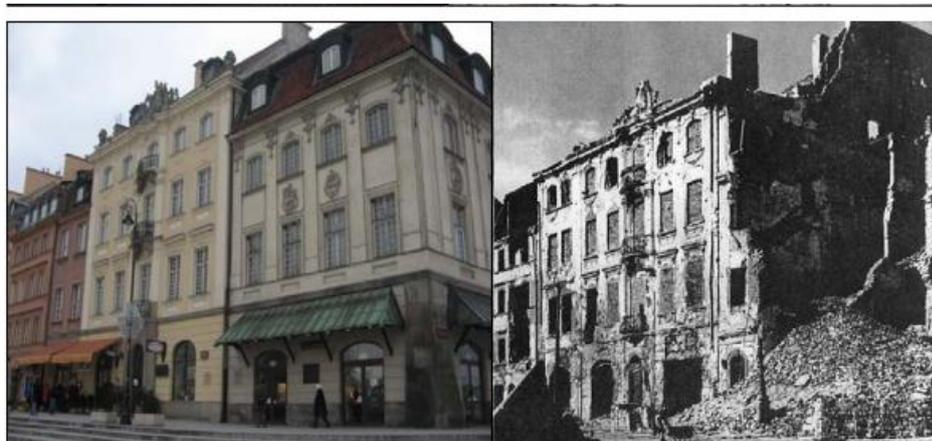
Figure (2.276) One of the buildings in Warsaw before and after the reconstruction

3-Preserving the collective memory: the reconstruction of Warsaw aimed to preserve the collective memory of the Polish people, by returning their city to normal life from among the ruins, with all its landmarks, symbols and buildings, in the same places, the same shape and the same materials if possible, and therefore work was done to rebuild everything as it is. It used to be the streets, the city, its distinctive signs, symbols, parks and buildings (in other words an exact copy has been created).

Figure (**2.278**)A street in Warsaw before and after the reconstruction process

4-The use of traditional building methods and materials: During the reconstruction of the historic city in Warsaw, the original building materials were reused. If they were not found, traditional methods and similar materials were used to replace the original materials. The identity of the place in addition to its use keeps the ancient traditional building techniques alive, and the use of these techniques in applied projects serves as a school that allows the new generation to learn these skills, and to take experience from technicians and craftsmen directly.

5- Cost: Rebuilding the same streets, for example, in the city will be more cost-effective because the foundation of the street network exists, but it must be rebuilt, in addition to the infrastructure lines existing, but they need to be repaired

6-Providing amenities and basic needs: The historical buildings in the city often lacked comfort and kept pace with the requirements of the modern era, so the external facades were sometimes rebuilt in their original condition, but the internal space was modified to suit the requirements of the modern era, such as heating, electricity, bathrooms, and kitchens. In addition to solving previous internal problems such as ventilation, lighting and humidity.

7-The discovery of the oldest layers of history: In many cases, during the cleaning process, older layers were revealed in the building and the historical urban fabric that were not visible, but rather had disappeared under the finishing facades or under the buildings, and since the goal was to go as far back in history as possible. The oldest extant fabric, usually construction, has been uncovered to the oldest possible era and appearance.

8-Strengthening the institutions of society to contribute to the reconstruction: With the beginning of World War II, the official government in Poland collapsed and left the country, and it had no direct control, so the population and civil society institutions assumed the

greatest responsibility, whether it was preparation and documentation or the process of concealing documents , in order to preserve the history, identity and heritage of their city from the destruction that befell it.

9-Eclecticism: During the implementation of the reconstruction of the historical city in Warsaw, a certain part of other periods and eras was preserved, so there was interest in restoring the old historical eras in Warsaw and neglecting certain political periods of the city's history, for example the buildings dating back to the nineteenth century AD When Poland was divided and subject to foreign control, it was neglected and not interested in rebuilding it.

2.9. Previous studies:

Studies dealing with the placement planning and reconstruction strategies for post war cities are among the scarcest studies in Arab cities in general and Iraqi cities in particular. The researcher tries to review a group of studies close to the context of the study to benefit from some ideas and identify some weaknesses to avoid them.

Table 2.1 Previous studies.

Study Title	Description	Notes
Post-War and Disaster Reconstruction Strategies in Palestine,2011	This study discusses the strategies after wars and disasters reconstruction to be followed in Palestine because of its particular importance at the national and humanitarian levels. It presents the theoretical concepts of reconstruction and addresses a set of global and local experiences in this field. The study aims mainly to shed light on the experiences of the reconstruction of Palestine and evaluate them by comparing them with the experiences of other countries and referring to the theoretical framework to come up with an integrated strategy for the reconstruction in Palestine in order to achieve greater effectiveness in the future to confront disasters, and to carry out comprehensive reconstruction that leads to achieving Better results for people and the place, especially since Palestine is still under occupation and its cities are subjected to continuous operations of programmed destruction, in addition to the possibility of natural disasters occurring in it like any other place in the world (Al-Taher, 2011)	Reconstruction studies in Palestine differ from others in the nature of the place and the nature of the conflict resulting from the occupation. The reconstruction work comes in light of the continuity of conditions and the different levels of relative stability in the Palestinian regions. The study shows the importance of the questionnaires for the population and the nature of their view of reconstruction and its requirements; the study focused mainly on the urban aspect and neglected the social and economic aspects

The Reconstruction of Historical Buildings in the Old City of Aleppo Public Buildings,2015	The study discusses the scientific method for dealing with the reconstruction of historical, archaeological and symbolic buildings that are subject to destruction due to wars and armed conflicts, as it reviewed the theoretical concepts related to reconstruction after disasters and wars, as well as studying the different trends of reconstruction of historical buildings and searching for the possibility of their application in the old city of Aleppo, through Monitoring some Western and Arab cases affected by human disasters and for which these trends were applied(Kousa,2015)	Another importance as it will document several important historical buildings in the old city of Aleppo and describe the most critical problems and damages that it suffered from as a result of the events and disturbances that the city witnessed during the past four years.
Reconstruction Strategies in the Gaza Strip after Disasters and Wars,2016	This research reviews the mechanisms and plans for the reconstruction of Gaza and its directions and their alignment with existing plans and regional and national goals to achieve comprehensive sustainable development for the region.the need to formulate a sound strategy for the reconstruction of previous reconstruction plans and to develop new plans to suit the Palestinian situation in general and the situation of the region in particular and Then return to the theoretical framework to come up with an integrated strategy that organizes reconstruction operations in the Gaza Strip later, to achieve greater effectiveness in the future to confront disasters, and carry out the burdens of reconstruction in a comprehensive manner that leads to achieving better results for people and places, and activating the role of the Palestinian Housing Council in the field of reconstruction (Hils,2016)	The research mainly aims to extract specific strategies for reconstruction after wars and disasters in the Gaza Strip and then extract a set of lessons and strategically formulate them for reconstruction that is comprehensive in all aspects and enhances the identification of success and corrects the mistakes that were committed in these previous operations
Proposing a strategy for reconstruction after disasters and wars - a case study of the reconstruction strategy in Syria,2017	This study is concerned with preparing a strategy for reconstruction after wars and disasters in Syria, by benefiting from global experiences and theoretical materials, in order to be by sound scientific and strategic foundations that take into account all the components of the urban environment, working on understanding the disaster and its causes, and then working on correctly managing the disaster and directing its reconstruction in order to be part of the development plans and elevate reality towards the best, and leads to the preservation of history, heritage and identity, and achieves the elements of sustainability in the reconstruction projects and in the preparedness processes that precede the disaster in the first place(AL Ahmar , Nano,2017)	The topics presented in the study seem general, and they start from the types of disasters, to the importance of proposing It is preserving heritage and identity in reconstruction projects. However, raising these issues clarifies the diversity of aspects of reconstruction and its challenges. Focusing on reconstruction as everyone's responsibility needs to clarify the mechanisms for achieving this in the post-conflict environment and the accumulation of the effects of the material and moral

		conflict on the victims of the conflict from the population of the affected areas.
UNESCO's Project to Revive the Spirit of Mosul,2019	The two researchers interviewed 47 Iraqi personalities about the UNESCO project while investigating the organization's previous projects in Afghanistan and other regions. This study is important in presenting strategies for urban and architectural reconstruction (UNESCO,2019)	This study is important in presenting urban and architectural reconstruction strategies.
Resilience through Urban Management of Reconstruction in Post-Conflict Settings: A focus on Housing Interventions in the Case of Iraq,2016	The study is concerned with the issue of reconstruction in post-conflict cities based on the regulatory frameworks for urban resilience using Iraq as a research case, focusing on the extent of the residents' ability to rebuild their homes after the end of crises despite the force majeure conditions of the absence of security and the necessary resources, as well as the absence of job opportunities as a result of the transition Periodic conditions of peace to war and from war to peace. The study showed, after analyzing the data of the reality of the situation, that the process of rebuilding the urban structures of cities after the conflict increases the chances of success of the reconstruction of housing and buildings for individuals on the private and public levels, and flexibility requires administrative participation and power-sharing between local municipal authorities and among the population with regard to reconstruction decisions (Alkhalefy & Piroozfar& Church ,2016)	This study focuses on the aspect of decision-sharing with the population to give correct decisions that serve the exclusivity of regional and racial discrimination of the population and away from the population, mainly in terms of decision-making, since the requirements of the individual are the main element in the reconstruction process for cities after the conflict.

Urban regeneration through post-war reconstruction: Reclaiming the urban identity of the old city of Mosul,2019	The study sought to emphasize the preservation of the urban identity of Mosul after its liberation and after suffering from the types of damage that reached great extents from 2014-2017 during the control of terrorism and the impact of war activities. The reconstructions with environmental and socio-economic aspects, by clarifying indicators of confirmation of memory, identity and development, emphasizing the interaction of new designs with urban fabric and the harmony of the urban environment with the original buildings, whether they exist or if they were destroyed, and emphasizing the symbolic importance of valuable buildings Historical, religious or cultural history and its role in the processes of identity confirmation during reconstruction (Hussein ,Abdulla ,Salih,2019)	This study is one of the important studies that dealt with the urban aspect and urban identity of the city of Mosul in Iraq, which was severely affected by terrorism and the liberation processes, and it seeks to emphasize that the distinct identity of the city is not lost, and to emphasize the importance of buildings with historical and religious value in preserving the city's legitimacy Urban age.
Strategic attitude for the Planning of Post-War Cities (The City of Mosul),2019	The study started from the problem of the impact of the physical, social and economic structure in the Iraqi city due to the wars and the absence of clear strategies for re-planning and reconstruction of these cities, with the aim of building a set of situations for the reconstruction of the city after the war phase in the economic and social aspects and assessing the viability of the city of Mosul to live after and before the war and studying and evaluating the resilience of The Mosuli community and its ability to absorb the shock of war and return to normal life (Abd Alziz , 2019)	The study concluded that it is necessary to adopt a policy of livability assessment for all Iraqi cities, and to try to include Iraqi cities in international reports and periodic classifications of livable cities because of their effective impact in increasing investments and developing the tourism aspect in the cities included in the classification and involving the private sector in operations Reconstruction in light of the weakness of the public sector due to the scarcity of financial resources, with the need to formulate a set of controls that protect citizens to focus the private sector on profit only.

2.15.Summary

This chapter constitutes an introduction to define the concepts of strategy, wars and the concept of reconstruction, and the classifications, features, effects and results associated with these concepts on the urban environment and individuals.

 The chapter also clarifies the procedures that must be taken after wars, including reconstruction and architectural movements after wars and disasters. It touches upon models for applying reconstruction projects after wars.

The chapter concluds with previous studies on post-war reconstruction, which include international and Arab studies and studies related to the city of Mosul.

Chapter Three

Case Study

3.1.Introduction:

Many Iraqi governorates were exposed to ISIS in 2014, and these governorates suffered from destruction and sabotage and are still suffering from it after the liberation process. Nineveh governorate and the city of Mosul, in particular, are considered the most damaged city by terrorism and armed confrontation during the liberation. It is one of the most important cities in Iraq, as it is rich in historical and civilized periods Successive and contemporary values at the level of society, politics, economy and culture, as well as the urban aspect and urban and architectural identity.

The western side of Mosul was elected as a case study as it is the most affected part and contains the historical center of the city (the old city of Mosul) and contains many heritage and religious symbols of different faiths and beliefs. Because terrorist operations, as well as later liberation operations, were concentrated there.

Accordingly, it is necessary to search to give a quick historical overview of the city of Mosul, in which Mosul was elected, which suffered the greatest damage, and contains distinct layers of the stages of crystallization of the urban fabric. Then, according to planning indicators, and according to qualitative measurement, the research analyzes its formal stages and extracts its urban structure, then moves to the investigation of the damages inflicted on Mosul from 2014 to 2017, focusing on the damages inflicted on the western side of Mosul so that the next stage will be the application of the theoretical and practical framework on it.

3.2. The city of Mosul

Is the capital of the Nineveh Governorate and a large city in northern Iraq. (Coker, 2017) approximately 400 km (250 mi) north of Baghdad, Mosul lies on the Tigris river. The Mosul metropolitan area has grown from the old city on the western side to encompass substantial areas on both the "Left Bank" (east side) and the "Right Bank" (west side), as locals call the two riverbanks. Mosul encloses the ruins of the ancient Assyrian city of Nineveh on its east side.

Mosul and its surrounding region have a mixed ethnic and religious population; Arabs make up the vast majority of the city's inhabitants, with Assyrians, Turkmens, Kurds, and other smaller ethnic minorities, making up the balance. Although Sunni Islam is the most popular religion, there are many Christians and followers of other Islamic sects and other minority religions.

Mosul is recognized as one of the Arab World's largest and most historically and culturally significant cities. Mosul has long served as a crossroads for international trade and travel due to its strategic location. Moslawi, a North Mesopotamian dialect of Arabic named after the city of Mosul, is widely spoken throughout the region.

Historically, Mosul marble and oil are two main local products. Mosul is home to Mosul University and its renowned Medical College, one of the Middle East's greatest educational and scientific institutions. Mosul, along with the surrounding Nineveh Plains, is one of the Assyrian people's historical centers(Dalley, 1993).
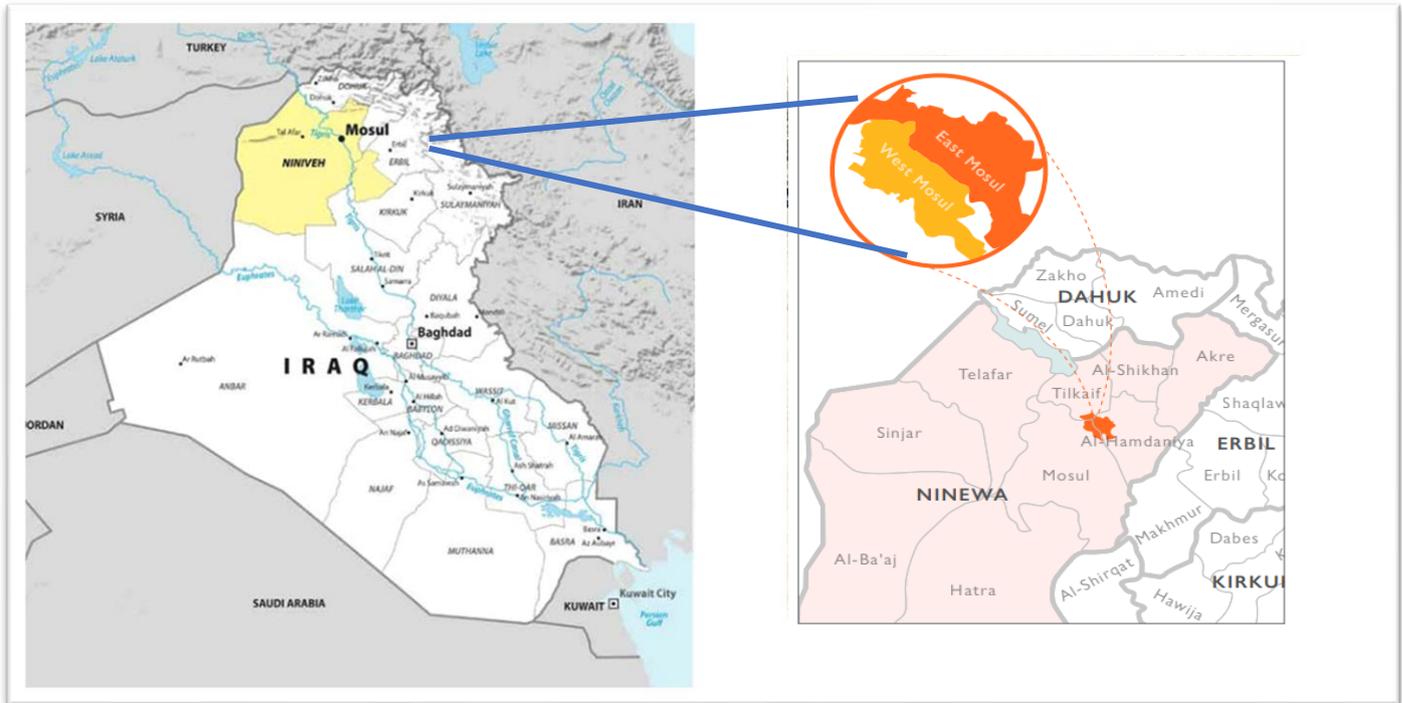
Figure (3.1) Mosul city

3.3.The Area of the City of Mosul

The total area of the city of Mosul, located within the design boundaries, was determined as (186 km) according to the design.

The basis, which was implemented in the year (1976) until the year (2000), to accommodate a population size of (927) thousand people in the year (2000), and the area of the various mainland uses that the city's residents need determined at (141) km, so that the share of One individual (6,151) of this quota is allocated (100) m for each person in residential areas at a density rate of (100) people / hectare. When adding the area of agricultural land and water bodies of the Tigris and its banks amounting to 45, the total per capita share is (200) m. (Ajaj, 2001, p.124)

The area of the city of Mosul is estimated at 240 km for the year (2014) based on the GIS ARC 2 program. It included this previously mentioned area for the year (1976) and the expansions that took place in the basic design after the year (2000), including the areas of trespassers. It is reported that in the year (1977) .

On the right side, it dominates (58%) of the total area of the city of Mosul, and on the left side is (43%), but in (2014) the area of the left side was estimated at (19.146) km, which represents a

percentage of (61%) ahead of the right side whose area is estimated at (93.87) and at a rate of (39%) of the total area of the city of Mosul (Studies and Planning Division, 2014,p.1).

3.4.Population Size and Composition

   Mosul is known for its diverse cultural, social, religious, and ethnic makeup. It had a mixed population of Arabs (mainly Muslim Sunnis); Kurds (primarily Muslim Sunnis); Turkomans (both Sunnis and Shi'ites); Shabak (Shi'ites); Assyrians, Arman, Chaldean (Christians); and Yazidis in the past.

However, given the country's sectarian and ethnic strife, Iraq's demographic data is a delicate subject. It is difficult to collect reliable data on population size and ethnoreligious composition. The most recent official national census was held in 1997.

Despite its unreliability, the Public Distribution System (PDS) Ration card became the primary source of demographic data in later years.

The large-scale population transfers in the city under the former regime, particularly in the decade following its fall, make gathering accurate census data extremely difficult. According to the Nineveh Governorate's Statistics Department, the city had 1,137,000 residents in 2009. In 2014, the number grew to 1,377,000. (before ISIL took control of the city). Until the early 1990s, the right bank housed almost two-thirds of the city's population. However, following the Iraq-Kuwait war, the left bank's urban areas gradually grew and attracted more residents; after 2003, it significantly expanded. Its population size was comparable to that of the right bank.

There are no accurate statistics on the city's ethnoreligious composition. However, it is widely assumed that the city has traditionally been dominated by Arab Sunnis (about 80% of the population), with Kurds, Christians, Turkomans, Shabak, and Yazidis following.

After ISIL took control of Mosul on June 10, 2014, a new wave of mass migration occurred. The city's remaining religious and ethnic minorities (e.g. Christians, Kurds, Turkomans, Shabaks, and Yazidis) were primarily targeted by the rising violence. Many people associated with the Iraqi government and security forces (mainly Arab Sunnis) and others deemed disloyal to ISIL were compelled to flee. Following ISIL's conquest, residents of largely Christian and Yazidi districts around Mosul (Al-Hamdaniyya, Bartilla, Tal Kaif, and Bashika) also fied.

Only Arab Sunni towns (such as Hammam Al-All, AlShorah, Al-Namrud, and Al-Mahallabiyya) retained a significant portion of their previous population. According to an IOM study from 2015, there are around 200,000 registered IDPs from Mosul city. However, according to a report by ACTED and UNOSAT (2015), this estimate is too low and cannot be used to determine the number of persons who departed the city.

According to the latter report, roughly 500,000 people evacuated the city in the weeks following its fall. The majority of displaced families relocated to the governorates of Dohuk and Erbil in Iraq's Kurdistan Region, while wealthier families went to Turkey. However, from September 2014, ISIL imposed strict controls on people's mobility out of the city, limiting access to the Kurdistan Region of Iraq and surrounding localities.
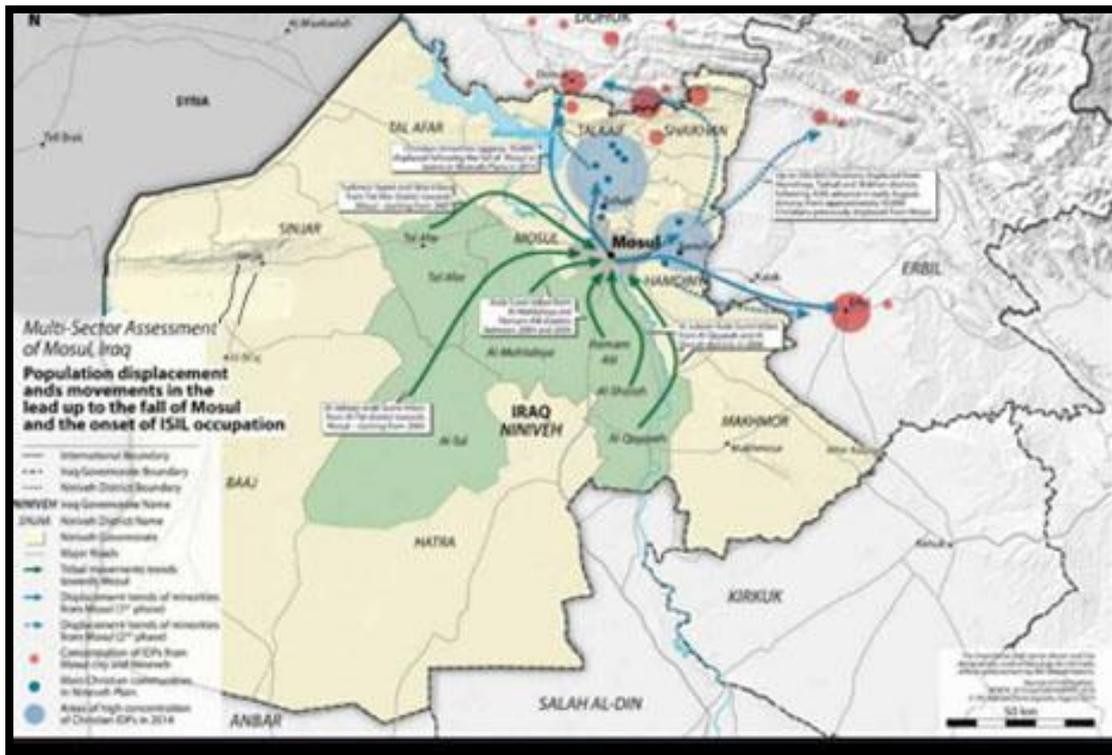
Figure (3.2) Displacement

3.5. The founding of the city of Mosul

Historical sources indicate that in the year 1080 BC. The Assyrians took the city of Nineveh as their capital (which are the ruins of Nineveh located on the left side of the city of Mosul at present). most of its parts.

The Assyrians also built a number of castles to defend themselves, including the castle located on top of the hill called "Tell Qalaiat" on the Tigris shore, opposite the city of Nineveh, which was called the Crossing Fortress. In the year 612 BC, the Medes and Chaldeans captured Nineveh after a fierce battle and destroyed it, just as they destroyed the crossing fortress.

After the battles subsided, the people of Mosul and Nineveh returned to their homes, repaired what was destroyed by the fighting, and rebuilt the Al-Ubouri Fort.

The Arabs called it "Mosul" because it is the crossroads of many roads linking the East with the West. The Achaemenids, who ruled it in the years 550-331 BC, were interested in settling the Arabs and Persians in it, and it became a city of importance.

Mosul did not escape the wars that took place between the East and the West, which caused its calamity several times, including the wars that took place between the Sasanians and the Romans

in the year 241 and the year 579. In the year 627 the Romans defeated the Persians after a decisive battle near Mosul, so Mosul became under the rule of the Romans.

Mosul, as an ancient city, means the right coast, and it was built by the conquering Arabs during the Islamic conquests of the Jazira region and the mountains of Kurdistan. As for the eastern (left) coast of the city, it is now originally an Assyrian city called Nineveh. It is not known exactly the meaning of the name Nineveh, the name of the city in the time of the Akkadians, but it is likely that it has a relationship with the Mesopotamian goddess Ishtar, the fertility god, since her old name was Nina. Another individual attributes the name of the city to Aramaic, where the word "Nona" means fish.[2] The entire city is still sometimes known as Nineveh (genders: „˚) or Athur („: „˚) to the Syriacs. The first mention of the modern designation goes back to Xenophon, the Greek historian, in the fifth century BC, when he mentioned the existence of a small settlement under the name Mpsila (Greek: Μέπσιλα). However, the fact that this designation belongs to the same modern city is doubtful, as it was located on the eastern bank of the Tigris. On the other hand, it is likely that the word is of Arabic origin, meaning "what connects two things," because it connected the two banks of the Tigris when it was built, and it was said between the island and Iraq, and it was said that it connects the Tigris and Euphrates.
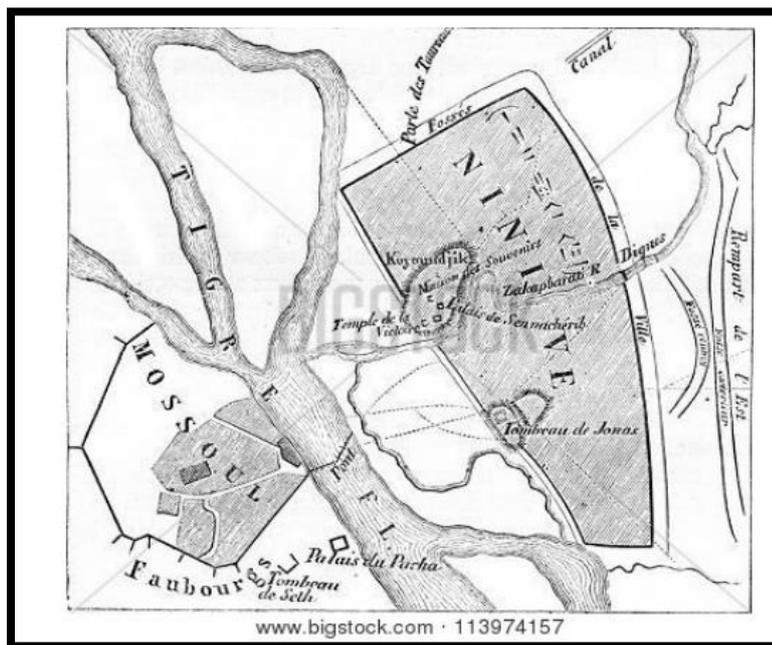
Figure (3.3) Nineveh and Mosul, the western fortress
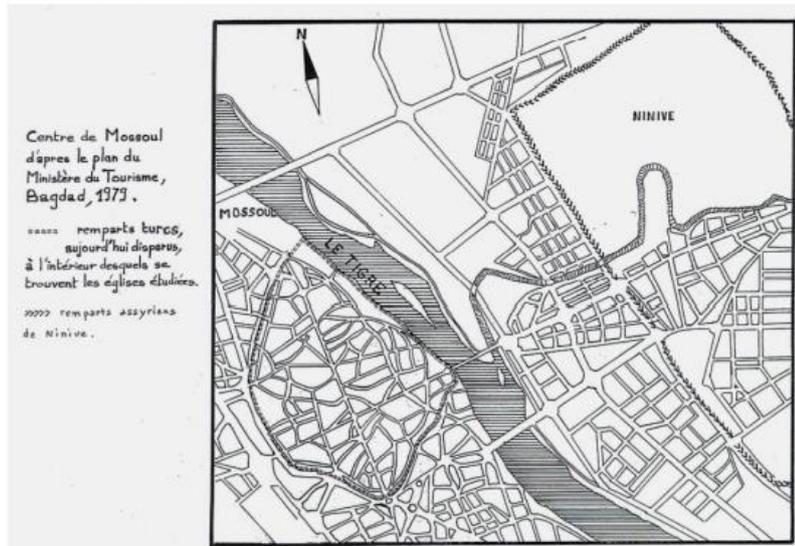
Figure (3.4) The growth of the old city

3.6.The evolution of the basic design of the city of Mosul

Significant developments have taken place in the plans of the contemporary city of Mosul after the year (1914 AD) until the year (2000 AD), and previous studies have identified four morphological stages of urban development in the city of Mosul that are compatible with the official population censuses that were relied on in analyzing the various changes and developments that contributed to the formation of the features of the plan City (General Directorate of Urban Planning, 2009)

4.6.1.The first stage 1914-1947 the stage of cumulative growth

During this phase the city of Mosul was a small semi-circular urban space surrounded by remnants of the old wall, which was mostly demolished in 1914. Most of the city directly overlooks the right side of the river Tigris. Its location was relatively high, providing natural protection against flood hazards and providing a safe place for urban growth. A small population on the left side represented by the Nabi Yunus region. Therefore, it can be said that the present city of Mosul originated from two nodes, the old city of Mosul and the district of Nabi Yunus, in the form of a congealed dhanra in line with its wall, and after the entry of cars, the construction of modern streets and the expansion of its population to the south, north and west, especially after the wall was demolished. It was adjacent to the Tigris River on the eastern side, which stood in front of it. However, the construction of the railway bridge in 1933 enabled the city for the first time to expand east. The area of expansion was blind very slow. In 1947, the city's area reached 5 km and its population reached 13,2764 inhabitants, which were concentrated in the old city 80.2%. The new residential quarters that mainly represented the expansion areas were concentrated in the south and north, representing 14.3% of the city's total population. Therefore,

the old city maintained its population weight and circular shape It should be noted that the area expansion during this phase was under the influence of the main streets of the city as these streets served as a guide to the urbanization axis.

3.6.2.Second period 1947-1957 (Axial growth stage and the beginning of star growth)

The population of the city grew in need of housing land, reaching 178,222 inhabitants in the year, to which new areas were added, especially on the axis of Nineveh Street, extending west, where the new locality of Mosul and the axis of the old Baghdad Street emerged, including the locality of Wadi Haqer. There was also a slight expansion along Khair El-Din El Omari Street on the left side, the area of the city widened to 7 km. The appearance of the exterior of the city gradually deviated from the circular pattern crowded by the emergence of new suburbs far from the old city, and the expansions focused on the main street axes at that stage. The extension of these streets separated large vacant areas from any urban use because of their distance from public transport services, which were the main transport system at this stage. The city has adopted a star-shaped pattern that is more pronounced on the right side due to the multiplicity of axes of expansion, and the population of the left side increased to (19,663) people, at a rate of (11%) of the total population of the old city, which was occupying the center stage in terms of population and by(69.9%).

3.6.3.The star and jumping pattern (the third stage / 1957-1977)

This stage witnessed continuous growth in the city's population, as the population of Mosul reached 414,162 people in (1977), of whom (135,159) people were on the left side, and a percentage of (23.3%) and the area of the built-up area has doubled at the end of This stage reached (35) km, including (22) km on the right side and (13) km on the left side, and this stage was completed with multiple axes of expansion. This was an indication of a shift in the phenomenon of the spatial growth of the city from the right side to the left side, especially after the construction of the second bridge (Freedom) in 1957. The star shape of the city was more clear during this stage to focus on the axes of new expansions with the extension of the main streets and roads, especially that connects the city with its back. Through the polarizing internationalism that the city lends to its regional framework, it is possible to analyze the axial or stellar growth pattern as a gain for the illiteracy of the region of the city of Mosul, so that it extended in the direction and specifically with the axes of the connecting roads.

As the use of private cars spread on a large scale, and public transport bus routes for the public and private sectors increased in the seventies and beyond until the areas between the axes of the main streets are like new residential suburbs that are implemented for the basic design paragraphs. The implementation of the basic design resulted in a spatial pattern called (for the plan pattern), which arose from the preparation of the detailed design that was and is still being prepared by the

Urban Planning Directorate. As a result of the implementation of these designs, the city returned to its shape The congregation filled the spaces confined between the arms, so the new suburbs far from the suburbs of the main streets were formed, so the shape of the city appeared in a pattern of dictated territorial expansion under the influence of the high flexibility that characterized the movement of cars in all directions and the non-restriction of the areal expansion on the main axes. It is important to note that the total area of the basic design for the main land uses amounted to (14) km, excluding the area of agricultural land and the river, which amounted to (45) km.
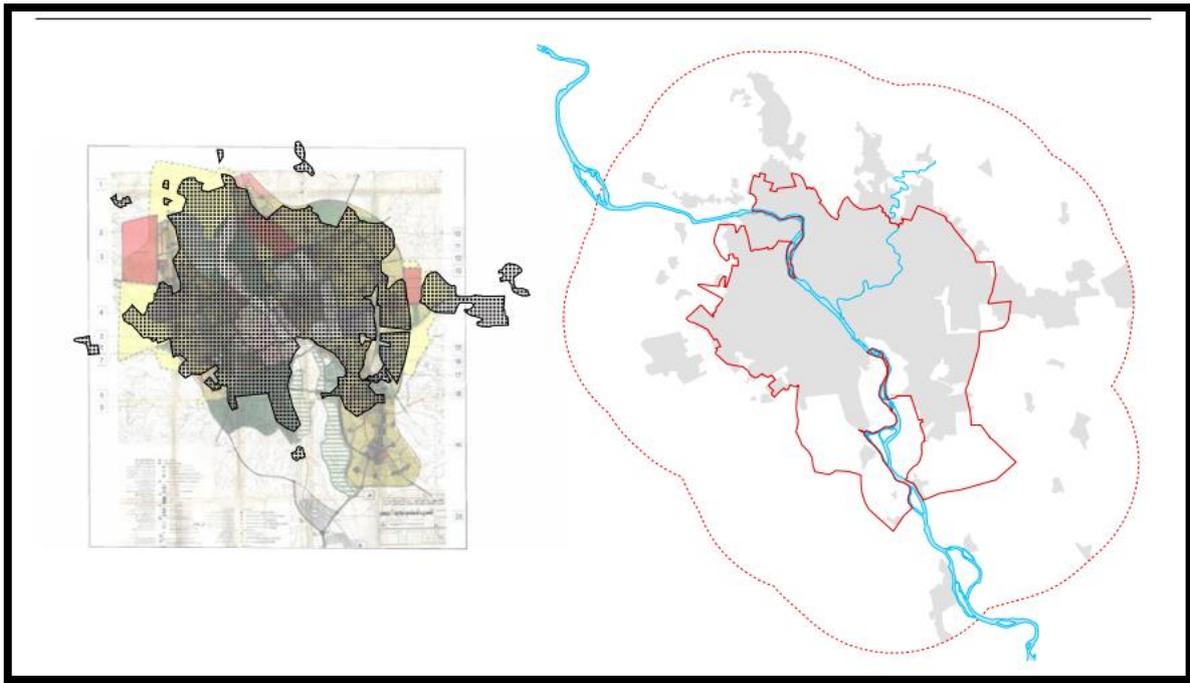
Figure(3.5) Growth outside the city, the master plan (UN-Habitat, 2016)

3.7.The west side of the Mosul City

The western side of the city of Mosul is geographically located to the west of the Tigris River, and from it exits the main road linking the center of the Nineveh Governorate and the Syrian border. It was the largest population group for ISIS in Iraq.

The western side is the origin of the city of Mosul, and some of its neighborhoods are called Old Mosul. It is characterized by its old neighborhoods, the proximity of its dwellings, and the narrowness of its alleys, which are negative indicators of the movement of tanks and large vehicles. On the ground, so the battles on the right coast turned into a street war, and artillery, air and bombs were used during the fight against ISIS, so the right side was greatly damaged during the war of liberation, due to the density of residential buildings and their close proximity

In addition to nearly 100 neighborhoods and residential areas, the western side includes the most important government buildings (about 20 government departments), on top of which is the

Nineveh Provincial Council building, Mosul International Airport and al-Ghazlani Camp, in addition to the headquarters of the Nineveh Court, the Police Directorate, and the Nineveh Operations Command.

It also includes seven major hospitals, led by Mosul General Hospital, and 15 health centers and the Mosul Medical College, one of the oldest and most scientifically prestigious medical colleges in Iraq. As for the strategic neighborhoods are Al-Farouq, Bab Al-Jadeed, Al-Zanjali, Sarkhana, and Bab Al-Saray. The western side also includes a huge number of mosques, on top of which is the Great Mosque of Al-Nuri. It also contains churches such as the Church of the Immaculate and many religious shrines and shrines. (Alghali, 2017)

3.8. Effects of the war on the city of Mosul (the west side in especially) 2014-2017

The city's fall to ISIL exacerbated the situation: its economy nearly collapsed, infrastructure and services deteriorated, public institutions were destroyed, and the city's history and cultural assets were sadly erased. ISIL forcibly relocated and displaced the city's minority communities and many others and took their abandoned homes. The majority of individuals who have stayed in the city live in deplorable circumstances, with limited access to necessities and services like food and water.

3.8.1.Human damage

The United Nations Assistance Mission for Iraq and the Office of the United Nations High Commissioner for Human Rights recorded at least (4,194) civilian population (2,521 dead and 673 wounded) since the start of military operations on February 1, 2016 until the official announcement of the liberation of Mosul on July 10, 2017 and reported Civil Defense teams, that since the beginning of (September 21, 2017) they have recovered the remains of (1642) civilians from under the rubble in Mosul, of which 1637 civilians were found west of Mosul, and this is a clear indication the intensity of the confrontations and the duration of the process of restoring the last part of the city, The impact of the various methods used by ISIS against civilians is evident at each stage of the operations. For example, the execution-like killings of the first phase of the battle overshadowed the approach to the city; during two weeks (first 29-17 20, 2016) ISIS killed about 550 civilians and formerly affiliated with the Iraqi Security Forces

As mentioned earlier, the real number of civilian casualties in the incidents may be higher than what was recorded. Moreover, the number of civilians killed due to side effects of violence, such as lack of access to food. The blood or medicine, and the number of remains that were not recovered, is still unknown(Abdul Aziz,2019,P94).

3.8.2.Housing

The United Nations estimated that about 20,000 homes were renovated or damaged during the military operations on Mosul, a third of those homes in the Old City, west of Mosul. Many people have been displaced from their houses. They were forced to stay in IDP camps in Nineveh Governorate. When asked about the most important barrier to return, 76% of the people currently displaced in the camps in Nineveh Governorate answered that their original residences had been destroyed in some way, severely damaged or completely destroyed. Some people rent houses and sometimes other parts of the city. The camps around Mosul continue to receive the displaced. He indicated that 48% of the people who arrived in the camps because of the economic and financial conditions, and indicated that 21% to the damaged or destroyed houses as a reason to come to the camp. (Protection challenges Civility in the Post-ISIS Phase, 2018)

UN-Habitat found that nearly a third of homes in the Old City (more than 5,000 out of about 16,000 residential buildings due to the restorations) were completely destroyed or severely damaged. (UN-Habitat, 2017, p.1)

Figure (3.6) Show damage to housing in west of Mosul (Researcher).
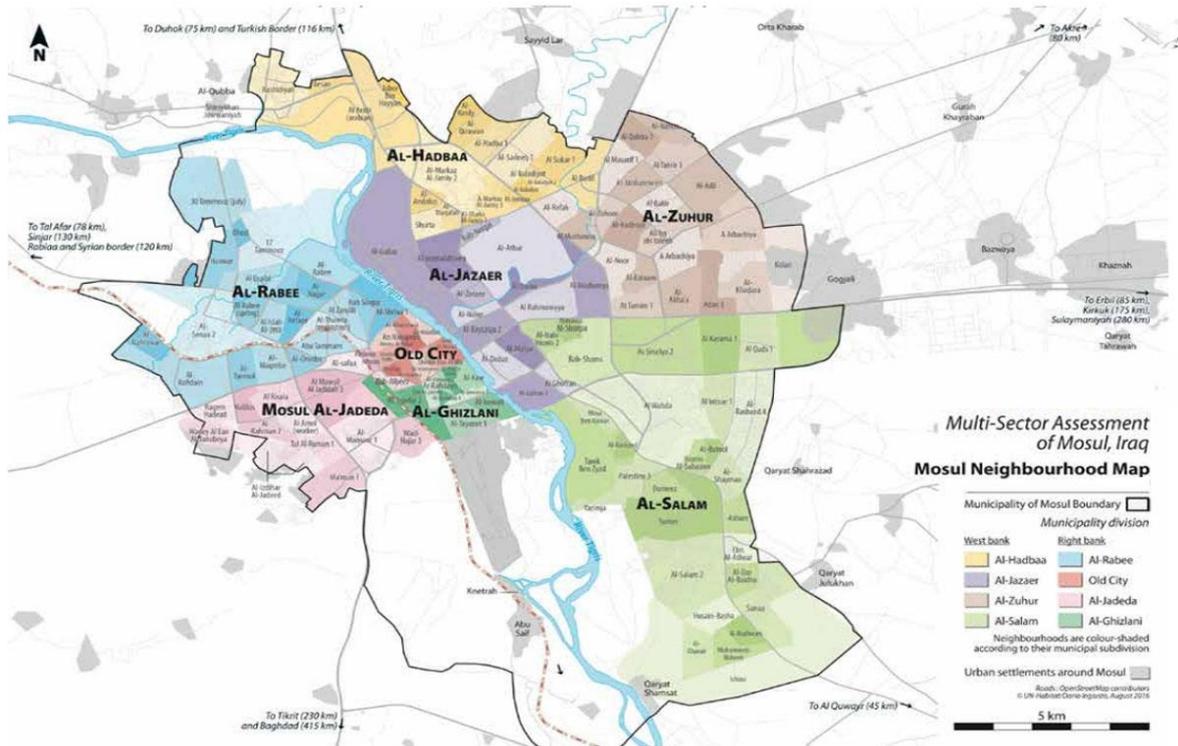
Figure (3.7) Mosul neighborhood (UN-Habitat,2016)
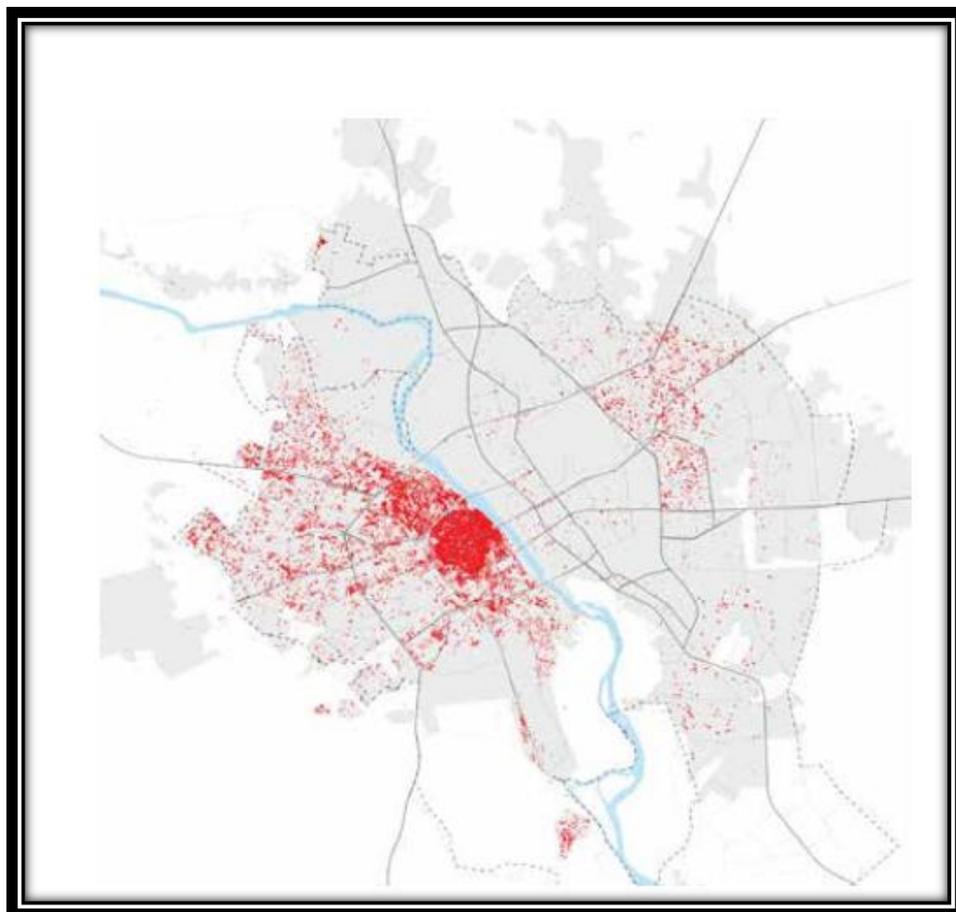
Camp name	Estimation families from Mosul
Qayyarah Jad'ah	3,550
Qayyarah Airstrip	1,997
Al Salamyiah	596
Hamam Al Alil 2	1,901
Hamam Al Alil 1	2,011
Haj Ali	839
Khazer M1	794
Hasansham U3	673
Hasansham U2	731
Al Salamyiah Nimrud	83

Neighborhoods	Sector	Side	Damaged Structures
Khazraj	Old City	West	1,533
Summer	Al Salam	East	1,395
Al Rafidain	Al Rabee	West	1,384
Al Maidan	Old City	West	1,293
Ibn Alather	Al Rabee	West	1,251
Abi Tamam	Al Rabee	West	1,051
Al Mansuriya	Old City	West	1,012
Al Nabi Jarjes	Old City	West	944
Al Abasia	Old City	West	941
Al Shifaa	Al Rabee	West	894

Figure (3.8) Damage to the housing sector on the west side (Source: UN-Habitat,2016)

3.8.3.The Local Economy

Years before ISIL took power, the city's administration and economy were in good shape. ISIL terrorists plundered the city's Central Bank after capturing control of the city in June 2014 (seizing over USD 425 million in cash and a quantity of gold bullion) and continued to abuse businesses and forcefully collect fees from business owners and farmers to fund their organization. As a result, the city's economy began to deteriorate. Many private firms and small businesses have closed, while government-funded initiatives have come to a halt. Due to the decreased purchasing power of city residents, industries, laboratories, cafés, restaurants, clothing stores, and other commercial operations shuttered. Following the occupation, certain initiatives were halted include the specialist German hospital (400 beds), Ain Al-Iraq, a residential city, and the Al-Muthanna three-level crossroads connecting the Al-Muthanna and Al-Zuhor neighborhoods (one-third of which was built before the city was occupied), and several five-star hotels and resorts (e.g. Rixos Hotel and Mosul Forests Project). ISIL demolished substantial portions of some of these projects (for example, the German hospital, which was more than half completed, and the Ain Al-Iraq project, which was still in the planning phases) and sold the steel, construction materials, and salvageable rubble both inside and beyond Iraq. According to some locals, Syrian businesspeople currently dominate Mosul's trade sector and manage many of the fast-food restaurants that debuted after June 2014. (United Nations Human Settlements Programme, 2016)

3.8.3.1. Petroleum Products and Oil

ISIL took control of oil fields, refineries, gas factories, and gasoline stations after taking control of Mosul and other sections of Nineveh. They monopolized oil sales inside their borders as a result and have made considerable profits from selling to oil companies.

ISIL took control of oil fields, refineries, gas factories, and gasoline stations after taking control of Mosul and other sections of Nineveh. They monopolized oil sales within their territory as a result and have been generating considerable profits by selling to oil smugglers at a discount. Vehicle fuel, kerosene, gasoline, and natural gas became extremely expensive. It limited the Iraqi army and coalition in Mosul troops closed the roadways that ISIL used to transport fuel, mainly the highway connecting Mosul to the oil refineries in Baiji and Al-Qayara. As a result, ISIL began

bringing these goods across the Syrian border to sell in the city. Quality, security, and availability all influence price (UN-Habitat, 2016, p.29).

3.8.3.2.Factories and Industries

In the Mosul region, there are various government factories. The following are the largest ones within the city:

Pharmaceuticals, medical equipment, sugar, yogurt, clothing and cotton textiles (2), pre-cast concrete parts, wood and furniture, and flour are all examples of industries that use flour (2). Cement (6), brick and mosaic construction materials, pharmaceutical businesses and medical equipment, electrical transformers, and several smaller manufacturers are located outside of the city. Food (349), leather (19), furniture (33), drinks and juices (2), metal furniture and aluminum products (20), and several others are among the private companies in the city. (Ministry of Planning 2013).

ISIL took control of all factories after June 10, 2014. Most quickly shut down due to a lack of raw materials and power outages (such as the sugar factory, dairy factories, and pharmaceutical sectors), or security reasons and cash and staff shortages. ISIL demolished the equipment of roughly 70%- 80% of the city's factories (such as plastic, aluminum, and ice cream factories) and moved and sold it in neighboring countries, mostly Turkey and Syria.

All cement plants have been shut down today, including Hammam Al-Alil, critical to the Mosul Dam's operation. Thermal fuses and other materials used in cement labs were stolen by ISIL and smuggled out of the country. Government textile mills in the city, which began producing traditional apparel in 2014, remained operational until mid-2015 when they were bombed. To stay in business, private factories still open must pay ISIL royalties. ISIL also stormed the Iraqi Ministry of Industry and Minerals' Al-Mishraq Sulphur State Company, stealing its rigs and transporting them to Syria.

The pharmaceutical industries in Mosul fared no better. ISIL also took all of the equipment from the Iraqi Ministry of Industry and Minerals' Nineveh pharmaceutical facility. ISIL also seized and sold prescription medications from the facility. In April 2016, air attacks on the city damaged the main building of the pharmaceutical plant factory.(UN-Habitat,2016,p.29)
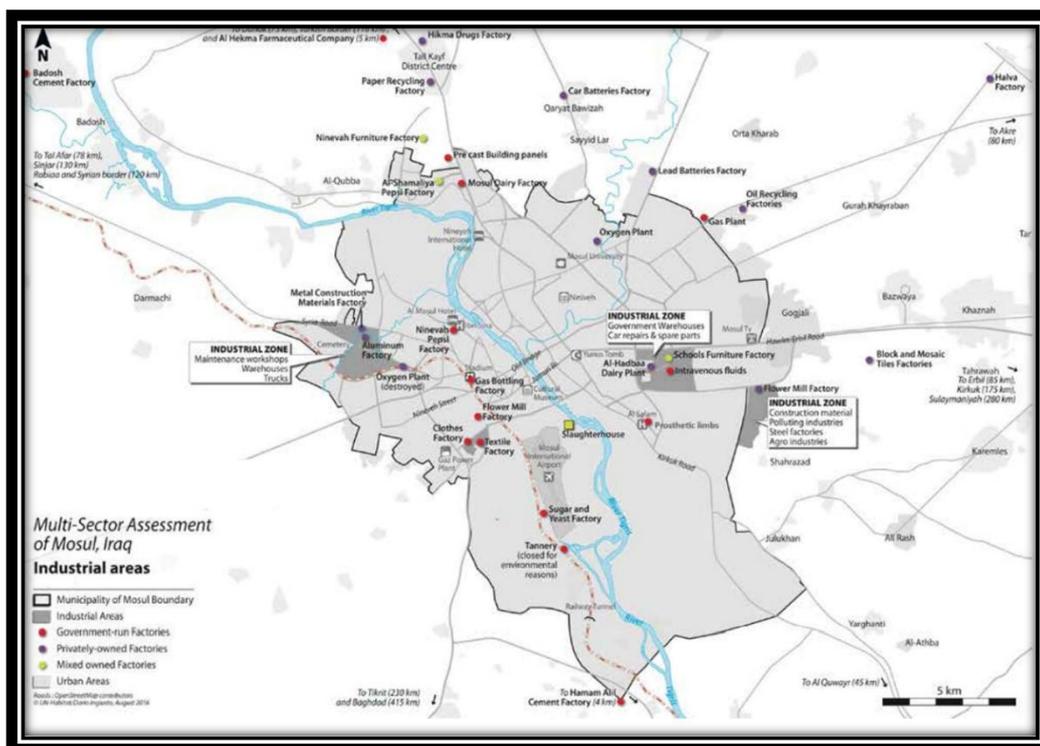
Figure (3.9) Industrial areas (UN-Habitat,2016)

3.8.3.3 Agriculture

Agriculture has long been a major component of Mosul's economy, with the Ninewa plains serving as the region's "breadbasket." Ninewa has the country's largest wheat and barley cultivations; it used to produce 40-45 percent of Iraq's yearly wheat and barley production and operated around 30 percent of its agriculture equipment.

Due to damaged or poorly maintained machinery, the displacement of local farmers, the contamination of lands with ERW, and destroyed silos, storage, and crop processing facilities, Iraq has lost approximately 40% of agricultural productivity since ISIL took control (Food and Agriculture Organization (FAO), 2018).

In addition, insecurity and armed confrontations forced a large number of local farmers to flee Ninewa. Although some farm settlements were spared, others were severely devastated, resulting in a reduction in the labor force available for agricultural production. The restoration of rural buildings and the repopulation of villages is thus critical for the revival of agriculture and the economy of Mosul as a whole.

The availability of water is another key limitation to boosting agricultural output. While much of northern Iraq's agriculture is rain-fed, growing water variability, seasonal availability, and local water shortages are the major challenges. Iraq used to be food self-sufficient but currently imports 70% of its needs, primarily through Turkey. Only approximately 20% of farmers in Nineveh have access to irrigation now, compared to 65 percent before the crisis.

Pipes, sprinklers, water pumps, channels, and wells were also robbed or damaged in large numbers (FAO, 2018). In the Ninewa plains, repairing the irrigation network and provisions temporary watering systems, such as new wells or extended water transportation pipes, is critical.

Furthermore, improving access to serviced warehouse facilities, cold storage, packaging/processing businesses, and service markets that allow agricultural products to be sold will help to strengthen the integration of Mosul's rural hinterland and urban regions.(UN-Habitat, 2019,p.29).

3.8.3.4.Damage Caused in the Education Sector:

    These are: First: University education services: Most of the university buildings affiliated with the Ministry of Higher Education have been damaged by the crisis, such as the buildings of Mosul University, Nineveh University, Hamdania University, Tal Afar University, the Technical College and the Technical Institute.

Second: Education services: There are many damaged schools, especially on the right side, which need rehabilitation. (Mosul University Engineering Advisory Team, 2017).

Some studies have also shown that more than a quarter of the displaced, aged six years and over, are currently enrolled

 With regard to education, the IDPs who did not enroll in education at all constitute a percentage (6, 12), and IDPs from Nineveh governorate who left school due to displacement constitute the highest percentage compared to the other six governorates in which the displacement took place, as it reached 37.2%, and this means that there is a problem in continuing the displaced For education, It is cannot be isolated from the effects of armed violence, as it destroys the infrastructure in the governorates, which exposes the educational systems to violence, and in turn destroys educational opportunities on a large scale, even after the security situation has stabilized and the displaced return to their homes for a short period. Many reasons push the displaced to leave education   (Abdul Aziz, 2019,p.95)
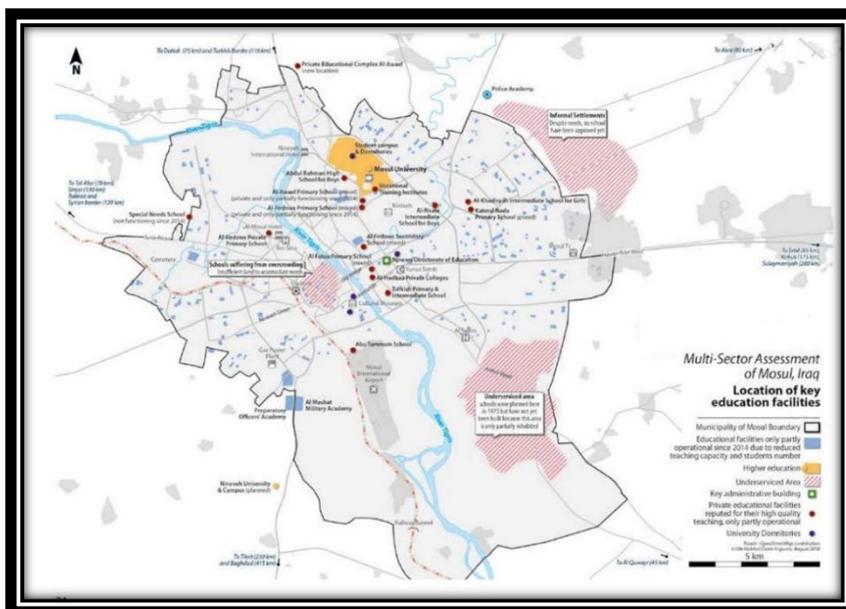
Figure (4.10) education facilities (UN-Habitat,2016)

Figure (3.11) One of the destroyed schools in Mosul. (Source: Kirkuk Now Archive)

3.8.4. Damage on the environment

The 18 oil wells set ablaze by ISIL in Qarrayah burned for nine months, producing such dense black smoke that people describe the clouded skies as the 'Daesh winter.'

The bursting of an oil well in the Al-Shuhadaa neighborhood damaged the area. The interiors of many homes are covered in toxic soot, and residents report that the colony is untenable due to solid smells from oil pools and smoldering fires.

ISIL set fire to a 50,000-tonne pure sulfur stockpile at the Mishraq Complex, resulting in a dense white cloud of poisonous sulfur oxides that reached Baghdad and surrounding countries.

In the insufficiently guarded site, a two million-ton pile of sulfur waste is at risk of further sabotage attempts or accidents.

ISIL repurposed a variety of locations, including factories, workshops, warehouses, and private residences and schools, into munitions manufacturing operations, which are now filled with explosives and potentially dangerous chemical products.

The significant damage to Mosul's electricity network poses considerable risk of deadly PCB contamination. ISIL deliberately shot heavy-caliber rounds into a block of power transformers at the main electrical station feeding western Mosul, filling the building floor below with up to 3 meters of transformer oil.

Another notable consequence of the fighting is artisanal oil refining on the outskirts of both eastern and western Mosul. Rudimentary techniques in makeshift refineries result in a localized but possibly considerable pollution footprint. Large amounts of toxic asbestos are present at Mosul airport, Ghizlani military base, and Western Mosul's central garages.
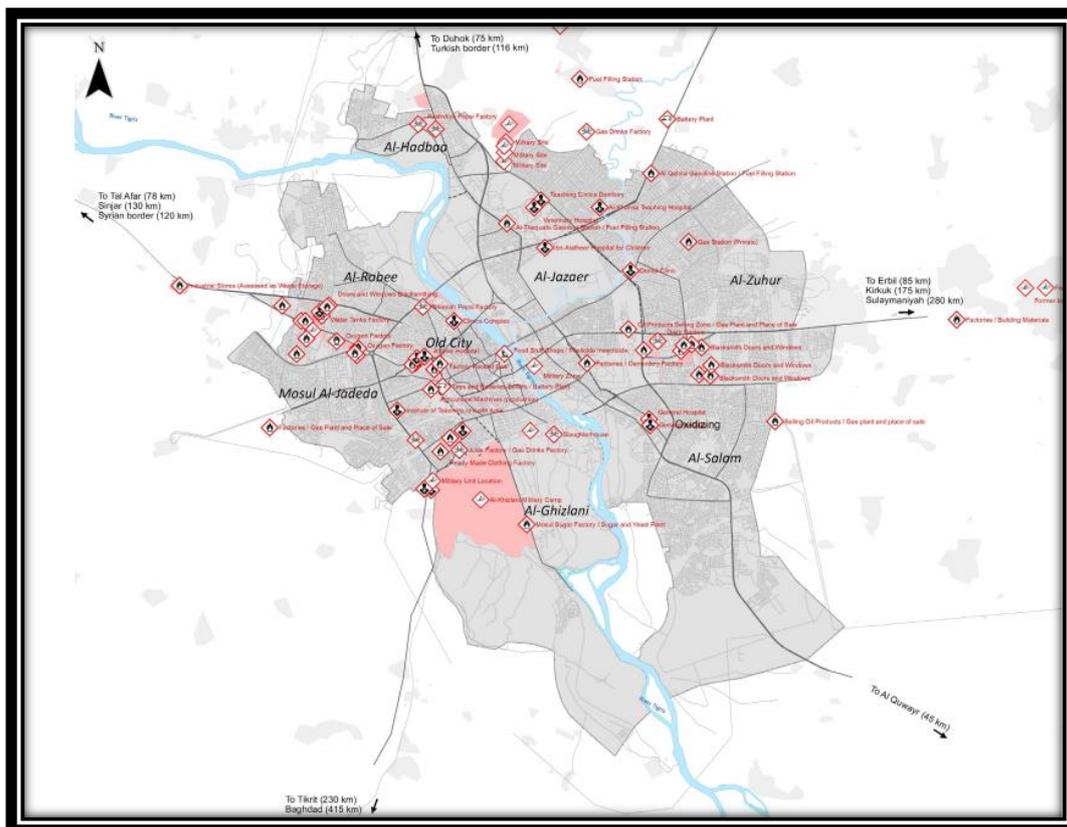
Figure(3.12) Damage on the environment

3.8.5. Damage caused to the city's essential services and transportation:

1.Damage to water networks: One of the most important service facilities is the rehabilitation of water transmission networks on both sides of Mosul because losses sometimes reach 50%

Figure(3.13) Water Network (UN-Habitat,2016)

Name	Location in Mosul	Municipal sector	Damage to water network (%)
Al Araby 2	East	Al Hadbaa	75
Al Muthana	East	Al Zuhoor	75
Al Araby 1	East	Al Hadbaa	75
Al Araby 3	East	Al Hadbaa	75
Al Araby 4	East	Al Hadbaa	75
Al Shortah	East	Al Hadbaa	75
Al Refaee	West	Al Rabee	60
Abe Tammam	West	Al Rabee	60
Ammo Al Bakal	West	Old City	60

Figure (3.14) Damage Water Network (UN-Habitat,2019)

2. Damage to the sewage and sewage networks: some roads on the right side suffer from setbacks in the streets because of the sewage pipes below these roads and thus damage them.

Figure (3.15) Waste Water Treatment (UN-Habitat,2016)

3. **Damage to the electricity networks**: The city needs a station of at least 400 megawatts to receive and distribute energy to the town.

#	Substations	Type	Damage %
1	Al Mansoor	132/33/11KVA	80
2	Al Dawasa	31/11 KVA	100
3	Bab Al Beth	31/11 KVA	100
4	Tal Al Roman	31/11 KVA	moderate
5	Al Nasij	31/11 KVA	100
6	Bab Al Tob	31/11 KVA	100
7	Al Yarmook	132/33/11 KVA	80
8	Al Nahrawan	31/11 KVA	100
9	Bab Sinjar	31/11 KVA	minimal
10	Molawwatha Al Ayman	31/11 KVA	minimal
11	Rajem Hadeed	31/11 KVA	minimal
12	17 Tamoz	31/11 KVA	moderate
13	Al Shifaa	31/11 KVA	100
14	Al Warshan	31/11 KVA	100
15	West Mosul	132/33/11 KVA	70
16	Al Sinaea Ayman	31/11 KVA	moderate
17	Al Haramat	31/11 KVA	moderate
18	Moujamaa Al Mostashfaiyat	31/11 KVA	100
19	Badoosh	132 KVA	moderate

Figure (3.16) Damage to power stations in west of Mosul (UN-Habitat,2019)

4 . Damage to health services: hospitals have a large deficit even before the crisis occurs. a number of families before the crisis, it was estimated that 3800 beds were covered by all the city's hospitals, which amounted to less than 800 beds after the crisis. (The Engineering Advisory Team of the University of Mosul, 2017)

#	Hospital Name	Status	Damage %	Rehabilited by
1	Blood Center Ibn Alather Hospital	unknown	15	-
2	Al Batool Hospital	operative	65	UNDP
3	Republican Education Hospital	non-operative	100	-
4	Al Salam Hospital	non-operative	70	-
5	Shifa Hospital	non-operative	10	Directorate
6	Al Mosul General Hospital	operative	30	UNDP
7	Spinal Cord Injuries Hospital	operative	5	-
8	Turkish Eye Hospital	non-operative	20	-
9	Blood Bank	non-operative	100	UNDP
10	Al Khansaa	operative	75	UNDP
11	Ibn Sina General Hospital	non-operative	80	UNDP
12	Oncology Hospital	non-operative	90	UNDP
13	Ibn Alather Hospital	operative	45	UNDP
14	Mosul Al Jadeed	non-operative	100	Kuwait
15	Al Rabee	non-operative	80	UNDP
16	Al Hadba Training	non-operative	100	-

Figure (3.17) Damage to the health sector (UN-Habitat,2019)

5 . Transportation: According to the United Nations report, most of the bus stations are no longer operational, in addition to severe damage to the bridges that connect the two parts of Mosul, and the Mosul airport has stopped working.

#	Bridge Name	Status	Actor	Connection
1	New 'Oberoi' Br.	100% operational	New	2-way, incl trucks
2	Fourth Br. (Qadissia)	100% operational	World Bank	2-way, vehicles only
3	Old Br.	100% operational	World Bank	2-way, vehicles only
4	Al Huria Br (temporary & existing)	50% Damaged - 25% Operational	World Bank	1-way. West to East, vehicles only
5	Fifth Br.	55 % Damaged - 25 % Operational	Ministry of Defense	1-way. East to West, vehicles only
6	Sixth Br.	Planned	-	-
7	Seventh Br.	Planned	-	-
8	Shuhada Br.	40% Damaged, Out of operation	-	Not Accessible

Legend:
- Operational
- Operational , needs upgrades
- Damaged, Unaccessable
- Planned
- Under Construction

Figure (3.18) Damage to bridges (UN-Habitat,2019)

Figure (3.19) Damage level of main transportation hubs in the west of Mosul(UN-Habitat,2019)
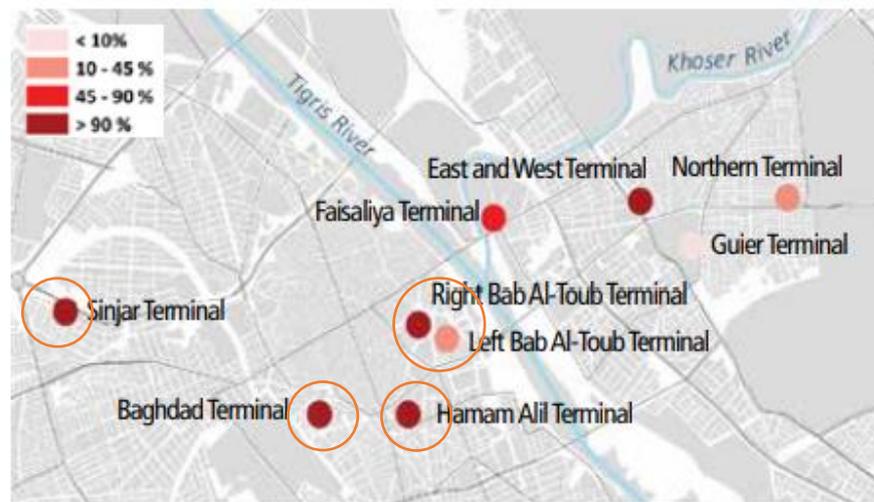
#	Type	Transport to	Status	Location
1	regional	Duhok, Erbil, Sulaymaniya, Kirkuk	in operation	East Mosul
2	regional	Guer, Hatra, Gayara	in operation	East Mosul
3	regional	Tel Kaif, Al Qush, Faida, Wana	not in operation	East Mosul
4	regional	Baghdad, Salah Al Din and others	not in operation	West Mosul
5	regional	Talafer, Rabia, Syria	in operation	West Mosul
6	local	East, West (temporary)	in operation	East Mosul
7	local	East Bank	not in operation	West Mosul
8	local	West Bank	not in operation	West Mosul

3.8.6. Damage to Traditional Fabric

The Technical Report of the UNEP Assessment of Debris Management in Mosul (May 2018) shows an estimated 7.65 tons of debris across Mosul, of which 75% is located in West Mosul (right side) and the rest is in the eastern part of Mosul City (side There are at least 1.875 million tons of debris (7500 tons per hectare) within the boundaries of the Old City (250 hectares). A number that was likely to rise as more rubble is generated

The time required to finish the removal of debris under the conditions was estimated to be more than 7 years by the United Nations Environment Program (UNEP). The reports indicated a very high rate of damage to heritage-style housing in the city. Not only the return of the population to the heart of the city, but also because ISIS deliberately prevented the city's recovery by placing booby traps in many buildings and improvised explosive devices, and the diversity and these devices' evolution is unsurpassed in contemporary history. (UNMAS) indicates that only 4.0% of the Old City has been cleared of ERW. (Habitat-UN ,2019, p.78)
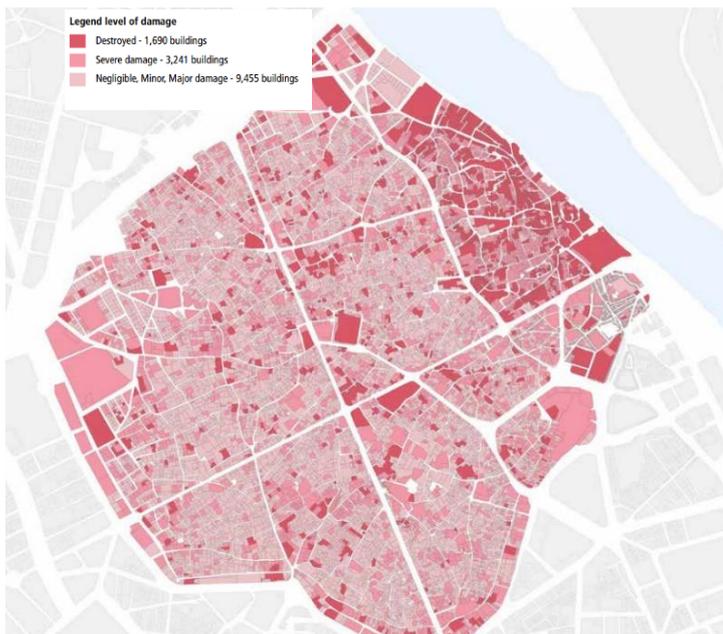
Figure(3.20) Damage assessment of the Old City (UN-Habitat,2019)

Figure (3.21) Sites cleared from ERW contamination in the Old City(UN-Habitat,2019)
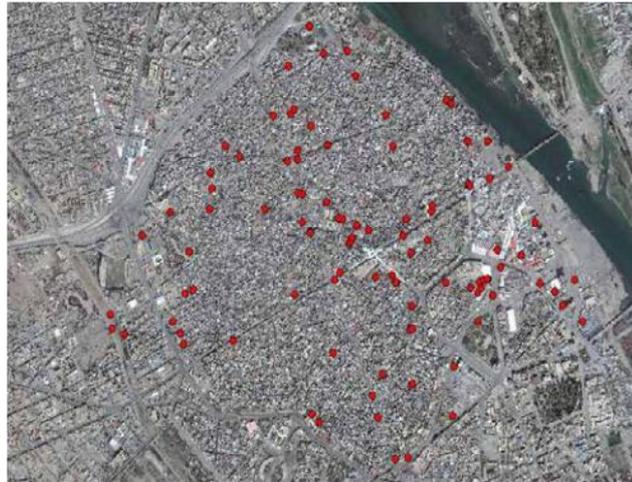
Figure (3.22) High risk contamination locations in the Old City. (UN-Habitat,2019)

3.8.7.Damage to buildings with value in the old City:

ISIS demolished and blew up religious buildings, including mosques, churches, and shrines, as Iraqi forces continued to advance towards the center to recover them. Such as the mosque and the tomb of the Prophet Yunus and the Prophet Zarjis, the shrine of the grandson of Omar Ibn Al-Khattab, the shrine of Sheikh Fathi, the shrine of Sheikh Ibrahim, the tomb of Ahmed Al-Rifai and other mosques, and several 20-10-2016 were demolished in the areas (Souk Al-Shaareen, Khazraj, and Hay Al-Nour), using Churches in demolition mechanisms seized from the Mosul municipality. He also seized the rest of the churches and turned them into centers affiliated with them, such as the Al-Tahra Church, which was converted into the headquarters of the Hisbah Diwan to hold the residents accountable, torture and imprison them there, and other churches in the Police District have been converted into headquarters for spoils. The churches were defaced and vandalized by destroying their holdings of crosses and statues, while painting the domes of these churches in black, as an expression of them to change the churches' function and consider them to be subordinate to the headquarters of their rule. In addition to the demolition of many schools and hospitals on the right and left side of the city. There are other acts of destruction carried out by the Iraqi forces and backed by the leaders of ISIS, such as the US forces, bombing some government buildings, which were the headquarters of the municipality on the left side of Mosul, and thus the city lost its social life centers and part of its memory, however, some buildings suffered from ruin Abuse (Majid, 2021, p.140)
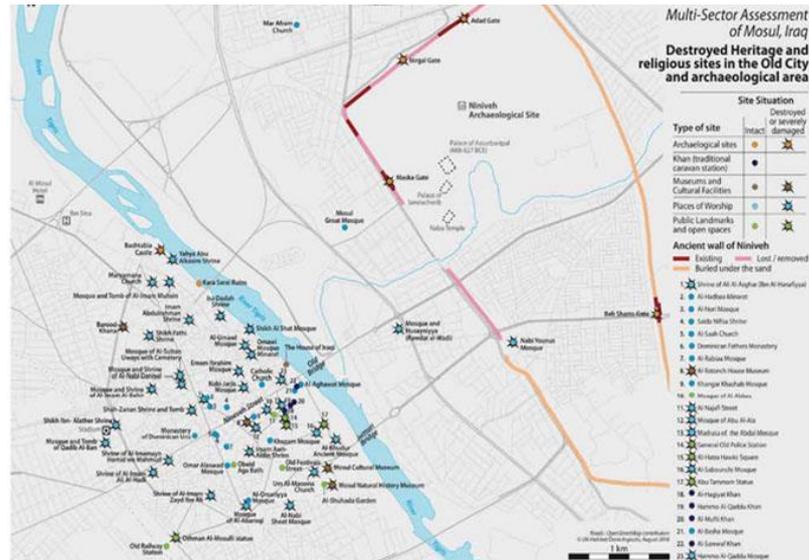
Figure(3.23) Destroyed Heritage and religious (UN-Habitat,2019)

3.8.8.Destruction of heritage :

In an attempt to erase Mosul's history, ISIL has engaged in a concerted campaign to demolish the city's cultural heritage buildings and sites. It razed Nineveh's ancient city, including Sennacherib's Palace and its monuments. It also destroyed the city's renowned gates and the entire 12-kilometer-long city wall. Thousands of precious books and manuscripts have been stolen, confiscated, or burned from libraries and museums. ISIL destroyed 37 key Islamic landmark sites and many religious buildings and heritage centers of minority communities in Mosul and its environs, including all Yazidi shrines in Bashiqa and Bahzany. Several archaeological sites in Tal Afar were looted and destroyed, the most famous being the Citadel (UN-Habitat, 2016, p.60).

#	Heritage landmarks	Status
1	Elisa Dadah shrine	Destroyed
2	Imam Abdulrahman shrine	Destroyed
3	Shekh Al Shat tomb	Destroyed
4	Al Umawi mosque	Destroyed
5	Omawi mosque minarat	Destroyed
6	Primary house of Iraqi	Minor Damage
7	Emam Ibrahim mosque	Destroyed
8	Hammo Al Qaddo mosque	Destroyed
9	Catholic church	Minor Damage
10	Al Aghawat mosque	Minor Damage
11	Al Sawwaf khan	Minor Damage
12	Nabi Jarjis mosque	Destroyed
13	Al Basha mosque	Minor Damage
14	Al Hadbaa minarat	Minor Damage
15	Al Mufti khan	Minor Damage
16	Hammo Al Qaddu khan	Minor Damage
17	Al Nuri mosque	Minor Damage
18	Saida Nifisa shrine	Destroyed
19	Shah Zanan shrine and tomb	Destroyed
20	Al Hagiyat Khan	Minor Damage
21	Al Najafi street	Minor Damage
22	Khangar Khashab mosque	Minor Damage
23	General old police station	Destroyed
24	Al Totonch house museum	Destroyed
25	Al Hatra hawks square	Destroyed
26	Al Saah church	Minor Damage
27	Dominican fathers monastery	Minor Damage
28	Monastery of Dominican nuns	Minor Damage
29	Khuzam mosque	Minor Damage
30	Ancient Nineveh wall	Destroyed
31	Al Rabiaa mosque	Minor Damage
32	Imam Awn Aldin shrins	Destroyed
33	Obeid Aga bath	Minor Damage
34	Omar Alaswad mosque	Minor Damage
35	Al Omariyya mosque	Minor Damage
36	Al Abaroqi mosque	Destroyed

Figure(3.24) Destroyed heritage land mark (UN-Habitat,2019)

Figure(3.25) Al-Tahira Church (Source: Researcher)

Figure(3.26) Al-Nouri Mosque (Source: Researcher)

Figure(3.27) Destroyed Riverfront (UN-Habitat,2019)

Figure(3.28) River front(Source: Reuters)
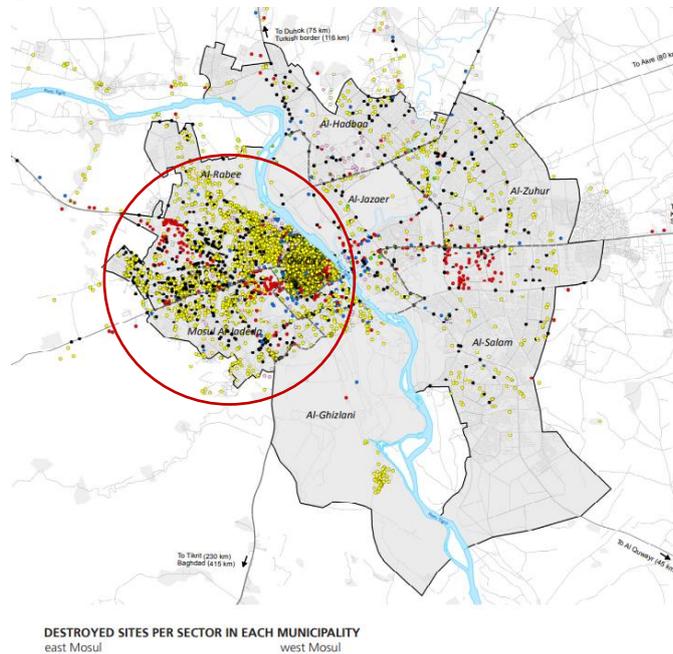
Figure(3.29) Total damage in west side of Mosul(UN-Habitat,2017)
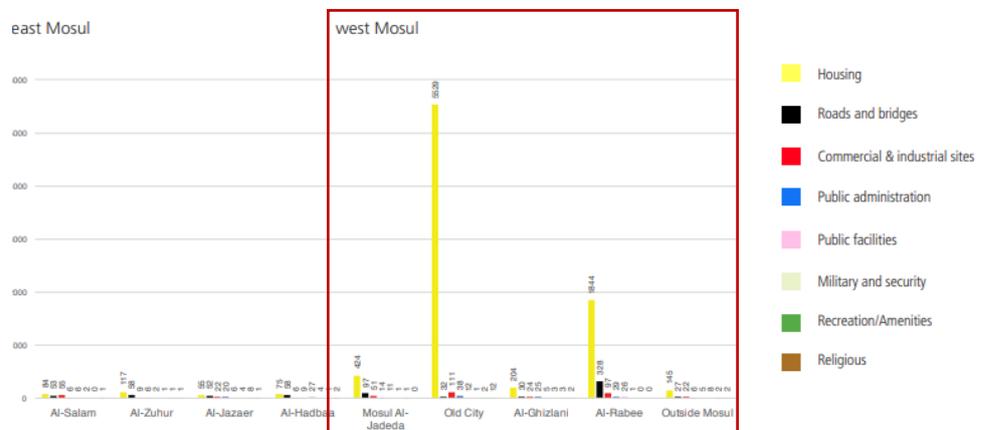
Figure (3.30) Destroyed sites in every sector in every municipality (UN-Habitat,2017)

3.9.Summary

In this chapter, the case study of the west side of Mosul had been chosen. It includes the ancient city of Mosul as the historical center of the city of Mosul.

Its origins, historical growth, and the interaction of the historical periods that showed morphological stages in the growth of the city were investigated.The urban structure of the region before 2014 is considered as a succession.

The research showed contradictory facts for the state of this region, while the region represents rich architectural, urban and cultural integration in a long history. It was subjected to the most severe types of destruction and damage in the era of the occupation of ISIS terrorism and the confrontations of its liberation, in addition to the losses incurred by its people, human victims, physical and psychological harm and destruction. Their homes, the infrastructure of the region, the collapse of their business, the economic aspects of their lives, and the impossibility of continuing life led to the displacement of the vast majority of them.

The research showed the extent of the damages suffered by the various sectors in the western side of Mosul, the sectors of education, housing, infrastructure, and historical and heritage buildings, which were severely damaged as a result of terrorist operations and mines planted in the region, as well as liberation operations later.

Chapter Four

Application of Methodological Framework for the west of the City of Mosul, Iraq

4.1.Introduction:

As discussed in the first chapter, which dealt with the research objectives, there is a need to evaluate the methodological framework of the study case that was dealt with in the previous chapter to achieve the desired goals of this study.

An analysis of the case study is presented to shed light on finding a strategy for the post-war reconstruction of cities. The first step includes identifying issues, problems and needs in the study area using documents and sources and discussing groups and interviews. The second step consists of reformulating the problems and needs that consist of the third step in formulating indicators and then selecting and arranging Indications in the fourth step.

The following are the objective of this chapter:

1. To assess the framework using a case study method.

2. To test the methodological framework's applicability in a real-world case study.

3. To see if a systematic approach to constructthe framework is feasible.

4. To discover any significant application issues in postwar cities.

5. Determine the most important issues and prioritize them.

This chapter aims to answer the following essential questions based on these goals:

1. To what extent would the proposed analytical framework be useful in developing a post-war urban reconstruction strategy in practice?

2. What changes to the methodological framework will be required in terms of themes, aims, and indicators?

3. How may the methodological framework be applied to the case study that has been chosen?

4. What are the most important themes in your chosen case study, and why?

5. Is it possible to use the case study to build a set of indicators that can be used in future post-war cities?

4.2.The First Step (Issues Identification)

Exploring the case study's issue areas, needs, and challenges are the first stage in developing the methodological framework. The process by which this task has been addressed is shown in Figure 4.1

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┌─────────────────────┐   ┌─────────────────────┐   ┌─────────────────────┐
│   document source   │   │    focus groups     │   │     interviews      │
└─────────────────────┘   └─────────────────────┘   └─────────────────────┘
          │                         │                         │
          ▼                         ▼                         ▼
┌─────────────────────┐   ┌─────────────────────┐   ┌─────────────────────┐
│  problems and issues│   │  problems and issues│   │  problems and issues│
└─────────────────────┘   └─────────────────────┘   └─────────────────────┘
            ╲                       │                       ╱
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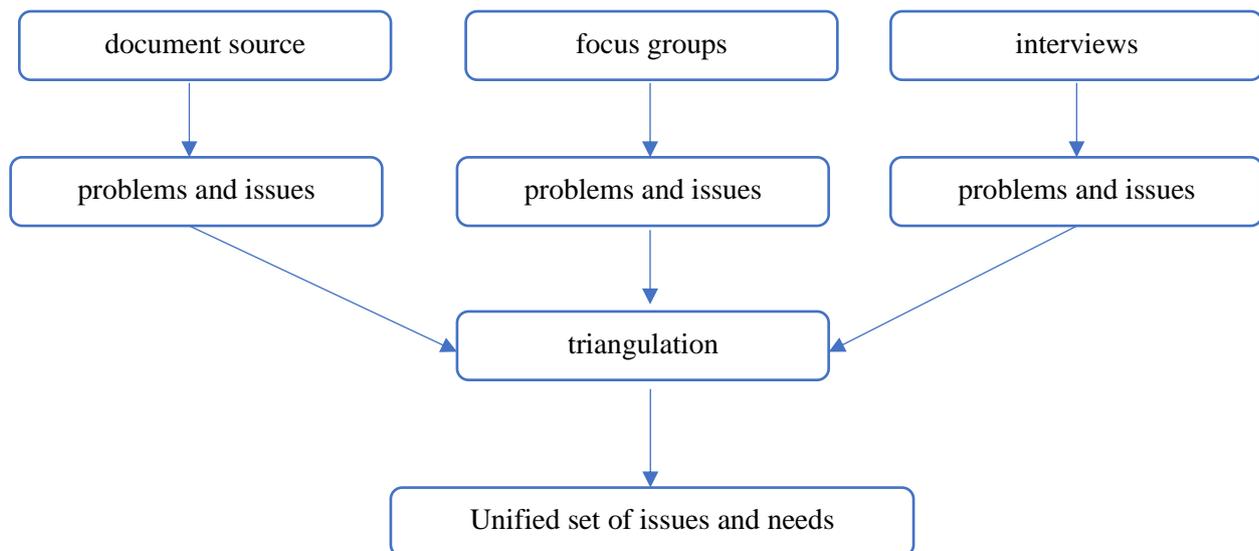
Figure (4.1) A diagram showing the first step in general (issues identification) (Al-Alwani,p.120)

Patton (2002,p.431) suggested following steps to construct case study data for analysis properly: collect raw data; create a case record; and compose a conclusion to the case study narrative, which might be delivered thematically, chronologically, or both. Various research methodologies can be used to gather raw case study data, including interviews, observation, questionnaires, focus groups, documentary sources, visual methods, and ranking exercises This study employs a range of methodologies often utilized in both industrialized and developing countries. Proposing several data sources, constructing a case study database, and maintaining a chain of evidence are the three basic data gathering principles for case studies(Al-Alwani,p.121)

Triangulation is one of the most effective processes for ensuring accuracy and alternate explanations when using multiple data sources Furthermore, the need to confirm the processes' legitimacy raises the need for triangulation.

In case studies, triangulation can be accomplished by combining data from several sources. Data source, theory, investigator, and technique triangulation are the four types of triangulation identified by Denzin (1984).

Triangulation of data sources was used in the particular case study of Mosul city to identify the key concerns, needs, or challenges related to post-war cities. Document sources, interviews, and focus groups are the key data collection methods and, consequently, the main triangulation sites. This study offers data to help comprehend the key difficulties or challenges in west of Mosul, a case study city. Documentary findings, interview discussions, and focus groups were properly recreated, and examined.

4.2.1.Documentary Sources

The following websites provide documentary sources related to the complete study:

1. A review of the Literature on Post-War Cities Reconstruction (Chapters 2)

2. The case study's description and some intriguing information (Chapter 3)

3. Analysis of the literature to determine the issues or problems of the city of Mosul after the war (Chapter 4).

In the initial stages of this study, data from documentary sources helped identify case study concerns and verify interview and focus group data.

Documentary sources used include newspapers, books and press articles" (UN-Habitat, 2016),(UNDP, 2017), (UN-Habitat, 2017)(IOM UN Migration, 2019),(The impact of wars on archaeological sites in the city of Mosul (the archaeological city of Nineveh)) and (UNHCR, 2015). All available are government documents, unpublished reports, non-governmental papers, academic publications, local historical records, maps, socioeconomic studies, and other sources pertinent to the case study.

Despite the possibility of inaccuracy and reliability of some of these "local" resources, Some of the information in the documents was significant to the case study.

Results of Documentary Sources

The information collected from the documentary sources was subjected to a thorough screening and sorting process. Table 4.1 shows the final findings of this project.

Table 4.1 Classification and inventory of problems in the west of Mosul identified through the document Source analysis

NO.	Problems
1	36 heritage buildings destroyed in old Mosul
2	Most of the schools were completely destroyed
3	The damage to health centers ranged from complete to partial destruction
4	Several military and security installations were damaged
5	25 recreational and sports facilities
6	The water network is damaged by 50%.
7	Many government buildings were damaged, with a damage rate of 50%-70
8	Destruction of buildings belonging to other religions (churches, monaster buildings belonging to the Yazidis, and others)
9	The front river elevation was almost completely destroyed.
10	The shrine of the Prophet Jirjis and the Prophet Sheet Mosque has b destroyed.
11	Great damage was caused to the Al-Nuri Mosque and the al-Hadba minaret

12	Damage to the sewage network
13	Highly polluted areas in the old area
14	Some bridges have not yet been reconstructed
15	Mosul airport was seriously damaged
16	Most of the factories are closed
17	Great Destruction in the Umayyad Mosque (Al-Musafi Mosque)
18	Damage to railways used to transport the merchandise
19	Many important hotels in Mosul were destroyed, the Mosul Hotel, the Ash Hotel, the Babylon Hotel, the Al-Hadba Hotel, and the Baghdad Tower Ho
20	30 churches and more than 20 monasteries need reconstruction rehabilitation
21	Damage to the caravanserais, bathrooms, and traditional markets
22	Destruction of heritage houses, including Beit Abdoun, Beit Ziada, and Beit Al-Tutanji
23	The main medical complex on the west side is 80% damaged
24	Mosul railway station destroyed
25	Damage to public transport garages
26	Destruction in the banks
27	Nineveh stores for foodstuffs have great damage

4.2.2.Focus groups

The purpose of using focus groups is to measure the views of the west side of Mosul city residents regarding their priorities and ideas on the reconstruction of their city. Mosul is divided into two parts (the left side and the right side, in which the old city is located); the researcher tried to interview the residents of the western side of Mosul as it was the most damaged by the war and was chosen as a case study

The meeting took place in many students of the University of Mosul, where there are students from the residents of the west of Mosul and the surrounding areas and different sects. They were met inside the university campus and in the student club where the students gather this is shown in the Figure 4.2, as well as some residents were met in the markets and in some residential neighborhoods.

The opportunity to hold focus groups was seized. There will be no coercion because participants will be free to select whether or not to participate in the focus group. Residents who volunteered to attend these meetings addressed their thoughts and desires for the facility's restoration. Because most participants did not want to reveal their identities for fear of getting into trouble, the researcher recorded his views in writing (non-electronic and no video recordings), and according to the ethical research protocol, participants had the right to withdraw at any time during the focus group or after it ended.

In these samples, the researcher noticed some imbalances in some people and minorities, fear of expressing opinions for fear of certain parties, especially uneducated people who do not know what this study is. Remedies were implemented to address expected imbalances by having many people who take part in the interview portion of the studyFor productive group talks; it is advised that groups of six to twelve persons be used (Robson, 2002). The number of participants in each focus group in this case study ranged from eight to ten; however, most meetings had ten. This avoided the issue of groups being too small or too large, resulting in a shallow exchange of experiences and ideas or problems managing the discussion's direction. Focus group meetings lasted until saturation,' or when no new significant issues emerged. The outcomes of each focus group were examined and compared to the information gathered during prior meetings. This was useful in determining if the saturation point had been achieved, when it was deemed completely.

Focus group discussions typically lasted several hours. Each participant was invited to jot down their thoughts, difficulties, and perspectives on a piece of paper. Information from focus group talks was transcribed and organized with participants' paper notes to capture topic detail and capture all essential information given by respondents and avoid loss of original meaning; all topics raised in their relevant dimensions were then pooled using discussion texts and notes. These focus groups were first organized in January 2022.
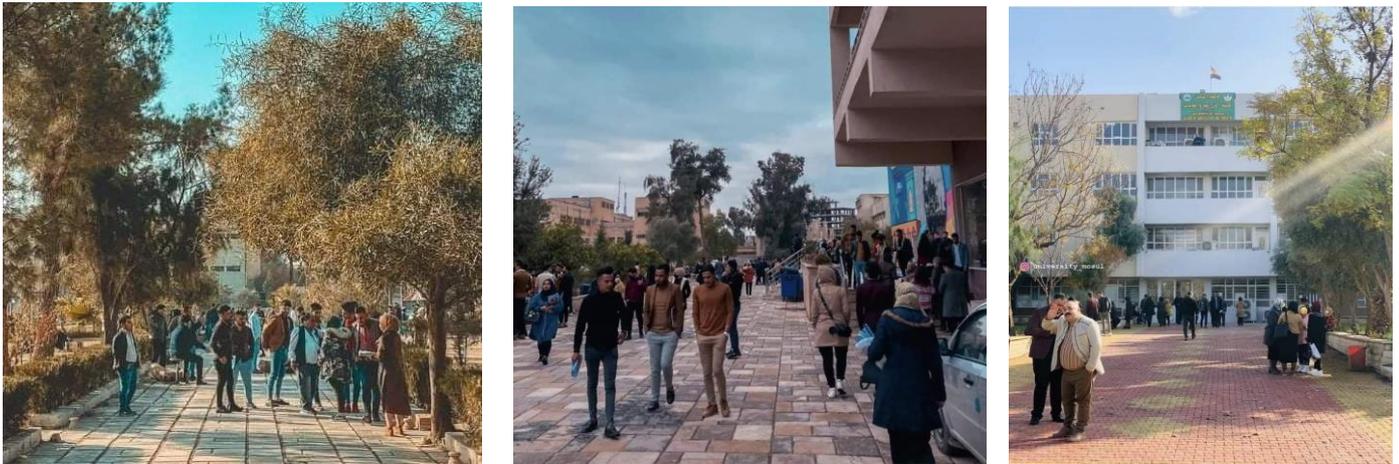
Figure (4.2) Mosul University where a focus group meeting was conducted (Researcher)

Focus group results

To extract all essential information, the points presented throughout the conversations were taken into account. The repetition is ignored if the information is mentioned more than once. The texts were collected, processed, and divided into dimensions relating to Mosul's challenges following the battle. Table 5.2 shows the outcomes of this procedure.

Table 4.2 Problems in the west side of Mosul city were gathered through focus group discussions

NO.	Problems
1	Poor health services
2	The Republican Hospital is destroyed and is now operating in the caravan system
3	Weakness in electricity services
4	Rubble is scattered a lot
5	There are still mines, especially in the old area
6	There are bodies near the Tigris River
7	Factories are nothing more than work
8	Lack of job opportunities for young people
9	Security measures in some areas destabilize the security of the population
10	Many families of martyrs did not receive compensation
11	Cut the salaries of members of the security forces after their martyrdom
12	Many homes are in danger of collapse, despite the return of the residents to them
13	There are neighborhoods in the old city almost completely destroyed
14	Damage to the educational sector at the level of kindergartens, schools and universities
15	The five bridges in Mosul are no longer functional
16	There are many damaged roads that have not yet been reconstructed
17	Entertainment services are limited to some private properties
18	Most government departments work in alternative locations
19	Poverty and homelessness spread
20	Increasing the proportion of slums
21	Many families from the west side moved to the east side, which caused a high population momentum
22	Mosul International Airport has not started any reconstruction process
23	Many large hotels have stopped working due to the destruction that has affected them
24	Damage to many sports facilities
25	Destruction of many heritage places
26	Destruction of many historical places such as Bashtabia Castle, Mosul Museum, and others
27	Destruction of places of worship, including the collection Prophet Jirjis, Prophet Sheet, Imam Mohsen, Imam Al-Bahir Mosque , the Mujahideen Mosque (Alkhadar Mosque) and the last of which is the Al-Nuri Mosque and its Al-Hadba minaret.
28	high traffic
29	Lack of solutions to reduce population momentum
30	Not taking care of the restoration of streets and central islands
31	Disease increase due to war pollutants
32	The buildings of the College of Agriculture and Forestry, the dormitory buildings for male and female students on the university campus, and those

	in the western part (right coast) of Mosul were subjected to various destructions.
33	There is no support for the agricultural sector
34	The collapse of the industrial sector
35	prevalence of mental illness
36	Increasing the number of people with disabilities
37	poor education
38	Most of the projects are referred to private companies
39	Taking the city's money from some outlaw forces
40	The lack of local government and reconstruction
41	Theft of private property by some influential parties

4.2.3.Interview Method

The case study's semi-structured interviews were created to meet the following goals:

1. Obtain detailed responses from interviewers and reason/examine the answers/issues thoroughly.

2. To attempt to correct predicted inequities in earlier focus groups, particularly about the inclusion of non-Muslim minorities like Christians and Yazidis.

3. To explain and improve the accuracy of the prior focus groups' uncertain responses.

Face-to-face interviews with residents were performed during a field visit to the city of Mosul on the right side, specifically in February 2022, and interviews were also conducted via Skype and phone conversations, with the locations of the meetings specified in Figure 4.4.

4.2.3.1.Selection of interviews for the main study

Interviews for the main study were chosen.

Stakeholders were chosen in two methods to participate in the interview. These included:

1. Prior experience, literature, and government resources

2. Advice on how to use the snowball technique

Snowball sampling is a method of selecting respondents who may be able to provide more information. The technique begins by asking the interviewee if anyone else can interview them. The "snowball" grows progressively as more people are interviewed (Patton, 1990). This technology can be used to secure a wider variety of stakeholders by recommending other stakeholders who may have knowledge or experience in reconstruction to create relevant data.

The suggested stakeholder was then contacted to gain their permission to participate in the interview. If interviewees decide to withdraw from the study later, they can do so by sending an email to the researcher, following which their data will be erased. None of the interviewees chose to leave while this was being displayed.

Interviews were conducted until no meaningful new information was obtained. The researcher continued to increase the sample size until the interviews yielded no new information, bringing the total number of participants to 200. To ensure confidentiality, these individuals are kept unnamed.

The interviews were conducted face to face with people in the markets or in their areas of residence or areas where they gather. All the people we met were enthusiastic about the topic and willing to express their thoughts. To avoid stressing the interviewee, each interview lasted between half an hour and one hour. Before the interview began, the researcher gave each participant an overview of the study's origins and how the information would be used. In addition, each participant was informed of the need to remain anonymous and asked to consent to participation in the study before the interview began. In February 2022, I interviewed stakeholders. The following questions were asked to them:

What are the problems that the city of Mosul currently suffers?

How to rebuild Mosul after the war? What are the obstacles to reconstruction?from?

Figure (4.3) Field interviews
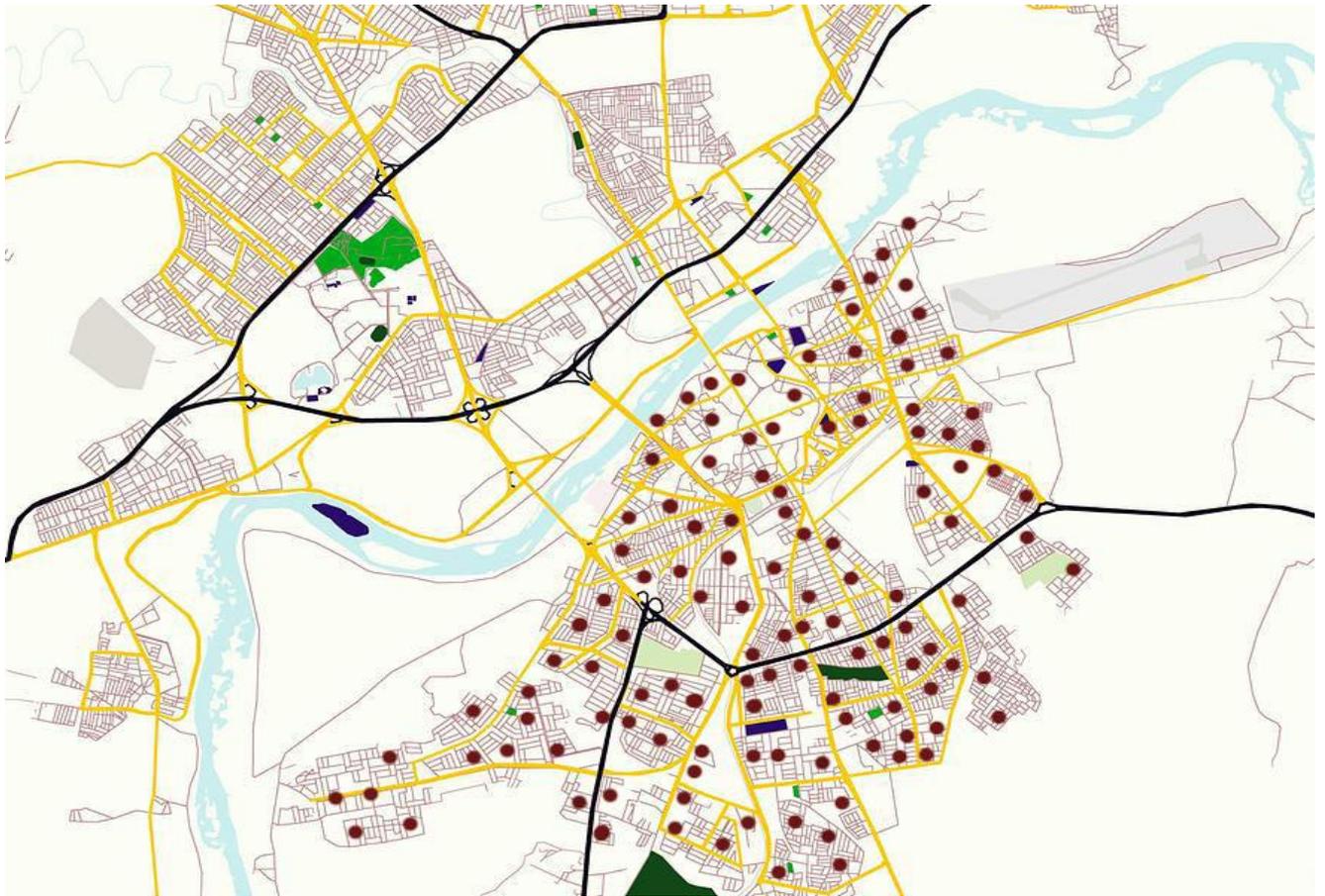
Figure (4.4) Places to conduct the Interviews in the west of Mosul

Results of Interviews

The form of interpretation used in this study meant condensation, which is an abridgment or shortening of something, notably a written work or a speech (The Free Dictionary, 2013). This is a widely used and relevant strategy for analyzing interview results. The interpretation of the interviews in this study was double-checked by sending it to interviewees through email or phoning them on the phone.

 Table 4.3 Classification and inventory of problems in the west side of Mosul city identified gathered through interviews

NO.	*Problems*
1	Destroyed bridges
2	Hospital infrastructure collapse
3	Many streets are destroyed
4	Population displacement
5	The emergence of residential camps
6	There is no urban planning
7	Lots of scrap
8	The phenomenon of poverty
9	The increase in illiteracy

10	There is no building for the maternity and children's hospital (caravans)
11	The lack of health centers so that it does not cover the population density
12	Converting residential buildings into commercial buildings
13	Many chronic diseases without the availability of their own hospitals
14	Lack of medical supplies
15	The lack of schools has led to the collapse of education
16	Electricity services are few because the electrical stations are partially destroyed
17	overpopulation
18	slums
19	Sarkhana market destroyed
20	Most of the people lost their jobs
21	There are no places for entertainment
22	Major damage to the Mosul International Stadium
23	Mosul airport was seriously damaged
24	There are no green places
25	Some deserted areas are unsafe and garbage accumulates
26	Water networks are destroyed in many areas
27	Sewer networks are down
28	industries collapse
29	Accumulation of waste in residential areas
30	Public transportation problems
31	Infrastructure does not match the population growth
32	flood
33	Government buildings destroyed
34	Heritage and historical buildings destroyed
35	Remnants of war
36	Overlap of uses in residential areas
37	Most of the markets are destroyed
38	The incomplete reconstruction of Al-Salam Teaching Hospital
39	Many orphans
40	Several military and security installations were damaged
41	Mosul University has been severely damaged
42	Destruction of buildings belonging to other religions (churches, monasteries, buildings belonging to the Yazidis, and others)
43	The front river elevation was almost completely destroyed
44	Highly polluted areas in the old area
45	Great damage was caused to the Al-Nuri Mosque
46	The Prophet Sheet Mosque and the shrine of the Prophet Jirjis have been destroyed

47	Many heritage buildings destroyed in old Mosul
48	The collapse of the agricultural sector
49	High destruction in the housing sector
50	Unemployment increase
51	Many hotels were destroyed
52	Mosul stadium was severely damaged
53	Some streets do not have lights
54	There is no interest in the Median of the streets
55	Increase in mental illness
56	Spread of financial and administrative corruption
57	The control of some militias in the city
58	Security measures for the city's residents, causing distress to the residents
59	Cultural decline
60	Education level down
61	There are so many missing
62	Weakness in the investment sector
63	Obstruction of the reconstruction process by some influential people
64	Many areas have turned into landfills
65	High prices
66	Low standard of living for the individual
67	Lack of support for local industries
68	The agricultural sector declined after the city had abundant agriculture
69	There are no housing complexes
70	The internet and communications are not good
71	There are no laws regarding reconstruction

To verify and validate the conclusions in this study, the findings from the three data sources were triangulated into a full whole (see Figure 4.5). Researchers use triangulation to look for convergence among many sources of information (Creswell & Miller, 2000,pp125-130). The use of data triangulation to confirm multiple approaches improves the results' dependability and credibility (Brewer and Hunter, 1989,pp45). Furthermore, because this technique limits the researcher's and each technique's bias, the case study's internal validity is improved (Decrop, 1999,pp. 103-133).

There are four different types of triangulation methods (Denzin, 1978,pp. 339-357.)
• Methodological triangulation: mixing multiple data collecting or research methodologies.
• Data triangulation: combining data from multiple sources or responder groups.
• Investigator triangulation: participation in the analysis by two or more researchers.
• Theoretical triangulation: examining research findings from multiple perspectives.
The type of triangulation used and whether or not to utilize triangulation techniques is determined on the research's nature. However, two types of triangulation were used in this study:

1. Methodological triangulation: combining three data collection methods (interviews, documentary source analysis and focus groups)

2. Data source triangulation: in the interviews, reflecting a variety of respondents (stakeholders, experts, local communities)

However, these categories overlapped, as discussed above. After all of the data sets have been analyzed individually, triangulating findings from various approaches begins, with the results being triangulated into a comprehensive whole.
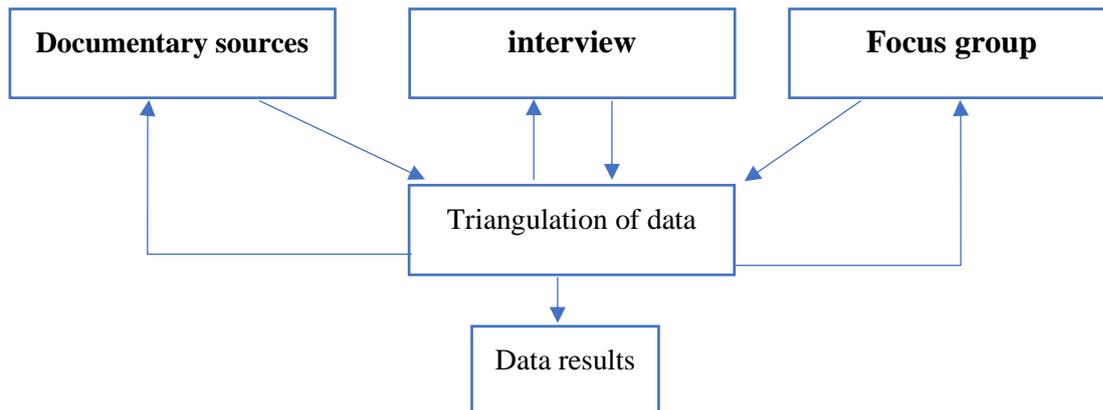
Figure (4.5) Flow diagram of analysis of issues gathered in the case study (Al-Alwani,p.140)

4.3.The Second Step (Objectives Formulation)

Environmental scientists, government officials, corporate leaders, non-governmental groups, research centers, and academics came together to reformulate the problems and needs identified during the first step of the issue identification process into solution statements or objectives (see Figure 4.6)
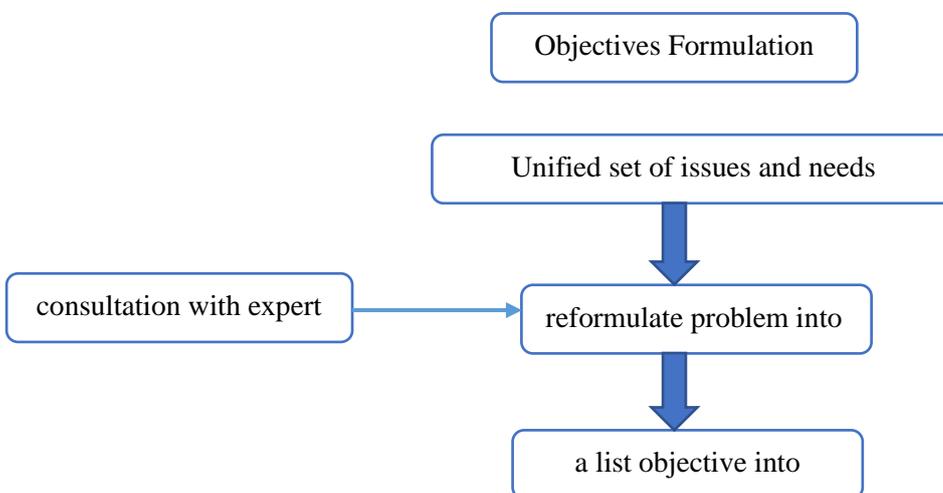
Figure (4.6) Flow diagram of analysis of issues gathered in the case study (Al-Alwani,p.142)

4.3.1.Approaches to Objectives Formulation

Setting objectives is the most crucial phase in establishing what the people want their city to become. Because it will be challenging to find the perfect answer to the obstructions, a poorly articulated target will obstruct progress toward a successful strategy. Furthermore, any action was taken by the city's citizens without clear aims risks becoming aimless and undirected (Bureau of Local Government Development and DILG, 2008).

The following two formulas (Bureau of Local Government) were used to generate objectives in the current study after a thorough review of the difficulties and issues (Al-Alwani,p.143):

1. Problem =Objective + Impediments to Achieving the Objective

Therefore

Objective = Problem – Impediments

2. Objective =1 / Problem

The second method employed in this thesis is found on the axiom that the goal is the inverse of the problem. When the problem is widespread corruption, the goal will be to prevent corruption.

As stated in Chapter Three (Methodology), each indicator was produced through a logical method in conjunction with specialists from many sectors and after a thorough examination of the literature on Mosul reconstruction. Ages UNESCO (2003) proposed an approach for formulating a list of prospective indicators, which was essentially followed in this core message's indicator development procedure.

This includes the following:

-Examine all of the goals you set in Step 2.

-Consider all available indicators for each aim without restriction.

-pondering for a long time

-Experts and a variety of stakeholders were consulted.

-Take advantage of the findings of previous studies and efforts.

At the drafting stage, it is necessary to think about how to measure progress towards this. Objectives during implementation and selection of the most appropriate indicator. For example, crafting an indicator to track progress toward "reducing unemployment" requires brainstorming, consulting with experts, and drawing guidance from other studies.

Results

Table 4.4 displays a sample of objective outcomes (top three) produced from examining problems and issues. The preceding calculations were used to create these goals. In the second step, the entire set of objectives was formulated.

Table 4.4 Sample of problem on the west side of Mosul and objective

	Problem	*Objectives*
1	Many houses, heritage buildings and heritage markets have been severely damaged	Reconstructing the destroyed heritage sites in accordance with their history and style
2	There are many schools that are completely or partially damaged	Rebuilding destroyed schools
3	Huge destruction in major hospitals and health centers and deteriorating medical services	Huge destruction in major hospitals and health centers and improving health services
4	Damage to water and sewage networks	Reconstruction and maintenance of the water and sewage network
5	Many government buildings were damaged	Reconstruction of government buildings
6	Destruction of buildings belonging to other religions (churches, monasteries, buildings belonging to the Yazidis, and others)	Rebuilding churches and religious sites of other faiths
7	The front river elevation was almost completely destroyed.	Reconstruction of the riverfront elevation
8	The shrine of the Prophet Jirjis and the Prophet Sheet Mosque have been destroyed, great damage was caused to the Al-Nuri Mosque and the al-Hadba minaret	Reconstruction of all mosques and shrines that were damaged
9	The increase in diseases (due to the increase in environmental pollution resulting from the rubble and remnants of war) and mental illness	Reducing diseases resulting from environmental pollution and providing the necessary medical care for mental illnesses
10	There are still some bridges destroyed, as well as the roads	Reconstruction of damaged bridges and roads
11	Mosul airport and the train station are destroyed at a high rate	Reconstruction and restoration of the damaged parts of the airport and train station
12	Weakness in public transportation	To improving public transportation
13	Unemployment	To reduce unemployment
14	The Faculty of Medicine and Veterinary Medicine is completely destroyed	Reconstruction of the Faculty of Medicine and Veterinary Medicine
15	Lots of destroyed homes on the west side	Reconstruction of destroyed homes on the west side

16	Many important hotels in Mosul were destroyed	Reconstruction of damaged hotels
17	The dead bodies are under the demolished buildings and have not been buried	Burying the dead bodies
18	Reconstruction of sports and recreational facilities, and increasing green areas	The percentage of rebuilding sports and recreational facilities and increasing green spaces
19	Shortage of housing units	To increase the number of housing units
20	the high rate of poverty	To reduce poverty
21	Lots of rubble and remnants of war	Removal of rubble and war pollutants
22	high pollution rate	To reduce air pollution
23	Population increase	To reduce population
24	The emergence of residential camps	Elimination of the residential camps
25	Increasing the proportion of slums	To reduce the proportion of slums
26	Transcend commercial buildings to residential buildings	Reducing Transcend of commercial buildings over residential buildings
27	Lack of compensation provided to those affected by the war	Provide compensation to those affected by the war
28	A large proportion of the infrastructure was damaged	Reconstruction of damaged infrastructure
29	Damage to factories and markets	Reconstruction factories and markets
30	Increasing the number of orphans	Providing orphanages and providing support to them
31	cultural decline	Increase cultural awareness
32	The destruction of the Ghazlani camp and security installations were damaged military	The reconstruction of the Ghazlani camp, military and security installations
33	The agricultural sector suffered damages and declines	To support the agriculture sector
34	Nineveh stores for foodstuffs have great damage	Rconstruction Nineveh stores for foodstuffs
35	Families return to their homes	The number of families who returned to their homes
36	The rise of extremist religious ideology	Decries the extremist religious ideology
37	reduce illiteracy	Adult literacy rate

4.4. The Third Step (Indicators Formulation)

Chapter Three (Methodology) stated that each indicator was produced through a logical method in conjunction with specialists from many sectors. After a thorough examination of the literature on Mosul and its post-war difficulties (see Figure 4.7).

In addition, the reversal of the following basic properties of an indicator has altered the indicators (Smith, 2002): concise, dependable, and easily understood by the general public and policymakers Mainly.
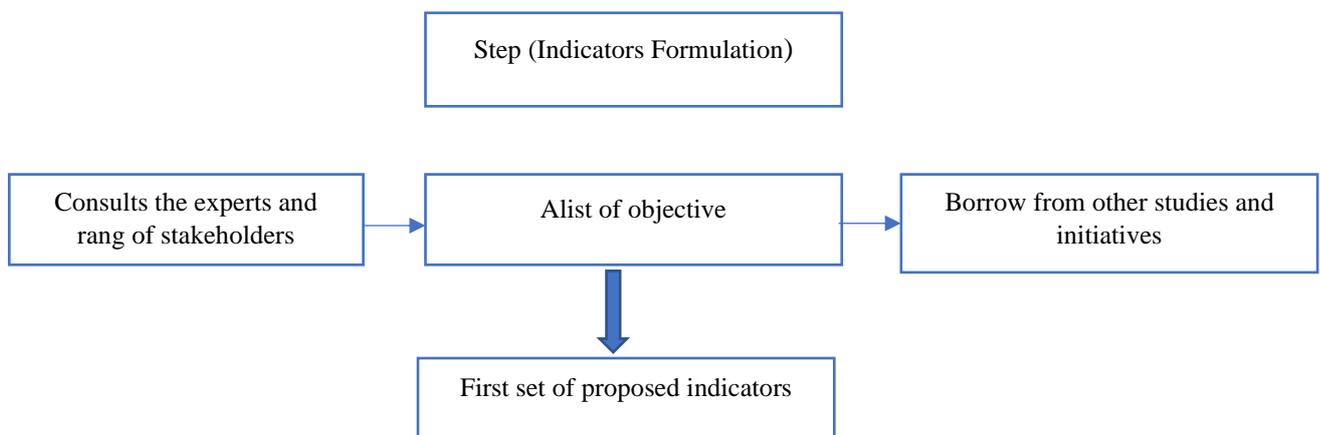
Figure (4.7) General scheme of the third step(Al-Alwani,p.146)

The basic approach proposed by UNESCO (2003) to generate a list of possible indicators was employed in the indicator formulation procedure in this thesis.
This includes:
☐ Review all objectives developed through Step 2
☐ Think unconstrainedly about possible indicators for each goal
☐ Doing deep thinking
☐ Consultation with experts and a range of stakeholders
☐ Take advantage of the findings of previous studies and efforts.
It is vital to consider how to monitor progress toward the goals throughout implementation and to select the most effective indicator during the formulation stage. Formulating an indicator to track success toward "reducing unemployment," for example, necessitates brainstorming, talking with experts, and referring to previous research. The guidance employed in this situation came from UNCSD (2001), which led to the use of the 'unemployment rate' as a suitable indicator.
The first objective was generated by applying this approach to the objectives derived from Step 2.
Applying this approach to the objectives derived from Step 2 created the first objective

A set of about 37 suggested indicators: this is shown in Table 4.5. While maintaining the framework approach, the proposed indicators cover the dimensions of urban reconstruction after the war (west side of Mosul city).

Tables 4.5 Objective and indicator

NO.	Objectives	Indicator
1	Reconstructing the destroyed heritage sites in accordance with their history and style	The number of heritage buildings that have been reconstructed in the old part of the city of Mosul
2	Building destroyed schools	The number of schools that have been reconstructed
3	Huge destruction in major hospitals and health centers and improving health services	The percentage of reconstruction of the health sector and the provision of health services
4	Reconstruction and maintenance of the water and sewage network	Reconstruction rate of the water network and sewage network
5	Reconstruction of government buildings	Reconstruction rate the government building
6	Rebuilding churches and religious sites of other faiths	The number of rebuilding churches and religious sites of other faiths
7	Reconstruction of the riverfront elevation	Percentage of reconstruction of the riverfront elevation
8	Reconstruction of all mosques and shrines that were damaged	The number of restoring shrines and mosques to their previous condition
9	Reducing diseases resulting from environmental pollution and providing the necessary medical care for mental illnesses	Number of people who have recovered and received health care
10	Reconstruction of damaged bridges and roads	The number of reconstruction bridges and Percentage of roads that have been paved
11	Reconstruction and restoration of the damaged parts of the airport and train station	The percentage of reconstruction of Mosul Airport and train station
12	To improving public transportation	Amount of improvement in public transport
13	To reduce unemployment	Unemployment rate
14	Reconstruction of the Faculty of Medicine and Veterinary Medicine	The rate of repeating the Faculty of Medicine and Veterinary Medicine is completely destroyed
15	Reconstruction of destroyed homes	The number of houses built
16	Reconstruction of damaged hotels	The number of reconstruction hotels
17	Burying the dead bodies	The number of bodies removed
18	Reconstruction of sports and recreational facilities, and increasing green areas	The percentage of rebuilding sports and recreational facilities and increasing green spaces
19	To increase the number of housing units	The number of increase in housing units
20	To reduce poverty	Increase per capita income

21	Removal of rubble and war pollutants	The number of rubble removal and war pollutants
22	To reduce air pollution	The percentage of dust and pollutants in the air
23	To reduce population	Proportion of population
24	Elimination of the residential camps	Number of eliminate residential camps
25	To reduce the proportion of slums	the proportion of slums
26	Reducing Transcend of commercial buildings over residential buildings	The percentage of commercial buildings overtaken by residential buildings
27	Provide compensation to those affected by the war	The percentage of compensation provided to those affected by the war
28	Reconstruction of damaged infrastructure	The rate of rebuilding damaged infrastructure
29	Reduce damage and support factories and markets	Number of Restoration of damages in factories, encouraging investment and industries
30	Providing orphanages and providing support to them	The percentage of public funding provided to support orphans and the amount of orphanages available
31	Increase cultural awareness	Percentage of people with cultural awareness
32	The reconstruction of the Ghazlani complex ,military and security installations	Reconstruction rate of the Ghazlani complex ,military and security installations
33	To support the agriculture sector	Proportion of local agricultural production
34	Restoration of damages in Nineveh stores for foodstuffs	Percentage of restoration of the damages of Nineveh stores for foodstuffs
35	Families return to their homes	The number of families who returned to their homes
36	reduce illiteracy	Adult literacy rate
37	Decries the extremist religious ideology	The rate of decline in extremist religious thought

4.5. The Fourth Step (Indicator Ranking)

The World Trade Organization (WTO, 2004) advised assigning priorities to indicators to produce a more effective set of indicators. A questionnaire about indicators for the reconstruction west side of Mosul was issued to forty specialists (academics and practitioners) from the city of Mosul at the end of March 2022.

Each participant was asked to select the level of relevance of each indicator contained in the questionnaire, as explained in Research Methodology. A Likert scale was used in the questionnaire, with each response category having a number and a brief description (see Appendix A). The experts who took part in the survey were asked to rate the relative

importance of each of the revised list of 37 indicators on a scale of one to four, with one being inconsequential, two being least relevant, three being important, and four being very important.

Participants selected the categories that best explained their responses to the evaluable indicator.

The goal of this step was to prioritize the indications and come up with a final set of indicators. The mean score for each indicator was calculated to reveal the preferences of all respondents. The questionnaire should not be utilized in a field study unless it has undergone substantial empirical testing (Malhotra ,Peterson, 2006, pp. 294-306). A pilot survey was conducted with 10 participants, including five professional colleagues and five stakeholders from Mosul, to ensure the reliability and validity of the results and the identification and resolution of any questionnaire difficulties. The pilot survey provided helpful information about questionnaire comprehension.

The appropriateness of response options and the time required to complete the questionnaire. The questionnaire was implemented using the questionnaire technique developed by Creswell (2009,p.382). The procedure for surveying the questionnaire was as follows:

1. Determine the investigation's purpose.

2. With the support of consultations with the supervisory discussion group, create a questionnaire tool.

3. Run a beta test and double-check the tool's correctness and dependability.

4. Identification of prospective respondents in Mosul.

5- Complete the survey.

6. Use Spss to calculate the mean, standard deviation, and rank of the data.

7. Present and discuss the findings Results of the survey and data analysis, which included the mean.

4.6. Questionnaire Results

SPSS was used to calculate the mean score, which is the average, and the standard deviation, which is a measure of variance or dispersion in the data, based on the questionnaire responses in Appendix F. Many authors, including Baggaley and Hull (1983 , pp.483 – 491); Maurer and Pierce (1998,pp19-22); Allen and Seaman, 1997, have demonstrated that Likert scales may be conveniently analyzed as interval scales and analyzed as such with descriptive statistics like means, standard deviations, and so on. Brown (2010, pp. 10-14) also advocates using Likert scales as interval data because they contain several items and can be treated as interval scales for descriptive statistics. The idea that only non-parametric statistical tests should be employed with Likert scales, according to Carifio and Perla (2007, pp.106-116), is incorrect. Norman (2010) ended the debate by demonstrating that parametric statistics

(statistics that use the mean and standard deviation) can be applied with Likert data, unequal variances, non-normal distributions, and small sample sizes without a considerable danger of drawing an inaccurate conclusion. As a result, the average score for each indicator was used to rank the importance assigned to each.

Furthermore, the standard deviation is used by Green et al (1990) and Miller (2001) to determine the degree of convergence. The lower the standard deviation, the less dispersion or variance in the data, and thus the higher the consistency or degree of convergence. The higher the standard deviation, on the other hand, the more dispersion or variation in the data has been encountered, or in other words, a more comprehensive range of opinions has been discovered, and thus the consistency or degree of convergence has been reduced. Each indicator's average, standard deviation, and rank are shown in Table 4.6.

The reliability coefficient (Cronbach - Alpha) was used, which is one of the most important statistical tests that are concerned with downloading the internal consistency between the paragraphs of the resolution to obtain high efficiency in terms of modification or non-modification based on the results of the laboratories. It consists of two scales (Campbell, 1963,p.13):

Validity: It is that the questions they contain are a tool for measuring all dimensions of the study.

Stability: It is the ability of a tool to give the same results if the researcher repeats the measurement on the same the person several times in similar circumstances

It is done according to the following equation, as:

K: the number of test items

Ōii: Variation of scores for each item

Ōij: variance of total test scores

$$\alpha = \frac{K}{K-1}\left[1 - \frac{\sum_{i=1}^{K}\sigma_{ii}}{\sum_{i=1}^{K}\sum_{j=1}^{K}\sigma_{ij}}\right]$$

Validity	Stability
0.931	0.963

The statistical analysis showed that the value of Cronbach's alpha coefficient reached (0.931) And the statistically acceptable value is $(60.0 \leq \alpha)$, and since the resulting value is greater, this means that the results of the poll are accepted, and adopted in subsequent research and studies.

Loading the results of the questionnaire according to the Likert scale:

Some statistical tools were used to analyze the factors affecting the regulation of residential use in the city, such as the arithmetic mean, which is one of the common tools in the analysis.

With weights representing the importance of each of them, the arithmetic mean is calculated through the following equation (Al-Abdali, 2018,p.40)

x_i Ranks are represented on the Liker T scale

W_i represents the weights or frequency of each rank.

$$\overline{X} = \frac{\sum w_i x_i}{n}$$

The standard deviation tool was also used, which is one of the best measures of dispersion, as it is known as the positive square root of the mean squares of deviations of the variable values from arithmetic mean and is calculated according to the following formula (Alloush, 2010,P3). Whereas:

x_i the Likert scale represents the ranks.

W_i represents the weights or frequency of each rank.

A $\overline{X}$ hmetic mean

$$S = \sqrt{\frac{1}{n}\sum W_i x_i^2 - \overline{x}^2}$$

The research relied on analyzing the questionnaire on the Likert scale method (very important, important, less important, unimportant) and the statistical analysis program (SPSS) was used to unload the questionnaire results and analyze them through
the following weights:
very important = 4
important = 3
less important = 2
unimportant = 1

Table 4.6 Results of questionnaire data analysis

Indicator	vary important	important	less important	no important	Mean	SD	percentage	T Test	Sample direction	Indicator Rank
The percentage of reconstruction of the health sector and the provision of health services	26	22	3		3.57	0.635	89	5.718	very important	1
The number of schools that have been reconstructed	26	8	5	1	3.47	0.816	86	3.681	very important	2
The number of reconstruction bridges and Percentage of roads that have been paved	22	14	4		3.45	0.677	86	4.201	very important	3
Reconstruction rate of the water network and sewage network	19	17	4		3.37	0.667	84	3.553	very important	4
The number of bodies removed	23	10	5	2	3.35	0.893	83	2.479	very important	5
The rate of rebuilding damaged infrastructure	20	14	5	1	3.32	0.797	83	2.579	very important	6
The number of rubble removal and war pollutants	16	19	5		3.27	0.679	81	2.562	very important	7
The percentage of compensation provided to those affected by the war	16	19	5		3.27	0.679	81	2.562	very important	7
The number of families who returned to their homes	17	17	6		3.27	0.716	81	2.430	very important	8
Unemployment rate	17	17	4	2	3.22	0.832	80	1.711	Important	9
The number of houses built	17	14	9		3.20	0.791	80	1.599	Important	10
The percentage of reconstruction of Mosul Airport and train station	21	11	2	6	3.17	0.903	79	1.022	Important	11
The percentage of dust and pollutants in the air	18	13	7	2	3.17	0.903	79	1.226	Important	11
the proportion of slums	20	8	8	4	3.15	1.014	78	0.598	Important	12
The rate of decline in extremist religious thought	13	19	8		3.12	0.723	78	1.094	Important	13

The percentage of commercial buildings overtaken by residential buildings	14	16	10		3.10	0.778	76	0.813	Important	14
Percentage of people with cultural awareness	13	20	5	2	3.10	0.810	77	0.781	Important	15
Increase per capita income	17	14	4	5	3.07	1.023	76	0.464	Important	16
Number of Restoration of damages in factories, encouraging investment and industries	11	19	9	1	3.05	0.724	76	0.000	Important	17
The percentage of public funding provided to support orphans and the amount of orphanages available	15	14	9	2	3.05	0.904	76	0.350	Important	18
Proportion of local agricultural production	11	21	6	2	3.02	0.800	75	0.198	Important	19
Proportion of population	10	21	8	1	3.00	0.751	75	0.000	Important	20
The rate of repeating the Faculty of Medicine and Veterinary Medicine is completely destroyed	12	16	10	2	2.95	0.876	73	-0.361	Important	21
Adult literacy rate	9	20	10	1	2.92	0.764	73	-0.621	Important	22
The number of heritage buildings that have been reconstructed in the old part of the city of Mosul	12	14	11	3	2.92	0.900	73	-0.842	Important	23
The number of increase in housing units	10	15	14	1	2.89	0.788	72	-1.138	Important	24
Number of people who have recovered and received health care	11	18	5	6	2.85	1.001	71	-0.947	Important	25
Amount of improvement in public transport	6	27	17		2.72	0.716	68	-2.430	Important	26
Reconstruction rate the government building	10	13	13	4	2.72	0.960	68	1.811	Important	27

Percentage of restoration of the damages of Nineveh stores for foodstuffs	7	12	21		2.65	0.770	66	-2.876	Important	28
The number of restoring shrines and mosques to their previous condition	7	15	15	3	2.65	0.864	66	-2.563	Important	29
Percentage of reconstruction of the riverfront elevation	8	15	10	7	2.64	0.986	66	-2.511	Important	30
The number of reconstruction hotels	6	18	11	5	2.62	0.897	65	-2.644	Important	31
Number of eliminate residential camps	3	15	21	1	2.50	0.679	62	-4.655	less important	32
The number of rebuilding churches and religious sites of other faiths	3	16	17	4	2.48	0.756	62	-4.444	less important	33
The percentage of rebuilding sports and recreational facilities and increasing green spaces	1	16	20	3	2.37	0.667	58	-5.922	less important	34
Reconstruction rate of the Ghazlani complex, military and security installations	1	19	13	7	2.35	0.802	47	-5.124	less important	35

4.7.Summary

This chapter presents the application of the research methodology to the case study of the western city of Mosul.

The objective of the first step, Case Definition, is to explore the main issues, needs, and problems in post-war West Mosul. This methodological framework has successfully collected relevant problems in West Mosul through source document analysis, focus groups investigation and interviews conduction.

Results collected from focus groups, documentary sources and interviews were faithfully reproduced and analyzed.

Using multiple data sources, triangulation is one of the beneficial protocols used to ensure accuracy and alternative interpretations. Moreover, the need to confirm the correctness of the data increases the necessity of the process of triangulation. Two methods of triangulation were employed in this study, including systematic and data source triangulation. Sorting, affinity coding, affinity rating, and feedback are all steps in the triangulation process. This unifies the triangular integer results into a single set.

The second stage (formation) involved reformulating the problems and needs identified in the first step into assertions of solutions or goals. These were compiled with the assistance of specialists of various sectors. Consequently, current study's goals were established.

Development of indicators as well as selection and arrangement of indicators are the main issues of (Step 3) and (Step 4). Through step 3, each indicator was developed in consultation with experts from different fields and, therefore, 37 indicators were produced. They were arranged with the help of forty experts from the city of Mosul based on priority (according to the importance of each indicator).

Results were analyzed using SPSS program and will be respectively discussed in the next chapter.

Chapter Five

Discussion of Results and Conclusions and Further Study

5.1. Introduction

In this chapter, the results of the methodological framework for the west side of Mosul will be discussed. The final set of indicators for the reconstruction of post-war cities (West side of Mosul) has been discussed after an arrangement of these indicators has been made by experts. Subsequently, special recommendations are presented to work on by future researchers or authorities responsible for the reconstruction.

5.2. A comparison of the findings of the three techniques

When comparing data from documentary sources, interviews, and focus groups, it becomes evident that interviews provide the most useful information since they allow the researcher to go into sensitive topics that the interviewee may find more challenging to bring up in a focus group environment.. Furthermore, interviews are a practical technique to collect extensive information about personal sentiments, insights, and perspectives. On the other hand, documentary source analysis yielded the least data. Despite the benefits of employing documentary sources, such as cost and accessibility, many are limited and partial, resulting in missing data.

However, as shown in Figure 6.1, there is a lot of consistency throughout documentary sources, focus groups, and interviews since the west of Mosul has a lot of reoccurring difficulties after the war.

Figure (5.1) The number of related issues with respect to documentary sources, focus groups and interview

Analysis in terms of topics, the challenges discovered by the three research methodologies as show that the health and education sector has the highest priority among the participants in the focus group and interviews, and the topics of airport reconstruction and sanitation networks, in addition to bridges, were also a priority in all research methods (Documentary sources, focus groups and interviews)

5.3. Results Discussion:

Following data analysis, on the first set of prospective indicators, evaluation and selection methods by using Spss were used, resulting in a revised list of 37 indicators for post-war city reconstruction, as well as a method of ranking the indicators by priority (the final set of

indicators). The results in Table 4.6 reveal that the higher-rated indications and concerns are consistent across expert participants, with the standard deviation of the data set of the questionnaire ranging from 3.57 to 3.20, as illustrated in Figure 5.2. The results showed that the ten most important issues in the west side of Mosul, which the experts gave the highest priority, have the highest level of consistency as evidenced by the standard deviations ranging from 0.635 to 0.791 only, although the mean score ranges from 3.57 to 3.20 and an answer rate of 89%-80% as shown In Figure 5.3
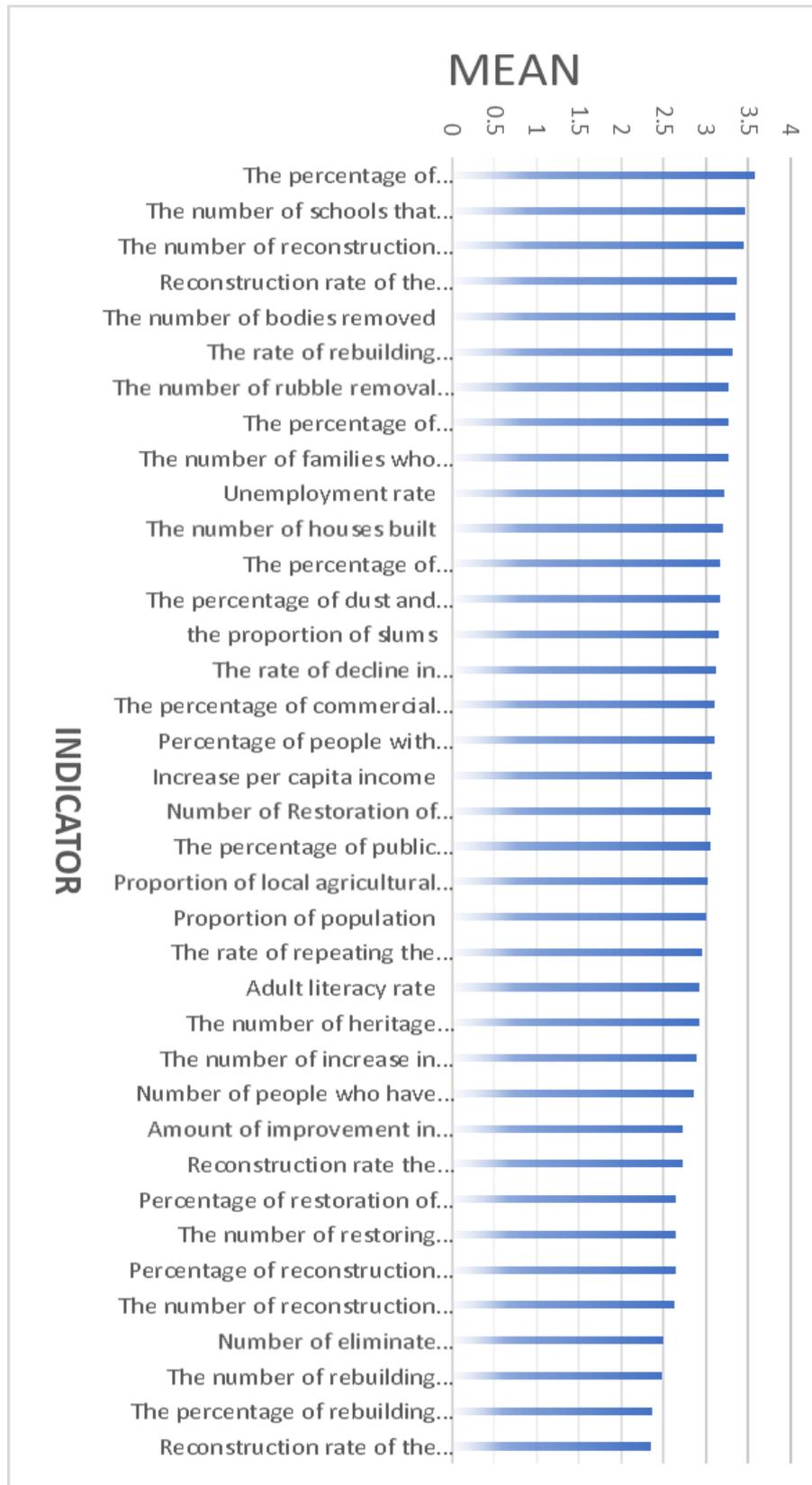
Figure (5.2) Priorities for indicators in the reconstruction of Mosul

PERCENTAGE

Indicator
The percentage of reconstruction of...
The number of schools that have been...
The number of reconstruction bridges...
Reconstruction rate of the water...
The number of bodies removed
The rate of rebuilding damaged...
The number of rubble removal and...
The percentage of compensation...
The number of families who returned...
Unemployment rate
The number of houses built
The percentage of reconstruction of...
The percentage of dust and pollutants...
the proportion of slums
The rate of decline in extremist...
The percentage of commercial...
Percentage of people with cultural...
Increase per capita income
Number of Restoration of damages in...
The percentage of public funding...
Proportion of local agricultural...
Proportion of population
The rate of repeating the Faculty of...
Adult literacy rate
The number of heritage buildings that...
The number of increase in housing units
Number of people who have...
Amount of improvement in public...
Reconstruction rate the government...
Percentage of restoration of the...
The number of restoring shrines and...
Percentage of reconstruction of the...
The number of reconstruction hotels
Number of eliminate residential camps
The number of rebuilding churches...
The percentage of rebuilding sports...
Reconstruction rate of the Ghazlani...

Figure (5.3) Response parentage to the importance of reconstruction indicators

It is clear from the answers of the selected sample, represented by experts from the city of Mosul, that the indicator for (reconstruction of the health sector and health services ranked first, as the sample members answered that it is a very important indicator, at 89%, even if the priority in the reconstruction process, with a mean of 3.57 and a standard deviation of 0 .635, as in Table 5.6 and the two figures, which was confirmed by the T-test that there is statistical significance in the respondents' response.

As well as for the indicator (the number of schools that have been reconstructed) it ranked

second, where the sample members answered that it is a very important indicator with a rate of 86% and has priority in the reconstruction process with a mean of 3.47 and a standard deviation

of 0.816, which was confirmed by the T-test. the same applies to the indicator of the reconstruction of roads and bridges, the reconstruction of water and sewage networks, and the number of bodies removed, as shown in Figures 6.2 and 6.3.

As for the indicators of the reconstruction of the damaged infrastructure, the removal of rubble and remnants of war, as well as compensation for those affected by the war, the return of families to their homes, the sample agreed that they are very important indicators in the reconstruction process with a ratio of (83%, 81%, 81%, 81%), with a mean of (3.32, 3.27,3.27 ,3.27) and with a standard deviation of ability 0.797, 0.679, 0.679, 0.716, and with a statistical significance T-test.

It is clear that the indicator for (the percentage of reconstruction of the Ghazlani complex and the military and security facility) occupied the last rank, as the sample members answered that it is less important, by 47%, in the reconstruction process, with a mean of 2.35, a standard deviation of 0.802, and a statistical significance of the T-test.

As well as for indicators of the reconstruction of sports and recreational facilities, the increase in green areas, the number of rebuilding churches and religious sites of other religions, and the number of camps for their elimination, they ranked last.

 Also, the sample agreed that they are less important indicators and percentages of 58, 62 and 62, with a mean (2.37, 2.48, and2.5) and a standard deviation (0.66,0.67and0.75) and with a statistical significance T-test.

As for the other indicators, such as the unemployment rate, the number of built houses, the reconstruction of Mosul airport and the transport station and other indicators that were mentioned in Table 5.6, the sample members answered that they are important indicators in the reconstruction process, with a percentage ranging between (81-65), and this is a mean ranging between (3.2 - 2.62)with a standard deviation ranging between

(0.83 - 0.8) and with a statistical significance T-test.

5.4. Further Study

In this paragraph is a summary of what has been studied in this research and recommendations for further studies and special requests to be made later for work on by future researchers or by the authorities responsible for the reconstruction.

5.4.1. Conclusions

-War is defined as a mutual armed conflict between two or more states that do not agree. They consider war as a military solution to reorganize the geopolitics between them to obtain the desired and prepared results. It is a conflict between the desires of two or more incompatible powers.

- Post-disaster reconstruction strategies are defined as a set of processes and policies that are put in place to confront and prepare for disasters before they occur and then meet the urgent need during the disaster and rebuild what was damaged by the disaster after its occurrence, in the short or long term. Policies cover all aspects of social, economic and cultural life

-Reconstruction is a broad concept that includes several aspects that can be described in three main aspects directed towards "empowerment," which means the disaster on its land and city and the restoration of its normal life. These aspects are civil and social peace reconstruction and urban and economic reconstruction.

- The research studied the strategies used at the intellectual level and the post-reconstruction experiences

Hart Hreik wars in Beirut and the reconstruction of Mostar in Bosnia and Herzegovina.

The experiences in Beirut showed the speed of implementation and the ease of its performance, but on the urban, architectural and heritage levels, it showed that the return of life to the afflicted area did not restore life to segments of the population in the city center, but rather turned the center into a tourist area for major investors and showed the absence of the resident's participation in the reconstruction decisions.

Other strategies can be interacting according to the vision and their Spatio-temporal scales; while reconstruction was used for civil construction in Warsaw, then reconstruction according to the renewal was used in Berlin, and the Mostar experience relied on reconstruction that serves to inspire hope in the residents.

- Mosul is considered the city most affected in the war against ISIS. It lost much of its infrastructure, heritage and history, especially the old city of Mosul, which was damaged by 85% - 90%, making it uninhabitable.

- There is no specific strategy for the reconstruction, and reconstruction operations lack organization.

- The weak role of the government in the reconstruction process, most of the reconstruction operations carried out by UN-Habitat and civil society organizations, and the reconstruction operations carried out by individuals.

-The reconstruction process requires a strategy of government cooperation with civil society organizations that have a high level of public awareness.
- According to specialists, the reconstruction process should start in the education and health sectors, as it is the most deteriorating sector in Mosul, where there is a shortage of schools and a decline in the educational level, and the main hospitals have been severely damaged. Most of them have not been reconstructed.
-The reconstruction of Mosul's transportation roads and bridges is a necessary step, as the previous requirement indicates that the city has entered the rapid response phase, without which it will be impossible to reach the liberated areas, remove debris, and transfer building materials, as well as construction equipment, particularly infrastructure. Sewage systems and drinking water should be given special care.- Removing the corpses from under the rubble and removing the rubble and remnants of war.

-Housing is an important priority in urban reconstruction and is in itself a challenge. As the challenge has doubled in the old Mosul, firstly because it represents the basic need for the return of the displaced, secondly because the scale of destruction in the old Mosul was very large, and thirdly, the great challenge is that housing in the old city represents an architectural and urban heritage and a heritage that crystallized over centuries, it is a civilized and cultural heritage in addition to an architectural heritage
- The damage to the main train station in Mosul has seriously damaged trade, as it is considered a road linking it with neighboring countries.
-Developing the economic sector, providing job opportunities for young people, reopening factories, developing agriculture, and developing the tourism aspect, because of its great returns on the city.
-Damage to government buildings, as most government buildings are currently in alternative locations, and damage to reconstructed military and sports buildings.
-The city of Mosul possesses a wide range of development potentials that qualifies it to be one of the most prominent tourist cities due to its location overlooking the Tigris river, the distinctive architectural fabric, buildings of historical value and shrines of different religions.

5.3.2. Recommendations

-Adopting a comprehensive strategic plan for the reconstruction of post-war cities, based on the reconstruction indicators that were developed based on the problems of west Mosul after the war, and then defining reconstruction priorities by involving experts in arranging these indicators according to the importance of each indicator.

-Focusing on the health and education sector and infrastructure in the reconstruction process because they represent the main requirements of the population.

- Reconstruction plans and priorities shall be in accordance with the requirements and preferences that guarantee the return of the displaced and their housing in the city and the return of life to the old city, and none of the decisions are in the hands of the donors or international organizations.

- Coordination between civil society institutions and official institutions to benefit from the experiences and lessons learned to ensure that efforts and resources are not squandered.

-Accelerate the reconstruction of the important landmarks in the city to instill a spirit of optimism among the residents and make them aware of the return of life to its ordinary course.

-To work to preserve the heritage, history and Mosul identity through reconstruction projects.

- Involving the local population in making all decisions by the authorities responsible for reconstruction and taking their opinion through questionnaires or representatives of the different sectors and the cultural and academic elites because the local population knows what the city needs.

Reconstruction of the airport and the Mosul train station and the reconstruction of hotels and archaeological and heritage areas, providing job opportunities for the population and reviving them economically. The city is of religious and tourist importance and its importance through its location in the movement of goods and merchandise.

Adopting the results, we have reached in preparing plans for the reconstruction and development of the city of Mosul.

- In light of the scarcity of studies related to reconstruction, there is a need to saturate this aspect with theoretical and applied scientific investigations.

-The reconstruction plans should be specific to each region, in proportion to its needs and the segment of its population.

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Appendises

Appendix A : Questions for the respondents

Questionnaire survey

Name: _____Today's date:_ _____

 Address: _____ City, _____ district, _____

sub district: _____, Neighborhood_____

Telephone: (   )

Date of birth: _____

Sex:
- ☐ Female
- ☐ Male

Background Please circle Area of expertise

- ☐ Academic
- ☐ Practitioner

Please circle Level of education

- ☐ BSc.
- ☐ MSc.
- ☐ PhD
- ☐ Other: _____

3. How long been living at Mosul city?

- ☐ More than 5 years
- ☐ More than 10 years
- ☐ More than 20 years
- ☐ More than 30 years

Please select one of the four levels of significance for the Mosul reconstruction indicators: Not important=1, Less important=2, Important=3, Very important=4

Appendix B: Indicators to be evaluated

ators	nportant	important	rtant	important
The percentage of reconstruction of the health sector and the provision of health services				
The number of schools that have been reconstructed				
The number of reconstruction bridges and Percentage of roads that have been paved				
Reconstruction rate of the water network and sewage network				
The number of bodies removed				
The rate of rebuilding damaged infrastructure				
The number of rubble removal and war pollutants				
The percentage of compensation provided to those affected by the war				
The number of families who returned to their homes				
Unemployment rate				
The number of houses built				
The percentage of reconstruction of Mosul Airport and train station				
The percentage of dust and pollutants in the air				
the proportion of slums				
The rate of decline in extremist religious thought				
The percentage of commercial buildings overtaken by residential buildings				
Percentage of people with cultural awareness				
Increase per capita income				
Number of Restoration of damages in factories, encouraging investment and industries				
The percentage of public funding provided to support orphans and the amount of orphanages available				
Proportion of local agricultural production				
Proportion of population				
The rate of repeating the Faculty of Medicine and Veterinary Medicine is completely destroyed				
Adult literacy rate				

The number of heritage buildings that have been reconstructed in the old part of the city of Mosul				
The number of increase in housing units				
Number of people who have recovered and received health care				
Amount of improvement in public transport				
Reconstruction rate the government building				
Percentage of restoration of the damages of Nineveh stores for foodstuffs				
The number of restoring shrines and mosques to their previous condition				
Percentage of reconstruction of the riverfront elevation				
The number of reconstruction hotels				
Number of eliminate residential camps				
The number of rebuilding churches and religious sites of other faiths				
The percentage of rebuilding sports and recreational facilities and increasing green spaces				
Reconstruction rate of the Ghazlani complex, military and security installations				

Appendix C: <u>Private questions for respondents'</u>

Responses of questionnaire

The gender of the respondents'

Female 7%

Male 93%

Male
Female

Area of expertise

46%

54%

Academic
Practitioner

Level of education

29%

46%

25%

BSc.
MSc.
PhD
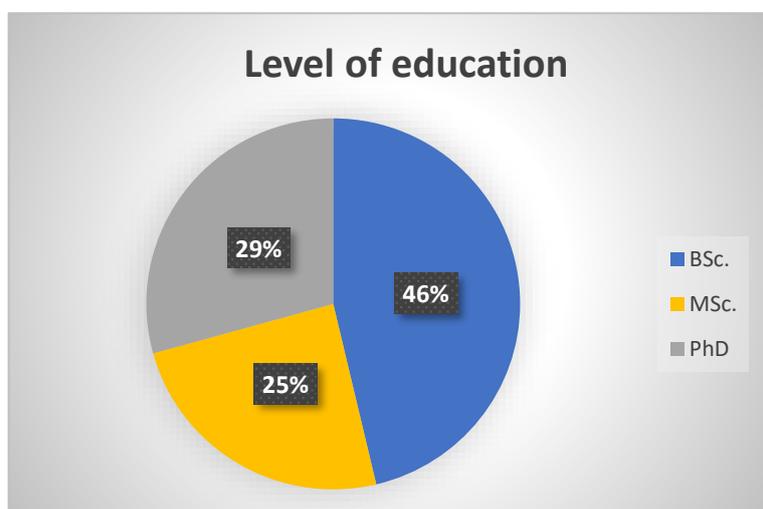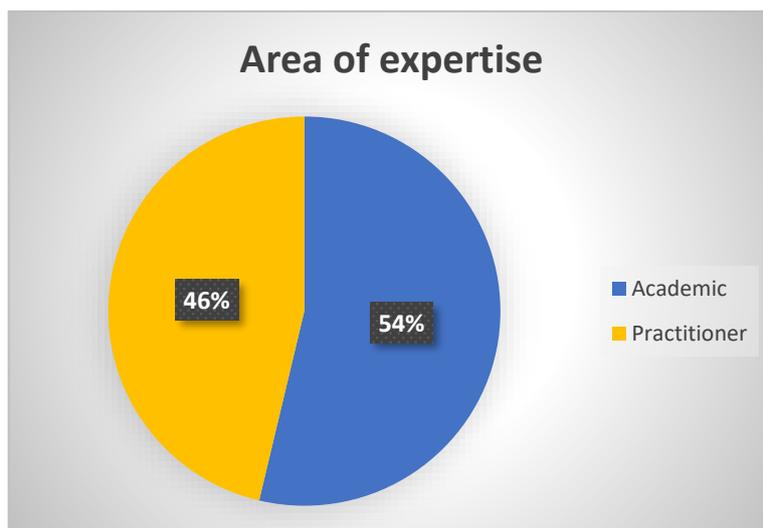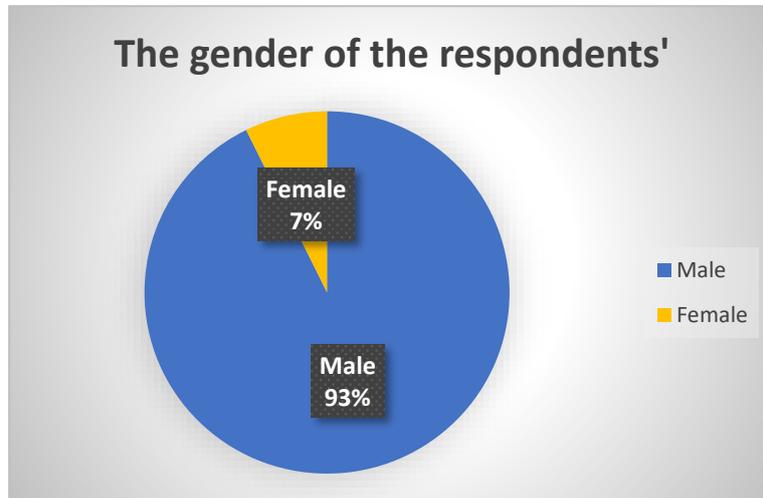
How long have you lived in Mosul

- More than 5 years
- More than 10 years
- More than 20 years
- More than 30 years

2% 20% 78%

Respondents' address

- sugar district
- Officers District
- zamar
- Police District
- Qayara
- Mosul
- Al-Mamoun
- Qadisiyah neighborhood
- Al-Ghufran district
- Al-Hadba neighborhood
- Cairo district
- Al-Bakr District
- Al Wahda District
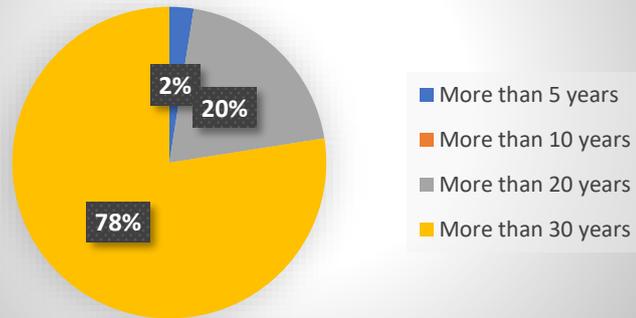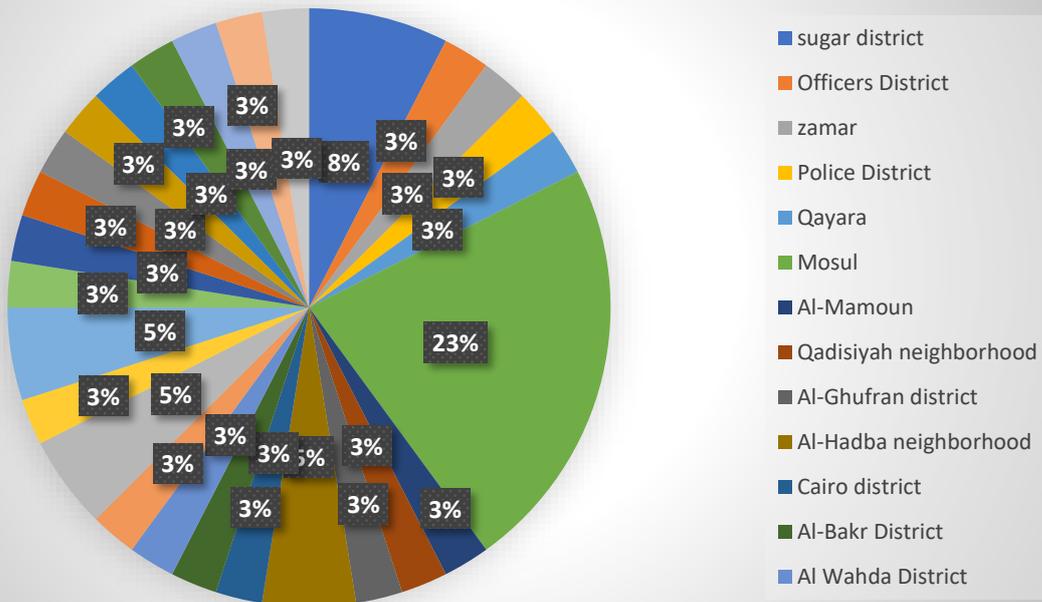
Appendix F: Responses of questionnaire

	Indicator1	Indicator2	Indicator3	Indicator4	Indicator5
Respondent 1	3	4	4	4	3
Respondent 2	3	4	4	3	3
Respondent 3	2	3	2	2	2
Respondent 4	4	3	1	3	2
Respondent 5	3	2	2	3	4
Respondent 6	3	4	4	4	3
Respondent 7	2	4	4	4	2
Respondent 8	2	2	3	3	2
Respondent 9	2	4	4	4	4
Respondent 10	4	3	3	3	2
Respondent 11	3	3	4	4	2
Respondent 12	3	4	4	4	4
Respondent 13	4	4	2	2	2
Respondent 14	4	4	4	2	2
Respondent 15	3	4	4	3	3
Respondent 16	4	3	4	3	2
Respondent 17	4	4	4	4	3
Respondent 18	4	4	4	4	3
Respondent 19	4	4	2	3	2
Respondent 20	3	2	2	2	4
Respondent 21	3	4	4	4	2
Respondent 22	2	3	3	3	3
Respondent 23	4	4	4	4	3
Respondent 24	3	4	4	3	3
Respondent 25	3	3	3	3	3
Respondent 26	3	3	3	4	2
Respondent 27	3	3	3	4	2
Respondent 28	3	4	4	4	2
Respondent 29	2	4	3	4	2
Respondent 30	4	4	4	3	2
Respondent 31	2	4	4	4	4
Respondent 32	3	3	3	3	3
Respondent 33	3	4	4	4	3
Respondent 34	2	3	4	4	3
Respondent 35	2	4	4	3	3
Respondent 36	3	4	4	3	3
Respondent 37	3	4	4	4	3
Respondent 38	1	4	4	3	2
Respondent 39	2	4	4	4	2
Respondent 40	4	4	4	3	2

	Indicator6	Indicator7	Indicator8	Indicator9	Indicator10
Respondent 1	3	3	3	4	4
Respondent 2	4	4	4	3	4
Respondent 3	2	1	2	2	3
Respondent 4	3	1	2	3	3
Respondent 5	3	2	2	2	3
Respondent 6	2	1	3	3	4
Respondent 7	3	3	2	4	4
Respondent 8	2	3	3	2	4
Respondent 9	2	4	4	4	4
Respondent 10	2	3	2	2	2
Respondent 11	2	2	3	4	3
Respondent 12	2	2	2	4	4
Respondent 13	3	2	2	2	2
Respondent 14	2	3	4	2	3
Respondent 15	2	4	3	3	3
Respondent 16	4	4	2	2	4
Respondent 17	3	3	4	3	4
Respondent 18	3	2	4	3	4
Respondent 19	2	3	3	4	4
Respondent 20	3	2	4	2	2
Respondent 21	3	2	2	3	4
Respondent 22	1	3	3	2	3
Respondent 23	3	2	2	3	4
Respondent 24	2	4	3	3	4
Respondent 25	3	3	2	2	3
Respondent 26	2	3	2	3	4
Respondent 27	2	2	3	3	4
Respondent 28	3	2	3	4	3
Respondent 29	2	3	2	4	3
Respondent 30	3	3	2	3	3
Respondent 31	2	2	3	1	3
Respondent 32	4	2	4	4	3
Respondent 33	3	3	3	2	3
Respondent 34	2	3	2	2	4
Respondent 35	2	3	2	3	4
Respondent 36	2	4	2	3	4
Respondent 37	2	2	2	4	4
Respondent 38	2	2	2	2	4
Respondent 39	2	2	2	2	2
Respondent 40	2	3	2	3	2

	Indicator11	Indicator112	Indicator13	Indicator14	Indicator15
Respondent 1	3	3	3	2	2
Respondent 2	4	3	3	3	3
Respondent 3	1	1	3	2	1
Respondent 4	1	1	4	1	1
Respondent 5	1	1	4	3	2
Respondent 6	4	3	3	3	1
Respondent 7	4	2	2	3	2
Respondent 8	2	2	4	3	3
Respondent 9	4	4	4	3	4
Respondent 10	1	1	2	2	1
Respondent 11	2	3	4	1	3
Respondent 12	4	4	4	3	3
Respondent 13	1	1	3	2	1
Respondent 14	4	3	4	3	4
Respondent 15	3	2	2	1	3
Respondent 16	4	3	3	2	4
Respondent 17	4	3	4	4	4
Respondent 18	4	3	3	2	2
Respondent 19	4	4	3	4	4
Respondent 20	1	1	2	2	1
Respondent 21	4	3	3	3	1
Respondent 22	3	3	3	3	2
Respondent 23	4	4	2	3	3
Respondent 24	3	4	3	2	2
Respondent 25	3	3	3	2	3
Respondent 26	3	3	2	3	3
Respondent 27	4	2	4	2	2
Respondent 28	4	4	3	3	3
Respondent 29	4	4	3	4	4
Respondent 30	3	3	3	2	3
Respondent 31	3	3	3	2	2
Respondent 32	3	2	3	2	3
Respondent 33	3	3	1	2	2
Respondent 34	3	3	3	2	2
Respondent 35	3	3	3	3	3
Respondent 36	4	3	2	3	4
Respondent 37	4	4	3	2	3
Respondent 38	4	4	2	1	3
Respondent 39	4	4	3	2	4
Respondent 40	4	4	3	3	3

	Indicator16	Indicator17	Indicator18	Indicator19	Indicator20
Respondent 1	4	2	2	4	3
Respondent 2	4	3	3	3	3
Respondent 3	4	2	1	2	3
Respondent 4	3	3	2	3	3
Respondent 5	4	3	3	3	4
Respondent 6	3	2	4	3	4
Respondent 7	4	2	3	3	4
Respondent 8	2	3	3	4	4
Respondent 9	2	3	3	2	4
Respondent 10	3	2	2	2	2
Respondent 11	2	3	3	3	2
Respondent 12	4	4	3	4	4
Respondent 13	3	1	1	4	2
Respondent 14	4	4	4	3	4
Respondent 15	4	2	3	4	2
Respondent 16	4	2	3	4	2
Respondent 17	1	4	4	3	3
Respondent 18	4	1	4	3	4
Respondent 19	4	4	4	3	4
Respondent 20	3	3	3	3	2
Respondent 21	2	3	3	4	3
Respondent 22	4	1	3	3	3
Respondent 23	2	4	4	3	4
Respondent 24	3	3	2	4	2
Respondent 25	4	3	3	3	3
Respondent 26	4	4	4	4	4
Respondent 27	4	3	3	4	4
Respondent 28	4	4	4	3	2
Respondent 29	4	4	4	3	3
Respondent 30	2	3	3	3	2
Respondent 31	4	3	3	3	3
Respondent 32	3	2	4	2	2
Respondent 33	1	2	2	2	3
Respondent 34	4	2	3	4	4
Respondent 35	4	4	4	4	3
Respondent 36	3	4	4	4	3
Respondent 37	4	3	4	4	4
Respondent 38	4	4	2	3	4
Respondent 39	3	2	3	3	3
Respondent 40	4	4	3	4	4

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	Indicator21	Indicator22	Indicator23	Indicator24	Indicator25
Respondent 1	3	4	4	4	4
Respondent 2	3	2	2	3	3
Respondent 3	2	1	3	3	2
Respondent 4	3	2	3	3	3
Respondent 6	3	3	3	4	3
Respondent 5	3	2	4	4	3
Respondent 7	3	2	3	3	4
Respondent 8	4	3	2	2	3
Respondent 9	3	1	2	3	4
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Respondent 11	2	3	3	4	4
Respondent 12	4	2	4	4	4
Respondent 13	4	3	4	3	2
Respondent 14	4	3	4	2	4
Respondent 15	3	2	4	3	3
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Respondent 17	4	3	3	3	3
Respondent 18	2	1	3	2	3
Respondent 19	3	3	4	2	4
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Respondent 21	4	4	4	4	3
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Respondent 23	4	3	4	4	3
Respondent 24	2	4	3	2	2
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Respondent 26	4	4	4	3	4
Respondent 27	3	3	3	3	4
Respondent 28	4	4	4	3	4
Respondent 29	4	3	4	4	3
Respondent 30	3	2	3	3	3
Respondent 31	3	3	3	3	3
Respondent 32	2	3	3	3	3
Respondent 33	2	2	2	3	4
Respondent 34	4	4	4	4	4
Respondent 35	3	3	4	4	4
Respondent 36	3	3	4	4	4
Respondent 37	4	4	4	4	4
Respondent 38	3	3	2	2	3
Respondent 39	3	3	4	4	3
Respondent 40	3	3	4	3	3

	Indicator26	Indicator27	Indicator28	Indicator29	Indicator30
Respondent 1	4	3	3	2	2
Respondent 2	3	3	3	2	2
Respondent 3	1	1	2	3	2
Respondent 4	2	1	3	3	1
Respondent 5	3	2	2	3	2
Respondent 6	4	3	3	3	2
Respondent 7	4	4	3	4	1
Respondent 8	3	2	4	4	2
Respondent 9	4	4	4	3	2
Respondent 10	2	1	2	2	1
Respondent 11	4	3	3	4	1
Respondent 12	4	3	3	4	3
Respondent 13	2	1	2	3	1
Respondent 14	3	4	3	2	3
Respondent 15	4	3	2	3	3
Respondent 16	3	2	2	3	2
Respondent 17	3	3	3	4	1
Respondent 18	3	4	4	4	3
Respondent 19	4	4	3	3	1
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Respondent 22	3	3	3	4	3
Respondent 23	4	4	4	2	3
Respondent 24	3	2	2	3	2
Respondent 25	3	3	3	3	3
Respondent 26	4	4	3	3	3
Respondent 27	4	3	3	3	2
Respondent 28	4	4	4	4	4
Respondent 29	3	4	1	3	3
Respondent 30	2	3	3	3	3
Respondent 31	4	4	4	2	3
Respondent 32	4	3	3	2	2
Respondent 33	3	3	3	2	2
Respondent 34	4	4	4	4	3
Respondent 35	4	4	4	4	3
Respondent 36	4	4	4	4	3
Respondent 37	4	4	4	4	3
Respondent 38	4	3	2	4	3
Respondent 39	3	4	3	2	3
Respondent 40	4	4	4	4	3

	Indicator31	Indicator32	Indicator33	Indicator34	Indicator35
Respondent 1	2	2	2	2	4
Respondent 2	2	3	2	2	4
Respondent 3	3	2	2	2	3
Respondent 4	3	2	1	3	4
Respondent 5	3	2	2	3	4
Respondent 6	1	3	2	1	3
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Respondent 22	2	3	3	2	2
Respondent 23	3	4	4	4	4
Respondent 24	2	2	2	2	2
Respondent 25	2	3	3	2	2
Respondent 26	2	4	3	3	4
Respondent 27	2	3	3	3	3
Respondent 28	3	4	4	2	4
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Respondent 30	2	3	2	2	2
Respondent 31	3	4	4	2	1
Respondent 32	4	3	4	2	3
Respondent 33	2	2	2	1	1
Respondent 34	2	4	4	3	3
Respondent 35	3	3	3	3	4
Respondent 36	3	3	3	3	4
Respondent 37	3	4	3	3	4
Respondent 38	2	2	2	1	2
Respondent 39	2	3	3	2	2
Respondent 40	3	4	4	3	4

	Indicator36	Indicator37
Respondent 1	3	4
Respondent 2	3	3
Respondent 3	3	1
Respondent 4	2	4
Respondent 5	3	3
Respondent 6	4	3
Respondent 7	4	3
Respondent 8	3	4
Respondent 9	4	4
Respondent 10	2	2
Respondent 11	4	3
Respondent 12	4	4
Respondent 13	2	4
Respondent 14	2	3
Respondent 15	4	3
Respondent 16	3	4
Respondent 17	3	2
Respondent 18	4	4
Respondent 19	4	4
Respondent 20	3	3
Respondent 21	3	4
Respondent 22	3	3
Respondent 23	3	4
Respondent 24	3	3
Respondent 25	3	2
Respondent 26	4	4
Respondent 27	3	3
Respondent 28	4	4
Respondent 29	3	3
Respondent 30	3	3
Respondent 31	4	4
Respondent 32	3	3
Respondent 33	2	2
Respondent 34	4	4
Respondent 35	4	3
Respondent 36	4	4
Respondent 37	4	3
Respondent 38	2	1
Respondent 39	4	3
Respondent 40	4	4

تطوير إستراتيجية لإعادة اعمار مدن مابعد الحرب

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مستخلص البحث

تعتبر الحروب والنزاعات المسلحة من أهم الأخطار التي تهدد البنى الاجتماعية والثقافية والاقتصادية والنظم السياسية للدول المتأثرة بها ، وبالتالي تتسبب في أضرار على جميع المستويات ولعل الأضرار العمرانية والمعمارية هي التسجيل الحي للدمار الذي خلفته الحروب والنزاعات المسلحة. في المقدمة يأتي تدمير العمارة والعمران المرتبطين بالمجتمع ، والذي يمثل ذاكرة وهوية هذا المجتمع ، فضلا عن تدمير البنية التحتية والتعليم والثقافة ، فضلا عن أضرار أخرى مثل النزوح و القتلى والجرحى والأيتام وتلوث البيئة بالأسلحة والمتفجرات وما إلى ذلك. لذلك يجب أن يكون هناك خطط لإعادة بناء هذه المدن.

لذلك تنبع هذه الدراسة من مشكلة عدم وجود استراتيجيات واضحة لإعادة إعمار المدن بعد الحرب في ظل الظروف الحالية.

الهدف من هذه الدراسة هو تطوير استراتيجية إعادة الإعمار الحضري لإعادة الإعمار الحضري لمدينة ما بعد الحرب. تستعرض هذه الدراسة أولاً الأدبيات المتعلقة بإعادة الإعمار بعد الحرب. اعتمدت الدراسة على عدة مناهج,اعتمد على المنهج التاريخي من خلال استعراض مجموعة من التجارب العالمية والعربية.و واعتمدت المنهج الوصفي من خلال شرح واقع مدينة الموصل بعد عمليات التحرير من خلال الخرائط والرسوم البيانية والأرقام الإحصائية التي أظهرت ان الجانب الغربي من المدينة هو الأكثر تضرراً ، حيث بلغ الضرر الذي لحق بالمدينة القديمة في الجانب الغربي (85_90٪) من حيث المساحة. يغطي الإطار المنهجي المستخدم في الدراسة أربع خطوات بما في ذلك تحديد المشكلة ، وصياغة الهدف ، وصياغة المؤشرات ، واختيار المؤشرات وترتيبها.

تم استخراج مجموعة من المؤشرات ثم ترتيبها لاقتراح استراتيجية لإعادة الإعمار بعد الحرب. يمكن بعد ذلك تقييم هذه الاستراتيجية في المنطقة الحضرية على الجانب الغربي من الموصل كدراسة حالة ، لأنها المدينة الرئيسية التي مزقتها الحرب في العراق.

تساهم هذه الدراسة بشكل فعال في واحدة من أهم مشاكل البشرية ، والتي يمكن أن تكون مفيدة للبحوث المستقبلية التي تتناول التدهور الحضري والبيئي الناجم عن الحروب .

الكلمات المفتاحية:استراتيجية- الحرب-مدن مابعد الحرب- اعادة الاعمار-الموصل

وزارة التعليم العالي والبحث العلمي

جامعة بابل

كلية الهندسة

قسم هندسة العمارة

تطوير إستراتيجية لإعادة اعمار المدن مابعد الحرب

رسالة ماجستير مقدمة الى مجلس كلية الهندسة

جامعة بابل وهي جزء من متطلبات نيل درجة الماجستير في

الهندسة /هندسة العمارة

من قبل

غدير واثق نصار حمزة

بأشراف

أ.م.د.مطصفى خضير العلواني