



**A Framework for Post-Disaster Reconstruction
Planning
A Case Study of Aleppo-SYRIA**

دراسة عن إعادة الإعمار بعد الكوارث
مدينة حلب كنموذج

by

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Abstract

Disasters occur around the globe leaving casualties in lives and a destructed built environment. But human made targeted destruction is far worse as it can leave one of the oldest continuously inhabited cities in the world: Aleppo, in a state where it is the most destructed city in this century. Considering all aspects of reconstruction is the due diligence of architects and planners, to assist the people to return to normality and the society to stabilize again.

The study looked at similar previous situations in a literature review to analyze the weak and strong points of each case. Mega destruction the scale of Aleppo has occurred in Germany, Japan, Korea, and Lebanon. From each of these cases lessons were learnt and projected to the situation in Syria currently, to develop a framework to start the reconstruction process.

Assessment of the situation in Aleppo was made through several analyzed satellite imagery, where the destruction was classified into 3 major categories.

Based on all of this data a framework was developed by the author, then assessed by experts in the field, through a survey and semi-constructed interviews: open ended questions, where each expert contributed in the way that related to his field of PDR. The main highlights of the framework are: data and assessment, decentralization and independent reconstruction council, potential donors and funding, recycling disaster waste, infrastructure recovery, urban areas, rural areas, considerations of temporary shelters for returnees, considerations for the historic old city, and building back better.

The framework was rectified to include the suggestions by experts, and be close to an applicable strategy to actual reconstruction of Aleppo.

نبذة مختصره

الكوارث تحصل في كل أنحاء العالم و تخلف خسارات جسيمة في الأرواح و البيئة العمرانية على حد سواء. و لكن الدمار الممنهج المقصود يمكن أن يحول واحده من أقدم المدن المأهولة في التاريخ إلى الأكثر دماراً في التاريخ الحديث، و هو ما حصل مع مدينة حلب. إن دراسة أساليب إعادة الإعمار هو من أولى مهام مهندسي العمارة و مخططي المدن و الاستدامه في هذا الزمن لمساعدة الناس في العودة إلى مساكنهم و حياتهم اليوميه بأقصى سرعه.

بدأت الدراسة بالاطلاع على أمثلة سابقه مماثله، كما حصل في المانيا بعد الحرب العالميه الثانيه، و اليابان و كوريا، و لبنان في الحربين: الأهليه و حرب تموز. الاستقاء من هذه النماذج كان ضروريا لأخذ العبر و الدروس من الأخطاء التي حصلت، و من أجل التعلم من الأمثلة الناجحه و التي عادت الأمم بعدها من الحرب أقوى من السابق كما في ألمانيا الغربيه و اليابان. الغايه من الدراسة كانت التوصل إلى خطة عمل منهجيه عن حالة إعادة إعمار مدينة حلب.

تم تحليل الوضع في المدينه عبر تحليل لصور من الأعمار الصناعيه توضح أماكن و نسب الدمار، و تم تقسيم المدينه بحسب نسبة الدمار إلى ثلاث أقسام، لكل منها معالجة مختلفة.

للتأكد من صلاحية خطة العمل هذه، عرضت على خمسة خبراء في مجال التخطيط و اعادة الاعمار، و باستخدام استبيان للرأي و مقابلات شخصية مع كل منهم، عدنا بتعديلات معينة اقترحها كل منهم حسب مجال خبرته و دراسته.

النتيجة النهائية هي خطة عمل و توصيات متكامله منهجية لإعادة إعمار المدينه، موثقة بتصنيفات نسبة الدمار في كل جزء.

Dedication

I genuinely prepared this research because I feel responsible as an architect to contribute in rebuilding my hometown. To every person who lost a home in Aleppo.

Acknowledgements

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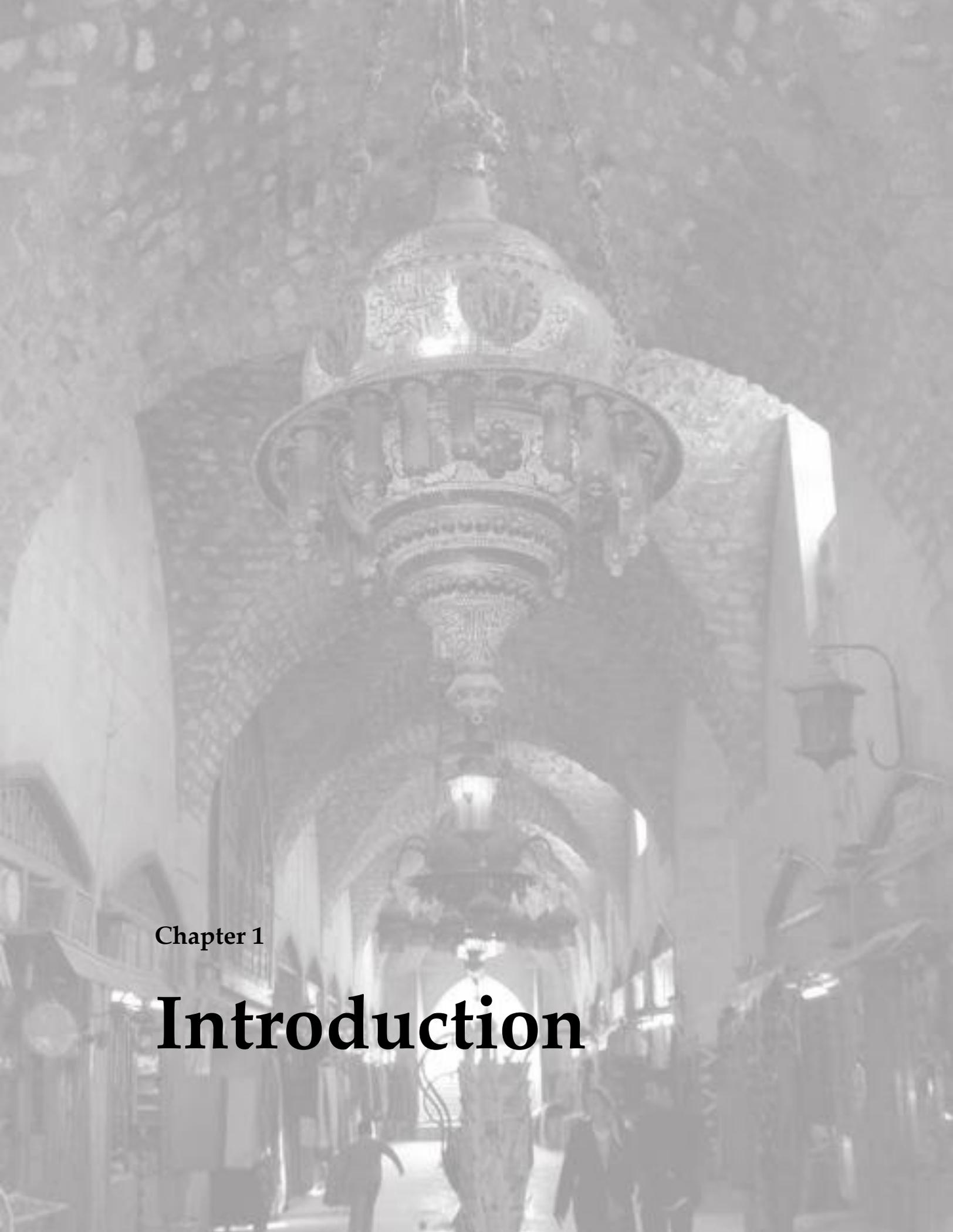
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Acronyms

AUB	American University in Beirut
BBB	Building Back Better
BCD	Beirut Central District
DDR	Donor Driven Reconstruction
DOC	The Directorate of the Old City
DPRK	Democratic People's Republic of Korea
GDP	Gross Domestic Product
GTZ	German Technical Group
IRC	Independent Reconstruction Council
MDGs	Millennium Development Goals -
NGO	Non Governmental Organizations
ODR	Owner Driven Reconstruction
PCR	Post Conflict Reconstruction
PDR	Post Disaster Reconstruction
RU	Reconstruction Unit
SCAP	The Supreme Command of Allied Powers
SOLIDERE	Solidere Société Libanaise pour le Développement et la Reconstruction de Beyrouth
UN	The United Nations
UNDP	United Nations Development Program
UNESCO	The United Nations Educational, Scientific and Cultural Organization
UNHCR	United Nations High Commissioner for Refugees
UNKRA	United Nations Korea Reconstruction Agency
WWII	World War II



Chapter 1

Introduction

1.1 Problem background

Disasters that lead to a destructed built environment with all its projections on people's lives are various, in some parts of the world natural disasters occur and affect the society, infrastructure, urban level, and eventually destroys people's homes and the dignity and sense of self-respect associated with it.

Despite all the development and human civilization, it is unfortunate that, wars and conflict are still factors that cause such human made damage that would consume time, resources, finances, and still take decades to recover from if well planned recovery existed, only to go back to 'status quo ante' or the pre-war state. Not to mention the amount of resources and planning it will take to put the country back on the development track. Armed conflicts intensify disparity and impede progress towards the Millennium Development Goals - MDGs (Anand, 2005). In the midst of this crisis, the biggest loser is the people of those countries, who are displaced, or living in the rubbles of homes, until the conflict is over and greater authorities decide to take the step to reconstruction. i.e. clear the debris, build back houses, make the built environment habitable again. The faster the reconstruction process, the earlier people can go back to functioning, producing, and balancing the country's economy, industry, and social life. The studies performed on post-disaster recovery in the region are not compatible to the repetitive occurrences of destruction in the same region, and further studies on this subject would pave the ground to a conceptual framework and policy to form the theoretical background for recovery. It is evident that the research in this subject if met with financial support, enthusiasm of decision makers and stakeholders would aid in the faster recovery process.

The scale of destruction in many Arab countries after the unrest that started late in 2010 is by no means a minor one. Unfortunately, it still continues to this moment, where the instability of the political situation spread from Tunisia, all the way to Syria, Yemen, passing by Egypt. Although the levels of destruction vary from some occurrences of bombing and terroristic attacks in Lebanon, Tunisia, and Egypt, to a whole war-torn country like Syria with more than 3.9 million refugees in the neighboring countries (UNHCR, 2015b). The damage to

the built environment in such cases is severe, resulting in an inoperative infrastructure and buildings, on urban and local scales.

1.2 Dimensions of post-disaster recovery.

Various terminology has been used to address the interventions to assist war-torn communities to recover from trauma on all levels. 'reconstruction', 'recovery', 'rehabilitation' or 'building back better' and 'resilience' are common terms used in 'post-conflict development' (Zainedin, 2015). It is argued that 'reconstruction' implies returning to 'status quo ante' and ignoring the factors that caused the community to be vulnerable to conflict. Thus other dimensions of rebuilding has to be addressed, such as social aspects, economic, medical, and psychological, which are represented in 'recovery' (Barakat & Zyck, 2009). The humanitarian community introduced the term 'post-conflict development' in the early 1990s specifically when 'protracted crises' or cases that are not urgent but rather prolonged development is required (Zainedin, 2015). The term 'Rehabilitation' was used later through the 1990s it aimed to integrate aid relief agendas within long-term development plans (Green, 1999).

What is agreed upon in the process of Post Disaster Recovery (PDR) is that it should facilitate transitioning to peace, and keep up with social and economic development while providing the necessary humanitarian relief to the people affected (Zainedin, 2015).

This research will look into post-disaster recovery in similar situations to the case study to learn lessons about the process in general. The main focus is on the built environment and best practices to rebuild back better, though social and economic factors will be taken into consideration as well.

1.3 Scope of research

Post-disaster redevelopment is one of the controversial subjects that are relevant to the prevailing situation in the Middle East region, and the urgency of such research is to use the full potential of the resources available to ensure people are sheltered again and their integrity is sustained.

The built environment is crucial when it comes to disaster management, because of its essential role in both: human life losses, and financial losses, and it makes up most of the assets which are affected by a disaster (Bilau et al. 2015). Although

human development has led to concentration of lives and possessions in large cities, it is unfortunately the same human power that is targeting those cities and urbanized areas, for political reasons and causing the massive destruction with all its aftermath in the same cities.

Although each case of a disaster dictates its own recovery possibilities, chances, and methods, the generic issues are of similar composition: the ability to recover, the legislative bodies development for such recovery, the density of the situation, the number of people in need of immediate sheltering, pace of rebuilding, and where the resources of this process would be provided – a war-torn government, stakeholders, developers, etc.

The vote of the people in such a process is crucial, as they are the ones to define their immediate needs according to the phase they are passing through. The voice of science in this matter must also ideally be heard and applied, since that would dictate the most recent and feasible materials, construction methods, building techniques, sustainability fads, and the list goes on.

Prototyping in disasters is not a favored decision, as the context in which the disaster took place in implies many different measures of solutions, problems, and difficulties.

For the redevelopment strategy to be as close to perfect as possible, many assessments have to be conducted, which should include but are not be limited to: the severity of the destruction, counting the families that have been dislocated, considering their needs, both short and long term, which all have to be taken into consideration when planning for the recovery.

The environment is one of the casualties that are to be looked at in this phase as well, restoring as much as possible from natural resources, preserving the water bodies, natural habitats, forests, and meanwhile, the other counterpart to sustaining the nature, is sustaining the economy of the town/country affected, and making sure the facilities that will support people's daily life and help them make a living is well-maintained.

1.4 Aims and objectives

This research aims to set guideline recommendations and propose a framework which would help in recovery after such disasters, particularly major ones with hundreds of thousands of people displaced, to design and construct housing that

would be adaptable to the context, economically viable, and with a timeframe suitable to the urgency of the situation. The aim is to provide the requirements beginning with water and shelter, and then progress to fulfill the secondary needs like social, cultural, and services. Research on post-disaster recovery and theoretical frameworks are our due diligence as architects and researchers of this era in the Middle East.

- Analysis of similar PDR projects
- Looking closely at general guidelines that have formed the background of PDR previously.
- Comprehending and learning from these examples to solve the current issue of PDR in the Aleppo case.
- By analyzing these factors, the author intends to construct a suitable, sustainable and efficient framework to assist in the post-disaster reconstruction and fulfill the immediate needs of the displaced people, taking into account the long-term needs as well.



Chapter 2

Literature Review

2.1 Similar Previous Disasters Internationally.

2.1.1 Germany

In 1939 the Second World War started between the United States, United Kingdom and Soviet Union known as Allied powers opposed to Axis Powers: Germany, Italy, Japan and their allies. The human casualties were more than 60 million people, and the destruction in cities was ruinous. World War II is considered the deadliest conflict in human history (Dunnigan and Nofi, 1994). Figure 1 shows the amount of destruction German cities faced.

It ended in 1945 with Germany's surrender to the Soviet Union and Western Allies, where Germany was in a catastrophe. Only a third of industrial production was functioning, destroyed transportation, infrastructure and housing. In urban areas half of houses were made unlivable due to shelling and bombing, and total of quarter housing in the country was also not livable (Komp, 1999). Germany makes a good example for rising after a catastrophic war because by the end of 1950 things had cleared, and Germany was a leading industrial country, and the people had settled back in their hometowns (Komp, 1999).



Figure 1 Amount of destruction and people clearing the rubble in Germany 1950 (Alamy,2017)

To examine the good German example of post-war recovery, we will analyze the factors that contributed to this recovery.

Local rebuilding

The people of Germany helped rebuild it with their own bare hands. The war left German cities into rubble, huge amounts of debris, The Allied Control Council introduced a mandatory work duty to the people, with food ration cards, of which mainly were women, since 15 million German men were lost in the war (DW.COM, 2017).

The rubble women known as Trümmerfrauen contributed by clearing cities of an 400 million cubic meters of debris, with their hands and very basic tools (DW.COM, 2017). The natural resilience of the German people played an important role especially when they found the conquerors instead of crushing them were lending a helping hand due to: (a) benevolence, (b) the fact that Europe is a united region, and (c) Germany was their bulwark against the common enemy: The Soviet Union. If they had fallen to the communists or the country had become war-torn and the people deprived, the whole region would have been affected.

After the war, there was no national government in Germany for a few years, which meant no dictation on how rebuilding will take place, the people started rebuilding what they were capable of by raising money to rebuild churches for example, or borrowing money from relatives to buy building materials (Diefendorf, 2015).

Marshall plan

The U.S. Secretary of State George C. Marshall in 1947 announced the European Recovery Program, known as the Marshall plan, to re-establish “the confidence of Europeans in the economic future of their countries and all of Europe.” (Komp, 1999). This plan was the way for the U.S. as an export market to sell the raw materials and machines to Europe, where the dollars were scarce anyway so the debt would be paid at a later stage. The plan was to bring up Western Europe in 4 years starting 1948 back to prewar levels in terms of infrastructure, rebuilding and productivity. The political goals behind this plan were:

- preventing communism to spread in Europe further
- restore self-reliance
- remove trade barriers
- create a modernized European industry influenced by the American model

Areas in Europe that were conquered by the Soviets refused plan benefits, one of them is Eastern Germany, as a result the Marshall plan only took effect on Western Germany (Hogan, 2005).

East Germany

The Soviet Union took over Eastern Germany after the war, and the country was divided, but the mentality that ruled the East was different, the communists didn't allow a democratic government and forced people with guns to fill craters, hence motivation lacked. The strategy conducted in Eastern Germany by the communists showed completely different results, the country did not rise from the war like Western Germany, and the bombed out towns stayed the same for years, until 1990 when Germany was reunited, and the government still devotes sums of money to rebuild it until now (DW.COM, 2017).

Germany today is a leading industrial country, "Europe's largest and strongest economy. On the world scale, it now ranks as the fourth largest economy in terms of nominal gross domestic product (GDP)" (Investopedia.com, 2017). The rebuilding of Germany after the war played a role in this, when Germany's factories were built anew, and the latest technologies and materials were used to replace the rubble. Germany makes an excellent example for rising after a devastating war. The German people set an example to the world in hard work and pride, and most importantly the ability to overcome the atrocities committed and start a new phase of their history. Years later, despite the German defeat that World War II ended with, the country is now a victor in terms of economy, industry, export, and political stability.

2.1.2 Japan

This example is also a trace of the Second World War. Following the attack on Pearl Harbor in December 1941, the United States declared war on Japan in alliance with China. The war wasn't over until 1945, after two atomic bombings on Japan in Hiroshima and Nagasaki, the emperor Hirohito announced surrender. But 4 years of war resulted in destruction that the built environment in Japan faced, where 64 major cities were turned to rubble, as shown in Figure 2 (Armstrong 2009; Takemae and Ricketts 2003).

Following the surrender of the Emperor to the United States in 1945, General Douglas MacArthur led the Supreme Command of Allied Powers (SCAP) and began the work of rebuilding Japan. This indicates that the process

landowners were limited by land reform, where the majority of tenant workers benefited, and the economy was meant to be transformed into a free market capitalist system versus the old *Zaibatsu*, or large Japanese business cliques who had taken over the market (Mewati, 2017).

Demilitarization

This point is very relevant to the study, because the example we set – Syria – is a militarized economy with a great part of GDP devoted for the military and defense. When Japan was disarmed, a big amount of the economic surplus was directed to construction and recovery, and more importantly, military personnel were released and played an important part with all the commitment they are trained for at the army to be productive in society and rebuilding (Mewati, 2017).

Also in Japan the commitment of the people and their high work ethics played an important role – like Germany – to help the country regain its prewar level.

Japan's example shows that despite the enormous the size of the destruction, with right planning, financing, and execution, building back is possible, and becoming better than prewar level is also doable. Another lesson we can conclude from this example is that internal stability is crucial when it comes to rebuilding. It forms the solid ground on which any economic, social, or physical development can flourish. *Zaibatsu* can also be reflected on the Syrian example, where corruption is widespread, and that affects the national resources and whether they are directed to serve the people in need, and the rebuilding of the nation on all scales, or just serving an elite.

2.1.3 Korea

In June 1950, a while after WWII ended, traces of the war and allies were in Korea separating its North from South, and North Korea tried to invade South Korea. The different allies (mainly the US and Soviet Union) each supported one side of the conflict, and escalated the situation to massive bombings on Korean cities, 635,000 tons of bombs were dropped on North Korea (Armstrong, 2009). Estimates by US Air Force show that North Korea's destruction alone was more than that of Japan after WWII. In the capital of North Korea and largest city: Pyongyang, only two buildings remained standing. The loss in built environment was –as per Democratic People's Republic of Korea DPRK statistics –“8,700 factories, 5000 schools, 1000 hospitals, and 600,000 homes” (Armstrong, 2009).

The war ended three year later, in 1953, with an armistice and cease fire agreement, and the country was torn into two: North Korea, supported by the

socialists (Soviet Union, China, and their allies from east Europe) and South Korea supported by the US, and Japan. It was the cold war get in action on the Korean peninsula (Armstrong, 2009).

North Korea

In the aftermath of Korean War, North Korea had little to rely on to build back. Even the workforce had diminished because of war hemorrhage. Economic and technical assistance came from the “fraternal” socialist countries, and the intact remnants of the industrial infrastructure were the base to start over.

To sum up major points that helped North Korea from fraternal countries:

- Soviet Union postponed repayment of debts.
- It also gave one billion rubles in aid, financial and industrial equipment.
- To fill in the workforce gap, Soviet technicians came to work in North Korea.
- China wanted to compete with Soviet Union and cancelled the debts as well.
- Chinese government also gave 800 million Yuan as aid.
- Chinese People’s Volunteers (CPV) who had had a role in fighting the war, were meant to stay in Korea to help in the post-war reconstruction. The soldiers worked as builders.
- The rest of Socialist countries also played their part in different logistic ways, for example: asphalt donation came from Albania to pave the roads, the buses were sent from Czechoslovakia, communication services such as telephones were sent from eastern Germany, Poland built the railway factory, and Romania the central hospital in the capital. Railroad industry was developed with assistance from china and East Germany.

Basically, one third of reconstruction aid was from Soviet Union, another third from China and the rest from the other countries.

The economy bounced back quite impressively, right after the war ended more than third the state revenue was from external support, and 7 years later it was down to only 2.6% (Armstrong, 2009).

However, despite overcoming the 1950’s war atrocities, the country was founded as a totalitarian state, and not enough freedom and interaction with the rest of the world is given to its people, leaving it behind in terms of

development. Figure 3 shows the difference in development between the two Koreas.

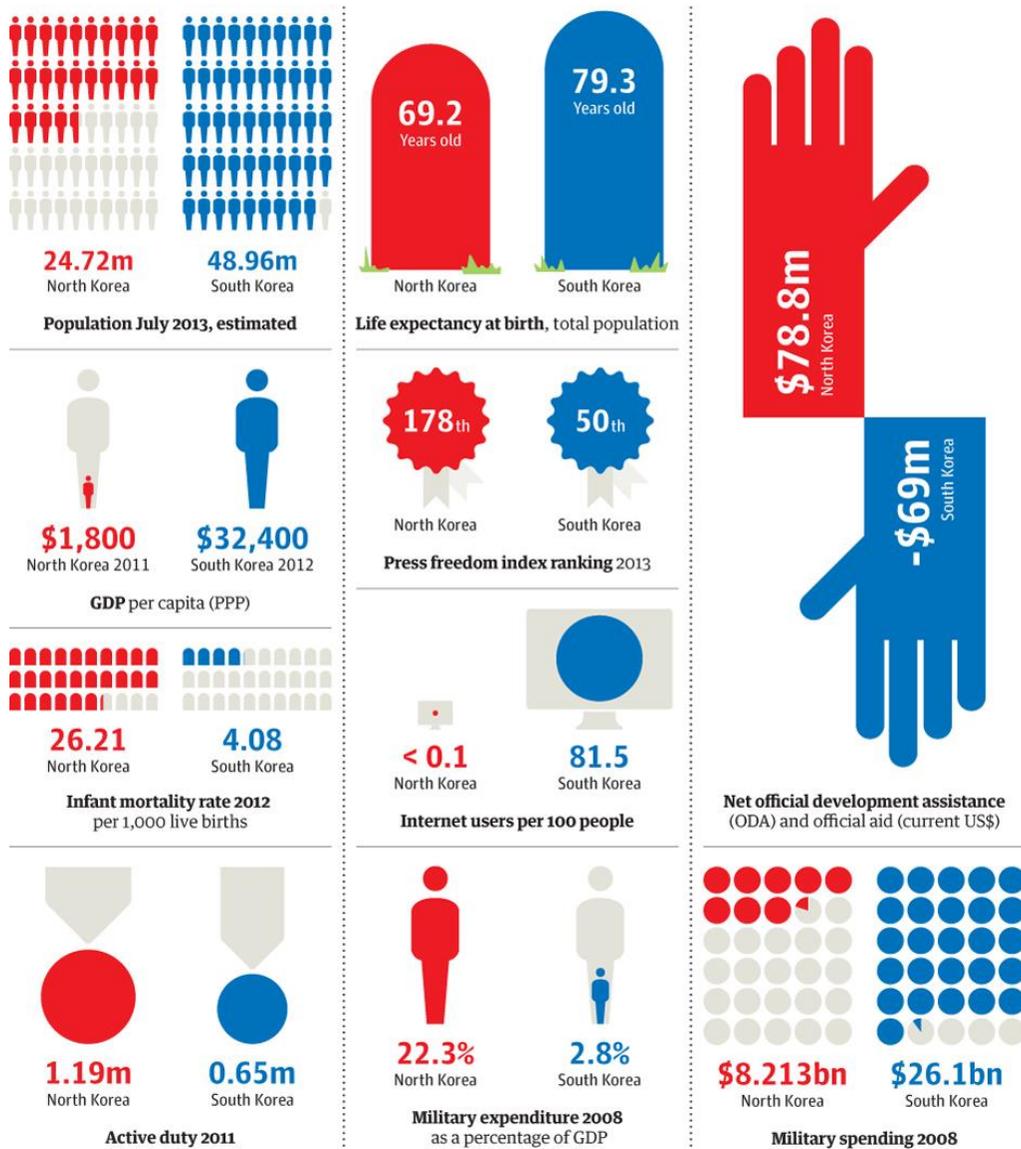
South Korea

The scenario of post-war recovery in the south was quite different to that of North Korea. After the Armistice in 1953, the help provided by US and Japan was mainly first aid donations, and the United Nations Korea Reconstruction Agency (UNKRA) which was a program led by the United States and its allies to rehabilitate South Korea, where 150 m\$ was raised by 40 voluntary governments in economic and social aid, with focus on refugees from the war. The program was suspended in 1960.

The inept political leadership did not have a serious rebuilding plan, the economy was in shambles, and the black market and corruption flourished. In 1961 a new leader, Park Chung-Hee, seized government control, he set a 5 year reconstruction plan, and sought foreign aid. Having been educated in Japan himself, he re-established diplomatic relations with Korea's former conqueror, and made an agreement with Japan for financial aid to kick start the reconstruction process. A deal was made with the US as well in the 1960s to send Korean workers to Vietnam to build military infrastructure in exchange for financial aid (Kim, 2017).

South Korea rose slowly after the war (the war ended in 1953 but development took until 1961 to start) for internal political reasons, as opposed to North Korea that flourished rapidly because of the socialists collaboration and various contributions. However, the totalitarian state of North Korea despite having nuclear weapons, industry – but later the country deteriorated and is now isolated from the rest of the world by the dictatorship, and as a result falling behind in terms of development and social standards.

North and South Korea



SOURCE: CIA WORLDFACTBOOK, REPORTERS WITHOUT BORDERS, WORLD BANK, FOREIGN POLICY, IHS MILITARY BALANCE 2012

Figure 3 North and South Korea graphic comparison CIA World factbook (the Gaurdian, 2017)

2.2 Main Elements of a PDR

In every Post-Disaster Recovery project there are main elements that together make up the process. Categorizing them and looking at each one closely facilitates the recovery and helps stakeholders identify the major holdbacks, issues, and

strength points of the situation. These elements are the ones repetitively mentioned in the literature of PDR.

2.2.1 Stakeholders:

Typical stakeholders that have been identified in the literature of PDR usually include representatives of:

- the impacted community;
- Governments, international, national, and the local government.
- civil society organizations, i.e. NGOs, community groups, and voluntary associations
- private/corporate sector (i.e., business and industry groups)
- professional groups, such as academic, training organizations, and consulting firms;
- media (EPC, 2004; Fayazi et al. 2017)

Naturally, these stakeholders have different motives, interests, and experience in PDR, thus causing potential competition or conflict among them, since their roles overlap in many ways (Fayazi et al. 2017). Consensus between these different stakeholders is key to a successful PDR project.

Specifically in a context with an absolute rule like our case study in Syria, we should differentiate between two main categories of stakeholders: external and local. The latter are represented by the government, the community, and local NGOs. While the war has been supported and funded by external allies, which will have a say in the post-war phase and in the reconstruction, and will be represented by their NGOs and their establishments. These external stakeholders are not avoidable at the beginning of the recovery process, but to ensure efficient recovery process takes place, Barakat (2005) states:

it is essential that once the system of government matures and new institutions and interests of civil society enter the system of governance, 'external' stakeholders withdraw from any involvement with internal governance and deal with national and local institutions on a strictly partnership basis

Reinforcing synergy between different stakeholders is the means to ensure the recovery process will be achievable and sustainable (Zainedin 2015). A post conflict government has to identify strategies to overcome ethnic and religious divisions amongst its people in order to reach sustainable development. To include the population in recovery, decentralization is a favored policy where government functions are dispersed to local levels (Ernstorfer et al. 2007). though

decentralization might face some difficulties if practiced immediately after conflict, it needs a stable political ground to build on in order not to lead to instability and conflict more so than peace and inclusion (Ernstorfer et al. 2007). Figure 4 shows the relations between different entities participating in the reconstruction of public sector.

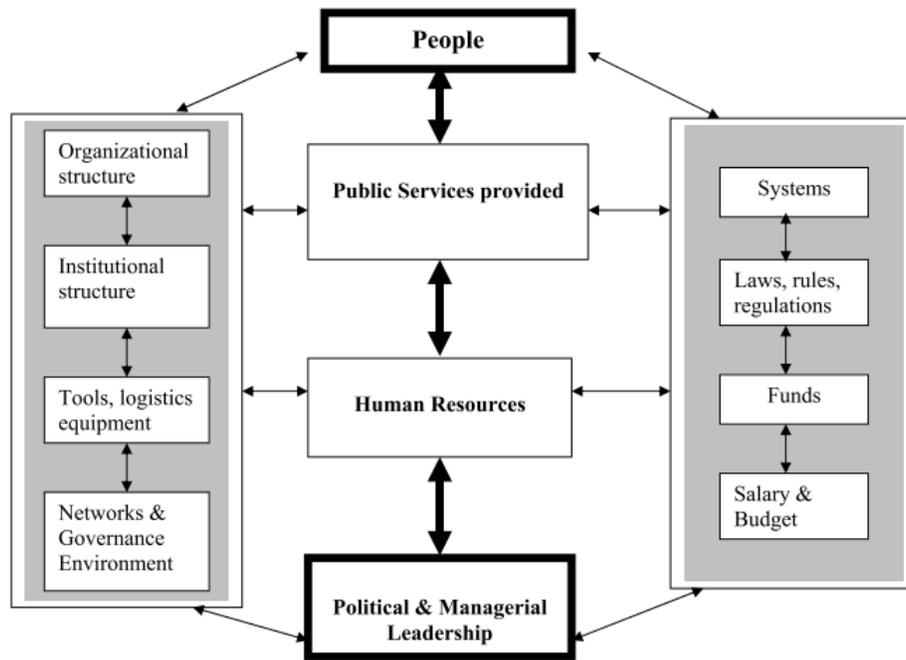


Figure 4 Post Conflict Public Sector Reconstruction (Ernstorfer et al. 2007)

2.2.2 Post-Disaster Recovery Framework

Developing a specific framework for recovery is essential in any PDR project. It must consult with key stakeholders, to implement recovery and serve all partners: government, international, and local partners, and most importantly: the affected people (National Reconstruction Authority 2016).

A framework in the post disaster recovery is essential to complement the needs assessment and plan the recovery process, it organizes the structure of agencies involved, and creates an action plan for priorities and sequencing the activities. Procurement and evaluations are also documented in the framework. It is basically a platform for multi-lateral strategies and project management among several stakeholders (GFDRR, 2015).

Bilau et al. (2015) suggest the process of post disaster reconstruction can be considered to go through three phases:

1. an enabling, strategic phase during which an institutional and budgetary framework for reconstruction is established following the disaster (on the basis of new legislation, if necessary)
2. a reconstruction planning phase where detailed plans and provisions are arranged and specific decisions are made
3. a reconstruction implementation phase where the actual reconstruction works are undertaken.

Figure 5 explains the overall framework for managing post-disaster housing reconstruction

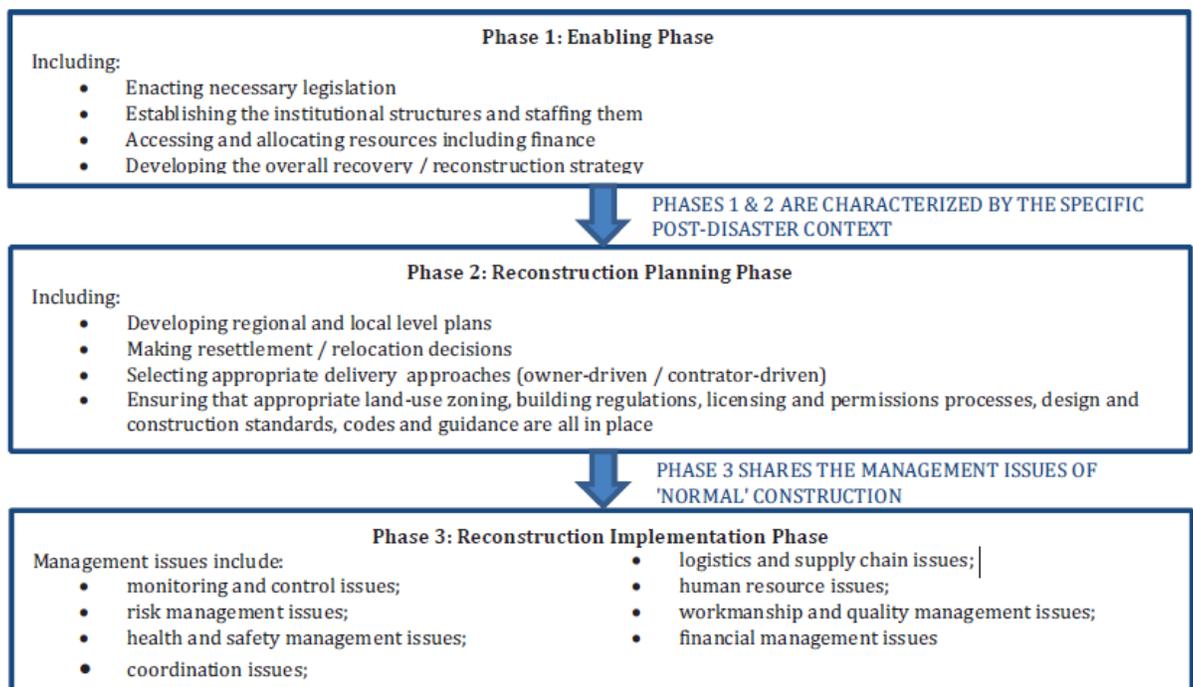


Figure 5 Overall framework for the management of housing reconstruction programmes (Bilau et al., 2015)

The base of any PDR framework is a thorough assessment of needs, capacities, and resources (Barakat, 2003). The more local resources are abundant, the fewer have to be imported, which reduces costs, and helps the local economy, ensuring the final result would be more in the context of the culture and environment, hence more appealing to the end-users. 7 categories of assets should be taken into account, namely: land, human resources, institutional resources, community resources, building materials, technology, financial resources (Barakat, 2003).

2.2.3 Financing and logistics/Funding Schemes

In a post-conflict/disaster scenario, economic interventions are a crucial part of the recovery program (Usaid, 2009), particularly in the case of post-conflict, where the status and capacity of the government was already questioned before the outbreak of violence, and financial problems are elevated by the conflict.

The state of post-conflict implies physical and human destruction, unemployment, weak governance, urgency, tensions on ethnic levels.

'Donors must consider the nature of the conflict, the nature of the peace, and the country's level of development as it emerges from the conflict' (Usaid, 2009).

Rebuilding in this case should not be an arbitrary decision, it should take into account the multiple factors of society to ensure equity, as it jeopardizes the legitimacy of the state (Usaid, 2009).

External actors make interventions and assistance (financial and technical) with certain conditions. Usually potential donors are international and regional development banks, bilateral and multilateral donors, NGOs (Barakat, 2003).

Foreign assistance post-conflict tends to witness a spike, e.g. Rwanda used to receive 3% of gross national income, that reached 95% after the conflict and fell to 20% after 5 years (Castillo & Phelps 2007). Although the capacity of post-conflict governments is not sufficient to hold the rebuilding alone, the host-country needs to hold ownership of the reforms, with as much national systems being included in the process with the multiple donors (Barakat 2003; Usaid 2009).

What to identify in a potential donor:

- intentions behind the intervention is it political, financial, or social?
- conditions of the assistance
- timescale proposed by donor to spend funds
- how long is the engagement by the donor
- what aspect of the proposed program is the donor funding?
- is it a relief intervention or a development program?

For example, in the aftermath of July 2006 war in Lebanon, the donor countries had different motives, diplomatic, political, and humanitarian (Barakat & Zyck 2010) where the Shia Iran and Sunni Gulf states battled over profile-raising in the country via contributions to reconstruction. Each donor country found a different channel to distribute their donations to rebuilding. Qatar donated \$250 million to

rebuild a Shia town: Bint Jbeil, through the adoption scheme which entitled every donor to pick a certain entity (bridge, town, suburb, etc) and adopt rebuilding it. Iran donated US\$900 million to its ally Hezbollah which utilized it in compensating the Shia community and rebuilding the southern suburb of Beirut. KSA donated \$600 million, and The Kuwait Fund US\$300 million but through a new approach to deliver the assistance through the Lebanese government (Barakat & Zyck 2010).

Barakat (2003) argues that “the majority of reconstruction costs are paid for by the affected people themselves, and their governments” assuming the scale of destruction was in the realm of the community and local government. However, he proposes that outside assistance is arranged for other parts of reconstruction that are beyond the community’s capabilities.

The UN in 1982 categorized financing models of post-disaster into three broad categories:

- 1) Outright gift
- 2) Partial support
- 3) Loan

Of which each has a context that suits, and Barakat (2003) put down the disadvantages and advantages of each of those models as shown in Table 1.

Table 1 Advantages and disadvantages of each of the funding modules (Barakat, 2003)

Finance Option	Description	Advantages	Disadvantages
Outright gift	Beneficiaries are given houses on the basis of meeting certain conditions of entitlement. The recipient has no obligation to repay the cost of the house	Removes the need to set up a system to recuperate costs Allows recipients to use their assets to meet other needs	Encourages dependency and undermines local coping mechanisms Bypasses and thus weakens local institutions Is often an imposed solution The assisting agency cannot recuperate money for new projects Number of houses provided is limited
Partial contribution through self-help	Beneficiaries may receive building material and/or technical advice, and/or a partial grant. They build their own house, usually on a communal basis or by contracting local builders	Removes the need to set up a system to recuperate costs Allows recipients to use their assets to meet other needs Increases involvement and participation by the recipients	As with the outright gift, this option can undermine both local capacity to cope and local institutions Materials provided may not meet the requirements or aspirations of the recipients Time spent on building may conflict with other priorities of the recipients, such as income generation, which may be a vital element in family recovery
Loans	There are many variations of loan programmes. The most common for reconstruction is the long-term loan. Some loans may be without interest, while others apply normal interest rates	People without resources are able to rebuild their homes and repay the loan over time Recipients have freedom to build a house according to their own choice Encourages independence and sustainability	May encourage renters to become owners Credit systems may not exist and so may need to be set up Loans may be a significant financial burden for recipients, especially if they have no previous experience of credit systems Loan systems are costly to administer Many financial institutions favour only the most credit-worthy people and may demand the creditor's house as a guarantee

Implementing reconstruction after the financial model has been sorted falls into three categories:

- The contractor model (donor driven reconstruction)
- The self-build model (owner driven reconstruction)
- The cooperative reconstruction

Deciding on a model must take into consideration which model is most appropriate for the level of destruction, whether traditional building methods are popular and there is a know-how amongst the people, had they built their own houses before (like rural areas in developing countries)? What capacities do

the stakeholders have? Are the people willing to cooperate, especially after conflict? How long is the project designated to last?

The contractor model (donor driven)

One consideration that is relevant to our case study is that in certain contexts international contractor's intervention in post disaster rebuilding might have a negative impact on local providers and contractors who might be forced out of business. Although previous disasters experience shows that a big amount of the physical destruction can be repaired by this same industry – the local one (Barakat, 2003).

To conclude, external assistance is most probably needed in major post-conflict reconstruction, but it must be utilized in the right way not to negatively affect small local construction business which has emerged from conflict and is vital to the economy of the affected population.

The major point of financing post-disaster reconstruction by decision makers and planners is to look at the beneficiaries of the process and direct them as much as possible to the local people, and local firms, which will help create the much needed new jobs for the population to regain economic stability. While international contractors can mainly handle jobs that are beyond the capabilities of the local firms (rebuilding infrastructure, dams, bridges, roads).

In developing countries, after 1970, when severe earthquakes hit Peru and Turkey, leaving behind huge destruction, it was a first for governments and external agencies to step in and a new predominant approach to reconstruction was generated: DRR or donor-driven-reconstruction. This meant that the sponsors (governments, humanitarian agencies, etc.) get to decide on the shape of the construction, which is then performed by contractors (Lyons & Schilderman, 2010).

Downsides to this approach varied, mainly: large scale building meant economic and uniform designs, that might not fit the needs of the households, and the need for large scale plots to develop this, which would take up time to acquire, and would be far from the existing infrastructure which means extra cost on developing the new proposed areas, and transferring materials, labour etc.

One of the major downsides is having to relocate the residents from where they lived, which threatens their livelihoods, and keeps them out of participation from all steps of the project, diminishing their sense of ownership (Lyons & Schilderman, 2010).

The self-build model - Owner Driven Reconstruction

A more recent approach that developed in the last couple decades in south Asia is Owner Driven Reconstruction (ODR). The concept behind it is that before any disaster took place, the norm is people constructing their own homes, so why would we alter this process in the case of reconstruction? (Lyons & Schilderman, 2010)

This approach leads to higher satisfaction with the end result, and is even faster than DDR, due to building on the existing plots and infrastructure. The contribution from the owners is not a minor one, they can provide an amount of the labour, and savings, which all reduces the cost of reconstruction. This whole process strengthens the livelihood of the community and empowers them creating a final product which is more satisfactory to them. However, this would better work in rural informal housing, than urban formal housing, where large scale construction takes place and owners are less familiar with the building techniques or any construction details, and where ownership is not that defined as in rural areas.

In the case of Aleppo, where destruction is not only limited to urban areas, but well versed in the rural areas as well, where some villages and small towns have been target for shelling and lost most of their urban environment features, both these types of reconstruction are needed, for two different textures of built environment, the urbanized and the more rural one where the locals are mainly the builders.

Cooperative reconstruction

This option is an intermediate solution where the community is going to undertake reconstruction but after being enabled by the authority of reconstruction. Materials and building knowledge are provided to the community and the reconstruction process is managed for the whole area. One big advantage of this type of reconstruction is strengthening the relations within the community which assists in reconciliation and recovery after the conflict/disaster. This approach also helps the vulnerable people depend more on their selves than an exterior intervention (Barakat, 2003).

2.2.4 Housing

This element of post-disaster reconstruction is crucial to the wellbeing of the people, as housing is such a vulnerable asset, and loss of houses whether through displacement, destruction, or dispossession affects the integrity and identity of people. Provision of physical shelters must be distinguished from provision of homes. (Barakat, 2003)

There are two main factors opposing each other in this process: the urgency of sheltering the displaced people, versus the importance of providing a sustainable long-term housing programme not just a temporary shelter, which takes a longer timeframe to plan and construct, while housing interventions are mostly rapid.

Housing reconstruction should consider mainly: “ local resources, needs, perceptions, expectations, potentials and constraints”(Barakat 2003)

The distinctive case of post-conflict makes house ownership and land tenure a problematic issue, when legal records are lost, and where houses have been deliberately targeted because of ethnicity or religion, then reconstruction will have political aftermaths that will affect and shape the process. (Barakat, 2003)

Lyons, Schilderman and Boano, (2010) identify three different housing processes: Formal urban, informal urban, and informal rural housing. Table 2 explains the three of them and shows the differences.

This categorization is relevant to assist in deciding on methods of rebuilding. The writer concludes that urban housing (towns and cities) is often expensive, land is scarce, and regulations are intact. In contrast, informal urban housing is where regulations are ignored, and construction techniques are limited to local materials and knowledge. While rural housing commonly doesn't follow regulations, and might not be registered – villages and remote towns.

Table 2 Predominant housing processes (Lyons, Schilderman and Boano, 2010)

<i>Formal urban housing</i>	<i>Informal urban housing</i>	<i>Informal rural housing</i>
Land is acquired and registered	Land is invaded or acquired informally	Land is owned and shared under traditional rules
↓	↓	↓
Site and house plans are designed and approved	Occupants build a shelter	House design and construction are mostly vernacular
↓	↓	↓
Infrastructure is installed	Over time this is expanded and improved to become a house	Infrastructure is basic and sometimes shared
↓	↓	↓
Houses are constructed	Infrastructure is accessed piecemeal and inadequately	Home ownership is often not formally registered and can pass on within families
↓	↓	
Titles are allocated	Eventually ownership may be regularized	
↓		
Houses are occupied		

The authors argue that the first type of housing is mainly the least affected by disasters considering it was built according to regulations that often consider disaster-resistance (Michal Lyons et al. 2010).

In all various theories of disaster response community consultation is a key factor (Anh et al. 2014). The method of consulting the population remains challenging. A certain connection with the end-users or beneficiaries is highly recommended even in indirect ways such as hiring local people in the reconstruction process. To identify some issues facing this contribution by the community, Figure 6 below explains by a case study from Afghanistan

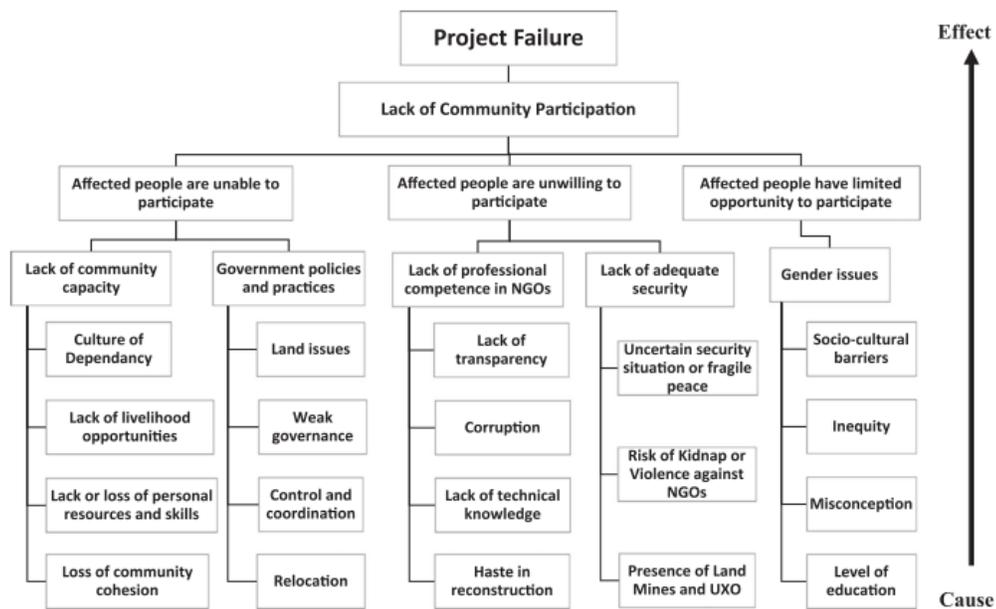


Figure 6 Cause and effect of community participation in reconstruction (Sadiqi et al., 2016)

Sustainable disaster housing is identified with 5 main aspects: "technical, economic (financial), social, environmental, and institutional (organisational)" (Barakat 2003).

Beneficiaries should be identified to assess the most vulnerable in society, i.e. female headed families, bigger families, families whose houses are destroyed, families with elderly or disabled members, etc. this helps in prioritizing the provision of housing in terms of greatest need, since the community as a whole needs aid and housing provision.

To examine community involvement in post disaster re-construction Lawther (2009) analyzed all the factors through two reconstruction stages on two different locations in the post-disaster of 2004 Tsunami, which was a large scale natural disaster in the modern times, that has generated a large scale philanthropy movement from around the world, and the British red cross dedicated a portion of that amount to rebuild the houses that were affected. He examined closely the case of the Maldives where 466 houses were rebuilt, on two phases, and sheds light on the opportunities, and challenges that engaging the local community implies. He then defines the skills required to achieve optimum engagement of the community. Part of the risks include sacrificing cost and quality, he even concludes that if the engagement wasn't by people with the desired skills and intentions, it could be skipped altogether (Lawther, 2009).

2.2.5 Infrastructure

Anand (2012) fragmented infrastructure as term to several entities:

- Economic infrastructure that means transportation, energy, communications.
- Social infrastructure that means water and sanitation, public facilities (educational, healthcare).
- Institutional infrastructure that includes facilities, equipment and the governance personnel.

He found that three dimensions to assess infrastructure policies are: state rebuilding, preventing conflict, reducing poverty. Assessing how central infrastructure is in a Post Conflict Reconstruction PCR scenario depends on the level of damage, and how vital is it to sustain activities within the post conflict reconstruction. the more ethnically diverse the country is, the more conflict will affect the social capital negatively (Anand 2005).

The main challenges that face restoration of infrastructure are:

1. high cost versus commercial risk that makes such projects not attractive for corporate investors (Mardirosian 2010)
2. providing services to all sides of the conflict is necessary to ensure stability
3. weak governance and legal systems of post-conflict states renders into corruption and weak management to coordinate such large scale projects.
4. any shifts in political support or threat to security and stability means infrastructure projects are delayed further (Anand, 2012)

One of the important points on infrastructure recovery in conflict, is regarding rebuilding roads and getting connections back in place, for peacekeepers to contain conflict, and taking into consideration that rebels or terrorist groups, might be able to have more mobility and that would make the recovery process delayed even further, which he called *the governance dilemma*, explained in Figure 7 (Anand 2005)

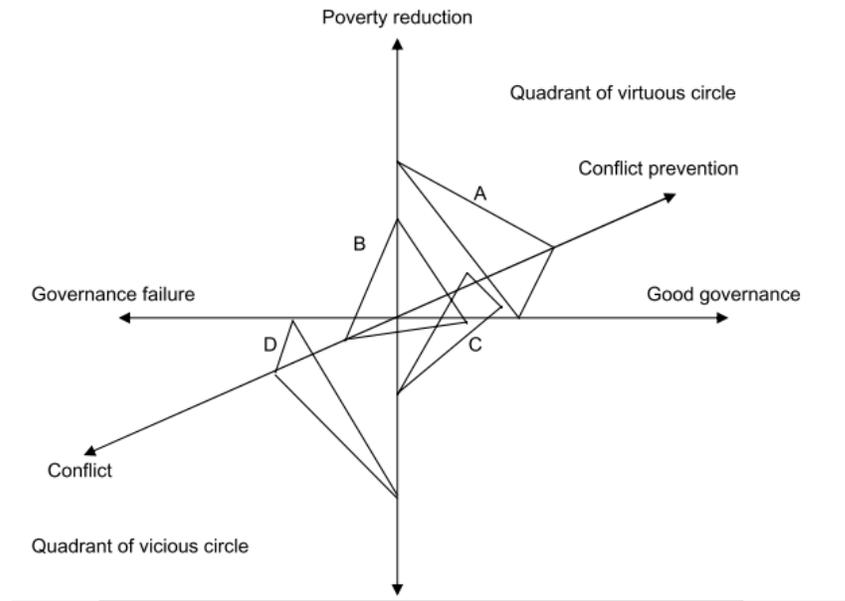


Figure 7 The new framework developed by Anand to assess strategies for their impact on conflict prevention, governance and poverty reduction (Anand,2005)

He noted that visual media from scenes of conflict tend to show destruction of facilities and highlight it, giving it more spotlight than ‘social/soft’ infrastructure, hence it creates bias towards rebuilding the physical infrastructure and less focus on the political and social aspects that are crucial to sustain peace (Anand, 2005).

The effect of public services is further than just a service to the population, but it reinforces the credibility of governance and public administration helping “re-establish credibility and trust in the state” (Ernstorfer et al. 2007). All these services normally reflect the state, transforming a government means transforming the public services, which should be representative, productive, and reflect the needs of the people to assist in sustaining peace and development (Ernstorfer et al. 2007).

Analysis of investment patterns in PCR reveals that the first restoration of infrastructure that happens is normally telecommunications, followed by transportation, energy – electricity projects often take 3 years and last is water projects (Anand 2012; Mardirosian 2010).

2.2.6 Social Aspect of Recovery

The social aspects of a post-disaster recovery scheme are one of the major areas to be looked at, specifically in post-conflict cases like our case study. Literature

distinguishes between disasters which are natural or man-made, the latter is more complicated in terms of social recovery, and the acceptance of the people of the losses of family members, acquisitions, homes and jobs (Qudsi, 2016). The case of Japan earthquake in 1995 namely Kobe city was an ideal reconstruction process, due to the organization of the society, and civic participation which was well established before the crisis occurred. While cases of pre-disaster institutional weakness affects the recovery process directly (Qudsi, 2016). In our case study one crucial factor is the different backgrounds political, religious and ethnic of the population affected, hence social recovery is key in this case to a healthy recovery.

Recovering the physical environment is not sufficient to allow the people to come back and inhabit the affected city/town after a conflict. Looking at other cases of conflict we can see that equity is a major issue that has to be ensured in the post-conflict recovery, where all levels of society get equal access to resources, equal efforts to rebuild, or else the flames that ignited the conflict may spark again.

Del Castillo and Phelps (2007) conclude in their research:

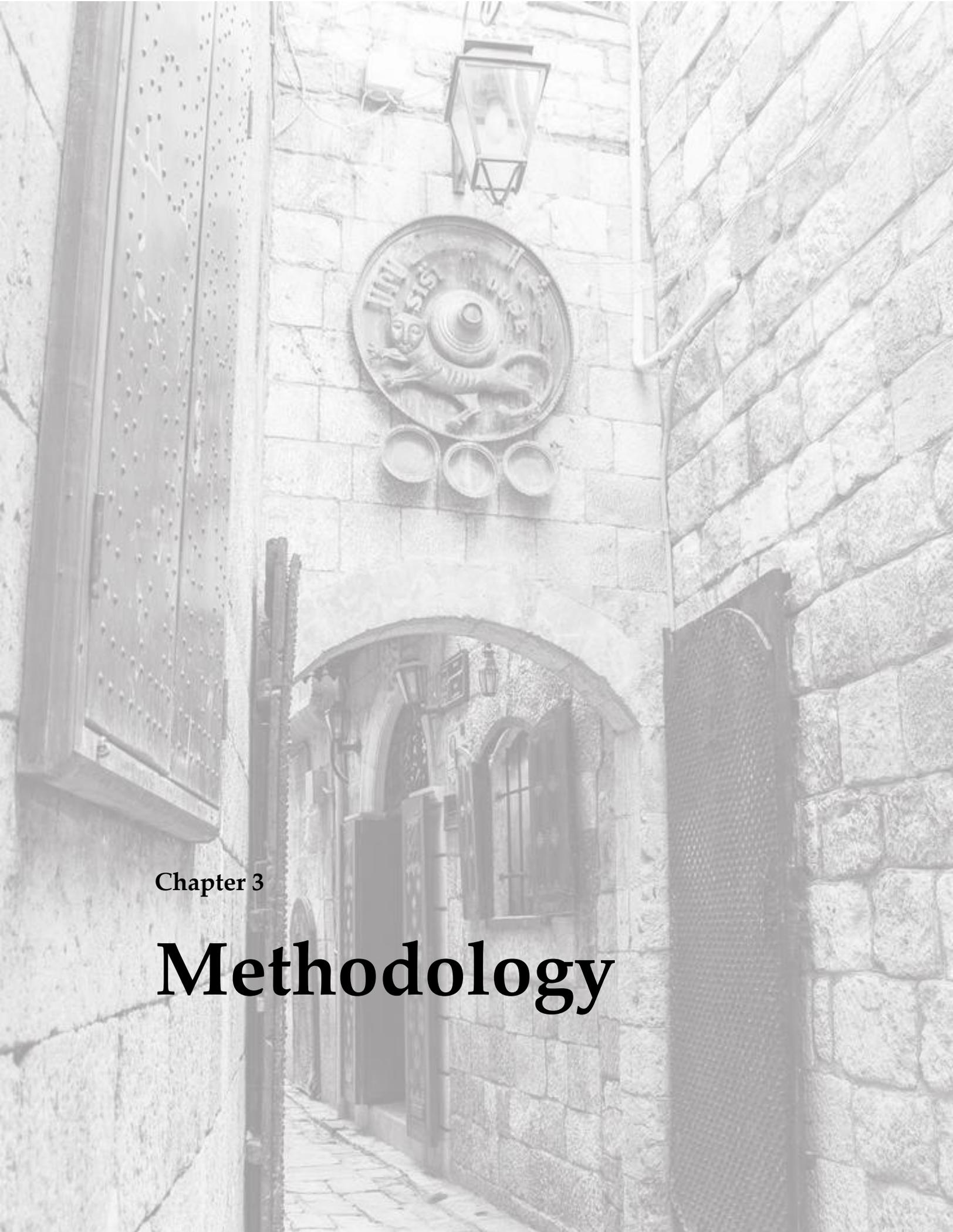
The problems of war-ravaged countries are far more acute and their choices much more constrained. Indeed, they confront a double challenge: to create dynamic economies and to promote, at the same time, economic and social inclusion. Without both of these elements, national reconciliation will likely prove impossible.

They pointed out several important points on post-conflict era:

- social inclusion is key, to provide jobs and give the people stability and economic independence
- public associations of safety and security such as judiciary, police departments, should be brought back in effect to maintain the safety of citizens and give the sense of security that will help people return to their homelands
- though a flexible labor market is key, but it is not sufficient
- welfare programs and minimum-wage laws did not prove effective either however raising wages in the private sector is key through wage subsidy
- learning from Iraq, Afghanistan, east Timor, Kosovo and Africa: inclusion paves the road to peace, and encourage donors to invest in the country
- donors often ask for their national personnel and companies to be used in the economic reconstruction process, at the higher end of the spectrum, leaving only blue collar jobs for the nationals, this must be avoided when

possible, to help integrate the educated national personnel in the rebuilding process of their country

- subsidizing firms to hire nationals would contribute to peace building and conflict prevention (Castillo & Phelps, 2007)
- when conflict emerged due to ethnic and religious reasons (like our case study) addressing the root problems will help stabilize peace and ensure turmoil will not start again in the future.



Chapter 3

Methodology

There has been quite a few research papers that have considered this topic focusing on opportunities of reconstruction, hindrances and obstacles, and many plans have been proposed to aid the authorities and legislative bodies take an action.

Different research approaches that can/were used to study this area

Many research methods have been applied to achieve results on the post-disaster reconstruction topic, these ranged from a solely theoretical approach – literature reviews on what have been done in the field to assess the progress/evaluate evolution and application of PDR studies, to more hands on experience such as case studies of actual PDR projects, or in some cases developing an automated system through remote sensing to count the number of the tents/displaced people, and even a system that would recommend the optimal temporary housing from the available public buildings.

3.1 Literature Review:

Literature review in this field of study would have a focus on guidelines for post-disaster reconstruction. For example, Borg et al. (2014) depended solely on this method to define the vulnerability assessment for Venice.

The research of YI and Yang in 2014 was built on assessing post-disaster reconstruction works done in the past 10 years focusing on research trends, and they identified several stages of temporary housing. The literature review had several phases, from scanning titles by a software to visually reading abstracts and eliminating the ones that didn't fall under the specified research. The results found that the US is a pioneer with 34% of the total from 2002-2012, and the developed world - despite suffering such disasters - fell behind in research. The themes of the papers were identified as well, which ranged from waste management, stake holder analysis, to sustainable reconstruction and governance and infrastructure matters.

Given the objective of the research is to spot the trends of development in the field, the method actually aided in the objective, and the results were of important value to the overall research on PDR, where the regions that are scarce in this field of study were identified, and the most preferable system of reconstruction was also defined.

The research of Abulnour in 2013 built on the same ground, by reviewing the literature and defining the stakeholders that are contributing to the process of temporary dwellings. The author here also found two different approaches to the delivery of the dwellings, and compared them to come out with importance of the uniqueness of each situation and some recommendations that work on all cases of PDR. There was a few case studies after the literature review in this research that aided in the recommendations on a more practical base than merely readings. This research about post-disaster temporary dwelling also started out by pointing the difference between shelters and houses, then defined the stakeholders which are involved in the provision of temporary dwellings, which include: disaster relief organizations, governments, citizens, NGOs, corporates, and a few more (Abulnour, 2013).

The author also compared the top-down, and bottom-up approaches to dwellings delivery and establishment, and the comparison is whether the first process is initiated by the governments, or the latter which involves the end users and communities in the decision. The recommendations for management of post-disaster temporary dwellings in this paper included the importance of distinctiveness of each situation, engaging the public, a rapid response, setting the priorities correctly, and coordination amongst all stakeholders. After the literature review, the author took a few examples from previous disasters ranging from the USA to Bangladesh, and examined these cases and the solutions applied in each. He then prescribed the qualitative characteristics of those dwellings, also taking examples from Kashmir and Pakistan. He also looked at the use of prefabricated modules, examples from Japan, communal participation, example from Turkey, affordability, and self-help. He then found some recommendations for temporary dwellings.

In 2014 a research by Bashrawi, Garetti and Moodley followed the same methodology, by looking at the design of disaster relief shelters. They examined different aspects of the issue, including environment, economy, technical, and sociocultural, they looked at integrating these factors in the decision making and design of those shelters. They also came up with a classification of the shelters into 7 groups. The authors looked at current guidelines, such as the transitional shelter guidance by International Organization for Migration, the Collective Centre Guidelines, and others. They looked at the matter from environmental, economic, technical, and sociocultural perspectives, how to incorporate these

factors in the decision making and later designing and provision of disaster relief shelters. They also classified the shelters into 7 groups from emergency to shelter until permanent housing. And they concluded that stakeholders should look at the design of the shelters well enough before taking the decision and mounting the units.

3.2 Quantitative methods: Mathematical Modeling/Experimental:

This methodology is more practical than theoretical, in the PDR literature most mathematical modeling is closely related to satellite imagery analysis or photogrammetry, since assessing the scale and distribution of destruction makes up an important part of the relief/reconstruction process. In some cases photogrammetry was used on tents to estimate the number of refugees, in others in was used on destructed towns to assess the destruction. Satellite imagery and calculations are a tool to aid directly in finding solutions to the displaced people through analysis of satellite imagery, or data to provide the best shelter/housing possible in the current situation.

Alwis Pitts and So (2017) relied on satellite imagery to detect change in urban texture and assess recovery (de Alwis Pitts & So 2017). Mochizuki and Chang (2017) also used quantitative method to assess the pre and post disaster communities in terms of solar energy usage in Japan (Mochizuki & Chang 2017). Hese and Heyer (2017) used high resolution satellite imagery on their research on post-tsunami reconstruction. Daly et al. (2017) used this same methodology in Indonesia tsunami to analyze livelihood recovery.

Xu et al. (2014) used the same for early impact analysis after the disaster. Hoque et al. (2017) reviewed this approach: remote sensing and spatial analysis, and the various applications they have for disaster assessment and recovery (Al-Amin Hoque et al. 2017)

A detailed example is Wang, and Smith (2015) who studied certain satellite images of the displaced populations living in refugee camps and developed methods to extract the data from them and after examining 4 different methods of extracting data from these images, developed a mathematical morphology to help analyze these images (Wang and Smith, 2015) .The accuracy of their results was around 81% caused by some objects around the camp which were recognized by the software as tents, while they were in real just objects with higher contrast than their surroundings, but no tent went unidentified. So the efficiency of the tool developed was significant, compared to the traditional method of field scanning, or visually interpreting the images and that study has been conducted

on two different locations: Thailand and Turkey. The method chosen has significant results, in comparison to the field experiments of scanning the tents and dislocated people in person, which is costly in terms of finance and time.

Another similar research was that of El-Anwar, El-Rayes and Elnashai (2009) who constructed their research as an automated system to optimize the post-disaster temporary housing allocation. The study took place in the USA, and despite the impact assessment software systems used by the Federal Emergency Management Agency (FEMA), which estimate the damage caused by earthquakes and the numbers of displaced families, the ability to find an optimized temporary housing for them was not finest. Many of those dwellings were in an unsafe area, caused environmental damage, were of poor quality, and suffered poor social life. The objective to be achieved in the prospective temporary housing arrangement, included safety, the environment, socio-economic impacts. Decision makers were allowed to add other parameters as their objectives to optimize. The characteristics of the available housing was to be met with the displaced families' data and the outcome is the feasible temporary housing alternatives. The outcome was displayed in a graphic visual form to make comprehensible. The models proposed helped with a temporary housing problem, finding the new optimized housing based on certain factors.

Rakes et al. (2014) conducted a study to assist in the interim housing needed after a disaster. They also used mathematical modeling, where they proposed a system that would support for allocating the optimum housing amongst the available alternatives, acknowledging that the dislocated people would ideally go back to their home neighborhoods/cities, after the critical stage of the post-disaster has passed. A model was used with variables, the parameters included number of families in need of housing, the area of preference, the distances to services – health, education – size of each family, and many others. The alternatives varied in type and size, and mostly belonged to the government.

They used a CPLEX optimizer, and developed a program to assist in the output, especially that the variables and constraints are numerous. Registration of families by authorities would be required to know the size and credentials of each family. The result was a model that proposed the best alternative for interim housing

A recent and relevant study by Marx in 2016, aimed at documenting urban destruction in the Syrian conflict, specifically the two largest cities in Syria: Aleppo and Damascus. The author used pre conflict baseline of high resolution satellite imagery, opposed to images from the first year of the conflict. The essential principle behind this is detecting observable change to the Earth's surface, through remote sensing imagery, which is quite a popular method in monitoring conflicts, and can assist in counting destroyed homes which also helps in counting refugees, and eyewitness human rights violations especially when indiscriminate weapons are used. Figure 8 shows how a demolition of a building can be detected by pixels on the automated program (Marx 2016).



Figure 8 Residential housing from Damascus, to the left - Neistat 2014, to the right Google Earth 2015 (Marx, 2016)

The study concluded with 74% accuracy and the process of downloading pixels for an entire city was very time consuming. Noise from baseline images, shadows, and buildings that were constructed newly are main factors that caused less accuracy. This research highlighted one main challenge in conflicts data, where ground reference is scarce, satellite imagery is very common in these cases.

3.3 Qualitative methods

Wilczak (2017), Nakanishi & Black (2016), and Hooper (2014) all used interviews as their methodology on collecting data for their qualitative research. (Wilczak 2017; Nakanishi & Black 2016; Hooper 2014)

In 2015 a research was conducted by Hoba and Johnson in Cote d'Ivoire, on a post conflict reconstruction of a single building – a university. The rebuilding process focused on education institutions to demonstrate that education is vital to the recovery of a nation, hence Universie Delix in Abidjan was picked – the city that witnessed the conflict in 2010. The analysis is mainly on the process, the interdisciplinary act, the network, how decisions are implemented as a result from this interplay. The participants are stakeholders: from the faculty staff,

administration, students, and from the government's side some officials. (Turner & Hoba, 2015)

They were asked questions in a responsive interview, and to analyze the data categorical aggregation and conceptual propositions were used. The authors found three major findings:

- (i) relational patterns: the interplay of the network that makes up the reconstruction, and analyzing how each of the stake holders viewed things differently, the students, the ministry, and the university officials.
- (ii) conflict, culture and congruence, the priorities differed among participants.
- (iii) perception mismanagement.

The questions of the research were:

How do actors interact during rebuilding? What happens during this process? How are post-conflict policies negotiated and manifested in the practice of rebuilding a university?

And the challenges to rebuilding were identified as: traces of the conflict, and fragmentation – because the rebuilding process needs a collective effort, but strategic and institutional uncertainty play a role in preventing collaborative action. The authors concluded that the preliminary considerations for rebuilding are: network relations and process norms, perception management, and policy priorities (Turner & Hoba, 2015).

A similar methodology was developed by Sadiqi in 2016 for a research in Afghanistan on community participation in post-disaster housing reconstruction. This is the second sequence of the study, in which the qualitative approach was used, by semi-structured interviews to collect useful data around the factors identified in the first study: the hindrances of community participation in reconstruction projects. This method – semi-structured interviews - helps the author explore new knowledge from people about the already identified factors. Most of the interviews were held using the internet (computer assisted interviews, since the researcher was not in the same place of the study. All participants were well-versed in the post-disaster recovery and reconstruction industry, from national and international NGOs and the UN operating in Afghanistan. The fact that they are PDR professionals made the data was rich insight on the particular situation.

The study resulted in identifying common barriers to community participation in post disaster reconstruction, with cause an effect analysis.

The barriers are:

lack of community capacity, gender issues, lack of professional competence in NGOs, government policies and practices, and lack of adequate security.(Sadiqi et al. 2016)

The authors also developed a framework to assist in overcoming the barriers identified, through a logical sequence based on the data collected through the interviews, as shown in Figure 9.

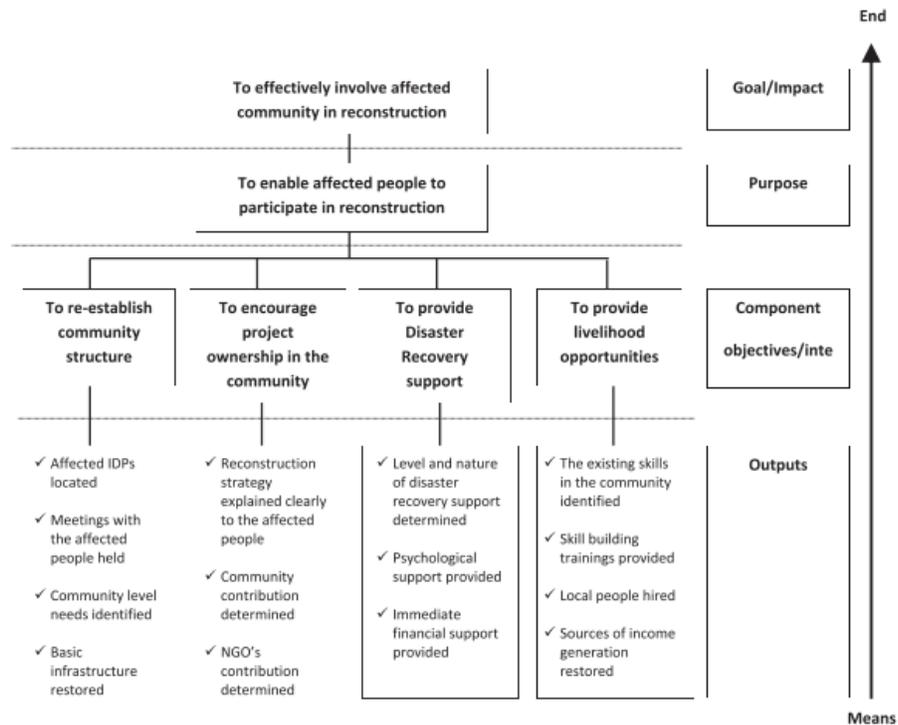


Figure 9 Objective Tree (Sadiqi et al. 2016)

The research by Setiawan and Barrett in 2016 used a similar qualitative approach to investigate in the built environment element of economic development in post conflict response. The study took place in Indonesia, where communal conflicts occurred in 1990s. Three places where investigated: Solo, Poso and Sambas, based

on a hypothetical question whether the built environment has an effect to the violent conflicts.

The methodology depended on unstructured/open ended interviews to ensure flexibility in sequencing and wording questions. Grounded Theory Style was adopted in this research to analyse the interviews. Four stakeholders in urban development were represented in the interviews: the government, experts/planning practitioners, NGOs, and local leaders from various socio-cultural groups. The findings identified four factors to the built environment role in post-conflict

- social interaction between socio-cultural groups
- the role of the traditional market as meetings places for protecting economic activity
- the role of informal sectors as a support for formal economic sectors
- urban heritage and conservations to improve economic development (Setiawan & Barrett, 2016).

3.4 Mixed Mode:

Domingo and Luo (2017) used both qualitative and quantitative approaches, literature review, case studies, and interviews (Domingo & Luo 2017). Anh et al. (2014) also used quantitative surveys and case studies in their research on reconstruction to investigate the community participation role (Anh et al. 2014).

Mannakkara & Wilkinson (2016) used several methodologies namely: qualitative case study and semi-structured interview on the course of four years to collect data on Building Back Better – a prominent post-disaster concept (Mannakkara & Wilkinson 2016).

Parvaa & Rahimianb (2014) similarly used several methodologies to investigate the transformation process of post-earthquake housing in Iran. Their methods included “systematic observations, map analysis over a 37 years period and interviews” (Parva & Rahimian, 2014).

The Recovery Project, by Brown, Saito and Spence in (2008) depended on a brief literature review to introduce, then examined satellite imagery, internet based statistics and field survey techniques to examine the indicators. The authors performed a user needs survey that lasted for 6 months alone, before processing the data, the survey is to assess the expected requirements for indicators of monitoring recovery. It was conducted on 40 personnel working with aid

organizations, it was emailed and they were also contacted personally. Most organizations (90%) said they already use field surveys and published statistics to assess the needs and three quarters of the surveyed organizations said they used satellite imagery. The next survey conducted was on people to see what indicators they thought is useful to be used to map the progress. Most of the results preferred multiple indicators rather than a simple approach. The digital images were bought from Ikonos and Quickbird, and the assessment of the recovery of two different case studies, one in Thailand after tsunami of 2004, and one in Pakistan after an earthquake in 2005. The results were not easy to comprehend, and the difficulties in evaluating such recovery was clear. The paper summed up by setting the complexities to such measuring and evaluating of recovery, and in the second phase of the project the authors will re-evaluate the indicators, and find ways to monitor them.

Another mixed mode method was done in 2011 by Shearer, on the evolution and recovery of housing in PDR. The study took a literature review form into the typology that monitors the phases of PDR, then looked at two case studies from Turkey and the Philippines after disasters. The research titled "Evolution and Recovery: Adaptable Housing Reconstruction in Post Disaster Scenarios" looked at the response of the built environment to the adjusting requirements of the displaced people after a disaster. The study was initiating a typology that monitors the multiple phases of a PDR redevelopment process. The research looked at the needs of the people, and the pros of looking at the process as a progressive one rather than an end result. Stakeholder's contribution was discussed, revolving from the shelter to the permanent housing, to achieve a framework for the solution, and the role of planning and management was highlighted, whether it is from national, local, or international backgrounds, especially in cases where destruction is major.

A research that followed a similar methodology is that of Felix, Branco and Feio, in 2013 which started by literature reviews and progressed into case studies. They also identified multiple stages of housing, and assessed the problems associated with them from sustainability and cultural perspectives.

Their research was basically relying on literature review and sample case studies from previous experiences on post-disaster temporary housing – where they identified four stages of housing in post-disaster situations: firstly an emergency shelter, then a temporary shelter, a temporary housing, and finally a permanent housing. The first two (shelters) are where people are merely protected, but will

probably not peruse their daily routines. They closely examined different types of temporary housing solutions, and assessed their problems from two points of view: sustainability, and cultural inadequacy. The final recommendations from this study suggested that context understanding is a crucial factor, and community participation helps in the spirits of cooperation as well as the assessment of local needs. They favored using local resources and construction techniques, than prefabricated units which are made abroad and transported to the disaster area, which are costly, less adaptive to the vernacular environment, and difficult to deal with after the sheltering stage has gone.

A study conducted in 2015 by Bliau et al. looked at the framework for managing post disaster housing reconstruction, and they analyzed 4 case studies, to identify successes and failures, the examples are natural disasters that took place in each of: Japan, Indonesia, Sri Lanka, Iran, and India (Bilau et al, 2015).

The main success factor identified by the authors was the suitable institutional framework, where in Japan, India and Iran, there was central coordination on different levels, local governments, state, and national. All those institutional structures, guidelines for housing reconstruction where made effective through legislative acts. The fact that those countries had suffered disasters earlier added to the experience to establish the new strategies. In the Iran example, the city of Bam, the programme for reconstruction allowed technical and economic observation, and the housing proposed was in line with national building codes, with locals participating with their technical knowledge which speeded up the process (Bilau et al, 2015).

In India, the city of Gujarat, five reconstruction methods were tested: “the owner-driven approach, subsidiary approach, participatory approach, contractor-driven in-situ and contractor-driven ex nihilo approaches” (Bilau et al, 2015). A new building code was introduced to ensure the safety of the reconstructed houses. Authorities monitoring the reconstruction works played a vital role in the success, and donor organizations, on all levels from private to international were included in the process. The owner driven approach required extra monitoring, since the end users were involved even in the design phase, the financial assessment, and directly in rebuilding. This method has resulted in greater satisfaction with the product. Worth noting that the people had received specific training to empower them and enlighten them on reconstruction works.

The faults spotted by the authors of this paper can be summed in: lack of pre-existing policy and institutional framework, like the case of Sri Lanka 2004,

corruption possibilities, lack of land for relocation, lack of reliable data on housing targets, which all resulted in poor implementation of reconstruction plans, and delays.

Whereas in India, where settlements were relocated to safer sites, the people wanted to settle back in their same region, and contractor-driven approach led to less satisfaction with the end result.

The authors concluded three phases that any housing reconstruction process can use:

1. The strategic phase for financial and institutional framework is defined
2. A planning phase for the reconstruction – detailed drawings
3. The implementation of reconstruction

The aspects of reconstructing after a disaster are many, and one of them is the huge amount of waste generated by the destruction of buildings, and natural habitat. A recent study by Brown and Milke (2016) looked at the recycling of debris after a disaster, and used literature reviews, interviews, and active participatory research coming from 5 different disasters that took place in developed countries ranging from Australia, Italy, the US, New Zealand and Japan, where institutional frameworks and disaster response capacities allowed for such advanced methods. They identified benefits from recycling disaster waste that included: reducing the amount of landfill areas, and raw material demand for reconstruction, the cost of managing waste is less, and more jobs are created for the locals (Brown and Milke, 2016)

The interviews conducted were semi-constructed interviews with experts on waste management, with topics ranging from disaster impacts, properties of the waste, legislative frameworks, funding, etc.

They also noted that the percentage of recycling varies, without being able to identify why. For instance, in New Mexico after the 2000 Grande Wildfire, the rate was 95%, where in Louisiana after Hurricane Katrina in 2005, landfilling was the method used mostly in waste management. In the Australian case, following bushfires in 2009, the waste – charred remains of buildings and vegetation, was recycled by the contractor to reduce the cost of demolition, without any regulatory requirement by authorities. While in the New Zealand example the authorities included recycling in the plan for waste management, for

environmental benefits, and to reduce landfill areas. Also in Japan, the ministry of environment generated guidelines for waste management of the disaster, but the waste had to be monitored for radioactivity, following the Fukushima nuclear power plant incident.

A relevant paper by Anand on “Getting Infrastructure Priorities Right in Post-Conflict Reconstruction” looked at infrastructure key challenges in post-conflict reconstruction. The author made evaluation studies on a number of previous conflicts and identified action points for policymakers specifically for post-conflict scenarios.

Another mixed mode methodology was used in 2016 by Dikmen and Elias-Ozkan in Turkey, to evaluate the post-disaster (earthquake) reconstruction in 2000 of typical designs and custom designed homes by the ministry of Environment and Urbanisation. The methodology relied on questionnaire and interviews with the 40 beneficiaries, and four case studies on different typologies of housing (Dikmen & Elias-Ozkan, 2016).

The authors compared Custom Designed houses, which were built in existing villages, to Typical Designed permanent houses which were built in the new settlements. The latter had low satisfaction rate among users. More than half of the houses were altered in design to fit their needs, the reason being architects who prepared those designs were not familiar with rural areas’ lifestyle. No discussion with end-users occurred before the design phase. The findings of this study reveal the importance of integrating the beneficiaries of post-disaster housing in the design phase, especially in rural areas where traditions and lifestyles are an important factor in the economy.

Vahanvati & Mulligan (2017) looked at a new model for effective post disaster housing reconstruction, and used a comparative case study of several PDR projects in India to assess the effectiveness of traditional project management (Vahanvati & Mulligan, 2017).

3.5 Micro and Macro Level Analysis

The research by Kim and Choi in 2013 started by the continuous suffering from typhoons in Korea, and wanted to improve the management of such PDR projects. The methodology was a macro and micro level analysis of some flood PDR projects, where the first is a study of a group of flood post disaster reconstruction project, with a holistic look at the outcomes, resources, progress,

and other factors and elements that affect the reconstruction process. The latter focuses on a single particular project, and it has chosen one of the severely affected areas with datasets about the resources, time, and all informative details to make it a fair sample of the recurring incident of flooding in Korea. The research looked at the “goals of project management in post-disaster rebuild projects” in an area that suffers from super typhoons, and works of PDR are continuous. The authors aimed to improve the management performance of those PDR projects, and wanted to identify the reasons behind low performance in quality and quantity. The results identified multiple challenges that affected the project management, which included lack of preparation for execution plans, coordination issues, and contractor’s qualification level.

Selection and justification of the method chosen

To answer the research question, the method selected amongst the ones similar research has used is mixed-mode, between literature review, case studies, making a proposed framework for the restructuring of the city, and then assessing it by a questionnaire survey and open ended questions, answered by experts in the field of PDR, PCR, and specifically on the case of reconstruction in Syria.

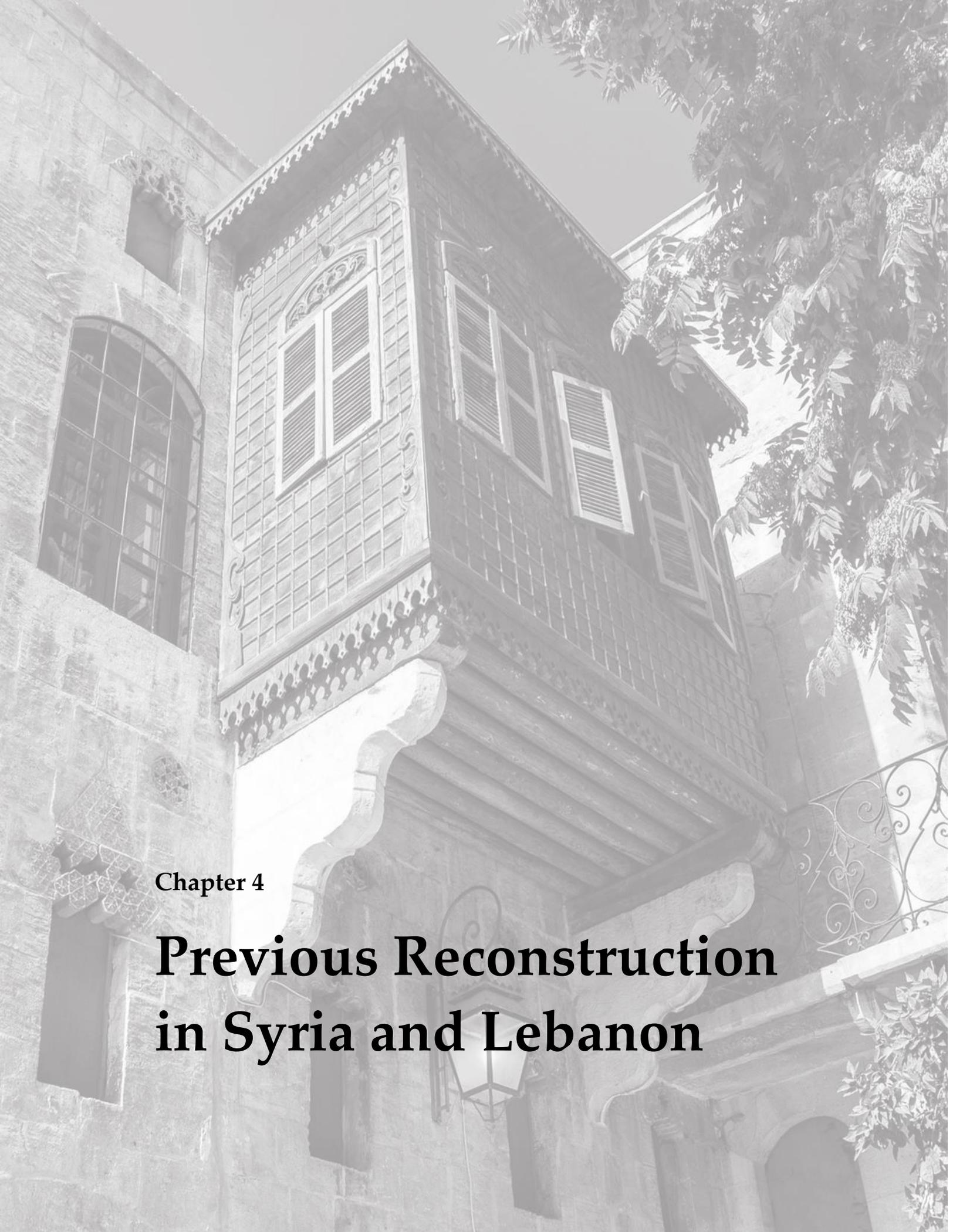
The framework proposed would be modified based on the experts’ opinions, and final recommendations will be concluded.

Because of the prevailing situation in the city the field experiments or actual measurements to assess the destruction or scan the dislocated people will not be appropriate for this particular research. The fact that there is scarcity in research on topics like post-disaster reconstruction in the region (Yi, and Yang, 2014) implies that a literature review and overviewing of past topics is important to build upon, and to initiate the guidelines and framework suitable for the case studied.

Using satellite imagery to assess the before and after situations of some areas can be utilized to comprehend the scale of damage, using Google Earth Pro, where shots from 2011 can be compared to shots from 2016, and real photos of buildings before and after will be used to assess the damage scale, and classify the damage into tiers, with different treatment for each tier, as this situation is very diverse in terms of destruction level.

This dissertation will be a base for the assessment and guidelines for reconstruction, as, unfortunately, the conflict is ongoing, and any results we achieve now are subject to change, with the enduring shelling and changing

political ground, but the main guidelines and recommendations for post-war recovery are firm, and this could be the first theoretical background of any reconstruction to be planned later.



Chapter 4

Previous Reconstruction in Syria and Lebanon

The Syrian architectural heritage as we witness it today has survived many disasters, natural and manmade. That including the famous citadels and old souks, of which were all modified due to urban redevelopment, function upgrading, and destruction after disasters (Soufan & Reforms 2015).

From the PDR discourse, it is a given than history of dealing with reconstruction and disasters gives the country more resilience and experience on such projects. Particularly in Syria's recent history, no such destruction occurred to look at strategies and responses of PDR. However, there has been some incidents of natural and manmade disasters that we will look at to examine PDR history in the country, though the scale is quite minor.

Lebanon on the other hand, being a close neighbor and under very similar geopolitical circumstances of our case study (Aleppo/Syria) has witnessed in the recent history several examples for PCR. Hence, it is the closest and most relevant example that we should look at to learn lessons for Aleppo's reconstruction.

4.2 Bab Tuma Story, 1862

In a UNESCO publication Syrian author Soufan goes through several scenarios of reconstruction on a minor scale, that occurred in Syria after the mid-19th century (Soufan & Reforms 2015)

In 1862 riots broke between two sects in Mont-Lebanon, and Bab Tuma, a Christian quarter in Damascus was under attack by Ottoman military and it was heavily destructed. Figure 10 shows the destruction of the quarter in that conflict.



Figure 10 Bab Tuma ruins after the riots.

To fund the rebuilding process, an international committee consisting of the extraordinary envoy of the Sublime-Porte, Fouad Pasha and representatives of

Grand Britain, France, Russia, Prussia and Austria, to organize the reconstruction process, the materials used for both, movable and immovable estates. Money was also collected from extra taxing on the Muslims and Jews, which symbolized society's responsibility for each other. The destruction was 80% of the houses, consisting of 1413 houses, and even the skilled workers of the time, builders, carpenters, were martyred in the incident. The process took 7 years, and the government (ottoman at the time) reimbursed the inhabitants to do the reconstruction works by themselves, despite repetitive requests by the people for the government to take action. The urban layout, and main design features – courtyard, spatial organization – were preserved, however, modern decoration, art, and windows that open up to streets were implemented as a novelty to the old houses.

Noticeably, the rebuilding of architectural monuments was not sufficient to retain the full activity of the area before the incident, as most Christians fled Bab Tuma, who were known to be the builders, the sculptures, the economy did not recover until the original inhabitants came back, after 1880 (Soufan & Reforms 2015).

4.3 Hariqah

In 1925, under the French mandate, hundreds of revolutionists attacked the headquarter or the French Haut-Commissaire the Azem palace, which is located in the middle of the ancient city of Damascus, Sidi Amoud. As a result many of the edifices of the ancient city were destroyed. This district until now is called Al Hariqah which translates in Arabic: The Fire (Soufan & Reforms 2015).

In 1926 the reconstruction was initiated taking into account the importance of the location, what this place symbolizes, and the need to maintain the image of the French, who ruled Syria in that era, plus the logistic financial and technical factors. The reconstruction process was announced, defining the character of the place as modern, the local heritage was preserved including European technologies in construction, which was satisfactory to both, the Syrians, plus the foreign governors.

4.4 Hama

In 1982, the Islamic rebellion in Syria also caused riots and destruction on a similar style but different scale than the current Syrian revolution. It took place mainly in Hama, a city in the middle of Syria, especially in al-Kilaniyyeh, and al-Baroudiyyeh districts. Only in 2005 the idea to reconstruct one of those districts was thought of, by the Municipal Councilor of Hama. The study was done by the architectural studies unit in the University of Al Ba'ath. What is noteworthy here

is that the basis of this project were the documents, archives, and photographs provided mainly by the inhabitants, which had a sincere desire and will to help and an encouraging reaction (Soufan & Reforms 2015). The complete project was set in 2010, after several meetings with all concerned parties, the main theme was keeping religious buildings function intact, and other houses were turned into social public buildings. The symbolic meaning of this project was overcoming the 1980s riots, and erasing the negative memory associated with it, and reviving the architectural heritage of a minor city in Syria.

Those examples are recent and they cover different scenarios of the destruction, urban context, historical meaning of the district, and have been assessed by the Syrian society.

4.5 Lebanon Civil War

Starting 1975, a civil war that took place in Lebanon, which was a multiple inter-ethnic war between 17 ethno religious groups, even the “army collapsed into sectarian affiliations” (McDonald, 2012). Very similar to the case of Aleppo, control over this particular strategic city in the war, was the objective of different militias, which are not a hundred per cent local, but foreign influencers backed up their side of the fight exactly like Syria’s war today. This resulted in the destruction of Beirut’s public and private infrastructures, and the economy was destabilized.

Another big resemblance to our case study (Aleppo) is the fact that the war left Beirut divided, into East and West, by the Green Line, and communities were parted into separate areas even long after the war ended. Peace negotiations led to Ta’if Agreement in 1989, which reinforced the power of one sect, Sunnis, presented by the Prime Minister Hariri. In 1990 the Solidère - French acronym for Société Libanaise pour le Développement et la Reconstruction de Beyrouth - a private company was founded by the former Prime Minister Al Hariri, reconstruction of central business district.

The map of Beirut in the post-war era is shown in Figure 11 where the downtown area suffered a destruction similar to that of Aleppo currently, it was almost levelled. Figure 12 shows a map of the area in the post-war era.



Figure 11 Downtown Beirut after the civil war (THE HISTORY OF BEIRUT, LEBANON, 2013)

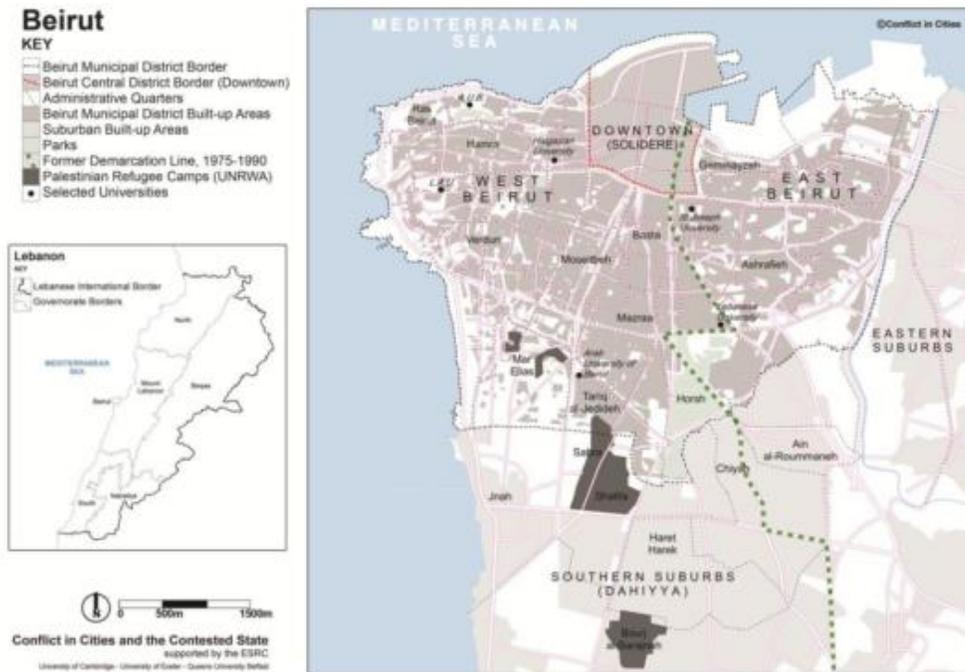


Figure 12 Beirut map after the war (Randall 2014)

Solidere was Hariri's personalized project, backed by the gulf influence and finance, to revive Beirut (Randall, 2014). The integrity of this association has always been questioned, especially that all the spaces of central Beirut became

owned by Solidere, which sparked controversy, as this taking over property violated the constitution (ILYÉS 2015).

Solidere took care of a 4.69 million m² of the city center, with many aspects:

- heritage buildings from Ottoman and Mandate era to be restored,
- archeological excavation,
- infrastructure was maintained and upgraded,
- some new spaces were built,

Until now, the whole area is managed by the same Solidere. The theme for this reconstruction was hugely criticized for being privatized to the view of a certain elite of Lebanese, the ones who fled in the war era, only to be wealthier, and are ready to return to a pre-built Beirut and dump in more money in the market “new contractor bourgeoisie”. The privatization of the planning process was always questioned, since reconstruction should ideally amend the trust in the government, and weave conflicting communities back together (ILYÉS 2015).

The strategy for urban renewal of central Beirut put the global citizen in mind over the local Lebanese, with influx from exterior resources elevating Beirut’s property rates by up to 400% (Randall 2014). The vision of the man behind it was to turn Beirut into a new economic hub, to compete with the rising Dubai and Doha - regardless of the rich history of the area. The mere idea that the construction company belonged to Hariri was a conflict of interest (ILYÉS 2015). Even the old Souks of Beirut which were restored to the same function to activate the commercial heart of the city like before, resulted in a center for international exclusive brands which are out of reach of the regular Beirutis, and felt more at home for the person coming from abroad, Figure 13 and 14 show the comparison between the original and new souks. The traditional marketplace where the merchants of the city from all backgrounds used to intermingle, was substituted by a modern mall, a deracinated experience, with no sense of the past, featuring international brands (ILYÉS 2015).

This single corporation had the power to acquire property in the heart of the city as a profitable solution to serve the interest of global market (Gavin, 1996). What makes this reconstruction unique is three sources that made it: “ the innate value and special qualities of the place itself, a comprehensive Master Plan, and the unique private sector vehicle created to implement the reconstruction” (Gavin, 1996).

This reconstruction process, though sophisticated for someone coming to the downtown area as a tourist, has neglected some main aspects of recovery, including equity, and population relief. Developing the downtown relied on international investors but the political turbulence of the area repelled them (ILYÉS 2015). The huge amount of resources utilized in this reconstruction left none for the poorest communities in Lebanon like suburbs that lacked running water. Yet the government concentrated on spending millions on a posh shopping city center. No focus was given to public gardens or open spaces. Some open spaces in the Beirut Central District (BCD) namely: Saifi Village, is restricted to rich visitors and require special access to their open art galleries and boulangeries, where private police filter who is allowed in, which emphasizes exclusion (ILYÉS, 2015). No public facilities were rebuilt in areas that help the people run the course of a normal lifestyle again, let alone the amount of buildings that were never restored (COA News, 2007). The integrity of Solidere is questioned to the extent that some argue not all buildings that were demolished were not salvageable. Since two thirds of the damaged buildings were completely demolished, it is arguable that reasons were political (ILYÉS 2015).

In this reconstruction case, the funding was used for the elite, and the most vulnerable were left out, which might interpret why the country did not enjoy stability for long, and the potential of conflict, resentment among different parties exists until the moment.



Figure 13 Original Historic Souks area (Lala Online, 2016)



Figure 14 New Beirut Souks Design by Rafael Moneo (Marfaa, 2011)

The same Hariri government made an initiative to rebuild and urbanize suburbs, specifically the Dahiyya, the southern suburb in Lebanon which is mainly characterized as a sectarian space, predominantly Shia Muslim. The Elyssar project was to be managed in the same way as Solidere, but later converted to a public agency. However, contrary to central Beirut, this area couldn't be transformed in the vision of commercial and business oriented, due to conflicting backgrounds, the Sunni domination over a Shia suburb was not welcome, and that reconstruction, although necessary, never happened.

4.6 Lebanon War with Israel

In 2006, a 34-day war between Israel and Hezbollah was very destructive for Lebanon. A million civilians displaced, war loss was US\$ 4 billion direct costs, and another 6 billion dollars indirect (Anthony H. et al. 2007). Like any other war, the targets were not merely military sites or buildings, but extended to civilian neighborhoods, homes, villages, infrastructure and even governmental buildings. The destruction was mainly in the southern parts and especially southern suburbs - Dahiyya of the capital Beirut, where the damaged buildings were estimated at 500 ones, and the completely destroyed was 250 multistory buildings (Mac Ginty & Hamieh 2010). 125,000 residential units were destroyed, those areas were already lacking planning and service, more of slums than suburbs and that made the reconstruction even more challenging.

This case has many resemblance with our study of Aleppo's post-war reconstruction for several factors, it is relatively recent, the big scale of destruction, the similar political turbulence and instability of Lebanon to today's Syria, where there is many confronting local and international allies each supporting their own group of Syrians/Lebanese.

On the same day that the war ended, 'Reconstruction and Recovery Cell' was established in coordination with UNDP (United Nations Development and Planning) and a conference in Sweden was offered for international donations. Before the conference was held, UNDP had worked with the Council of Development and Reconstruction to assess the damage and the document was ready to present to the conference. Simultaneously, Hizbollah was working on Jihad Al Binaa for indemnities to people who lost their homes. This recovery is relatively speedy and efficient compared to the magnitude of the disaster the country had faced, where only weeks after the war ended the rebound signs were noticeable (UNDP, 2007).

The main donor and actor in south Lebanon was UNDP which contributed financially from its own resources to several municipalities, in proportion to the damage of towns. These grants went to repairing roads and clearing rubble, restoring urban furniture and services such as sewage and public buildings (UNDP, 2007). Several countries contributed namely: Sweden, Japan, Brazil, Australia, Italy and this helped the international organisation (UNDP) expand its program to cover 216 municipalities in South Lebanon alone. The special thing that distinguishes this international organization's contribution to recovery is the prioritization on the most vulnerable, regardless of the ethnicity, religion, or any political motivations behind the assistance. For instance, one of the most vulnerable victims of this war were the fishermen, who were devastated by the destruction of their workplaces, plus the contamination of the sea because of an oil spill, which directly threatens their jobs and livelihood. Hence UNDP focused on them the most. UNDP even made projects in conjunction with the government to solve the persisting problem of electricity provision in the country, before and after the war (UNDP, 2007).

Parallel to these efforts, Hezbollah was backed up financially by its favorite international ally, Iran, to begin a fast reconstruction process that aimed at returning the displaced people which make up the support base for the same Hezbollah, and reclaim the territory for the sect (Randall, 2014). The Waa'd project – Promise in Arabic – was initiated, by a non-state social actor, NGO

named Jihad AlBanna, which was able to distribute 12,000\$ in cash to the civil owners, in a very short time (Mac Ginty & Hamieh, 2010). The government had its own compensation scheme, which also relied on external money to fund the compensations. In 2007, Hezbollah made the residents of the damaged buildings two offers in an official speech by its president: either wait for government compensation and rebuild their apartments independently, or put the money with the Waa'd scheme which will organize the reconstruction. However, that was the mere decision that the original residents was allowed to make in the rebuilding process, because the Waa'd project mainly involved rebuilding everything as a replica to what is was before the war. It was believed that any changes in the old layout might delay the project and the political situation couldn't allow that (Randall, 2014). The orientation was to quickly restore *the status quo ante*.

A positive initiative by the American University in Beirut's planners and architects was founding the *Reconstruction Unit* (RU) that is affiliated with the Department of Architecture and Design, a multi-disciplinary group that worked on the level of conceptual planning and technical aid. This group of public scholars helped as a medium in between the conflicting parties of reconstruction, and raised the issue of public debate on urban planning, and helped integrate the opinions of the people in the policymaking of an otherwise sealed-off planning practice (Al-Harithy, 2010).

No effort was made to improve the spaces, except from some minor changes to street furniture and building exteriors. The extreme density of the neighborhood - which was almost a slum - was repeated as it was, with no building permits or master plan. The new homes were on wobbly ground, making the residents more dependent on their political religious party – Hezbollah.

This quick reactive rather than proactive type of reconstruction had its own drawbacks, where teams from United Nations Environment Program conducted a post-conflict Environmental Assessment at request from the government, to find that tap water after this reconstruction was contaminated and not suitable even for domestic none-drinking purposes (McDonald, 2012). Despite the speed in which the reconstruction occurred, where in 5 years after the war, most of the buildings had been rebuilt. The main drawback, was not using the destruction of the premises as an opportunity to build better, but in contrast, an opportunity to secure the legitimacy and authority of a certain political party.

The uniqueness of the recovery after this particular situation is the 'adoption scheme' proposed by the Lebanese government, which is an innovative approach "whereby individuals, institutions, or foreign states could adopt an area and directly contribute to its reparation and reconstruction process" (Ghosn & Khoury 2012). One of the main reasons behind this scheme was desire by the PM of the Lebanese government then to act and show support to the people against the non-state Shia actor Hizbollah. This facilitated quick response to affected communities vs the traditional post-conflict reconstruction scheme where the focus goes to governance projects and security sector development. That had a positive effect on people whose towns were adopted, but a counterintuitive affect was feelings of exclusion by people who were not adopted by a foreign state (Ghosn & Khoury 2012).

When it comes to infrastructure rebuilding this scheme showed more success where 45 of 93 bridges were adopted by different donors, who coordinate with the Council for Development and Reconstruction to design and build these bridges in accordance with regulations and technical specs of the Ministry of Public Transport (Rebuildlebanon.gov.lb, 2017).

In both cases, the special theme that dominated the reconstruction was the presence of non-state actors who have directed the whole process (Randall 2014). All the professional initiatives by the civil society, architects, and engineers were used to serve the politics of space.

In both Lebanese scenarios, we find that reconstruction was a process that facilitated strengthening the political party who won the war, while using the fragile ground – whether it be the city without an identity and central hub in the 1980s war, or the homes that are not livable in 2006 war, to emphasize the financial and political capital of the policy makers. Which is what made these two scenarios, although successful from the outside, if compared with the amount of rebuilding involved, but not decent and people-orientated, completely dependent on external finances, making the land less of the original owners, and more a publicized, sold in a way or another, land.

4.6 Lessons from the Lebanese two reconstruction cases

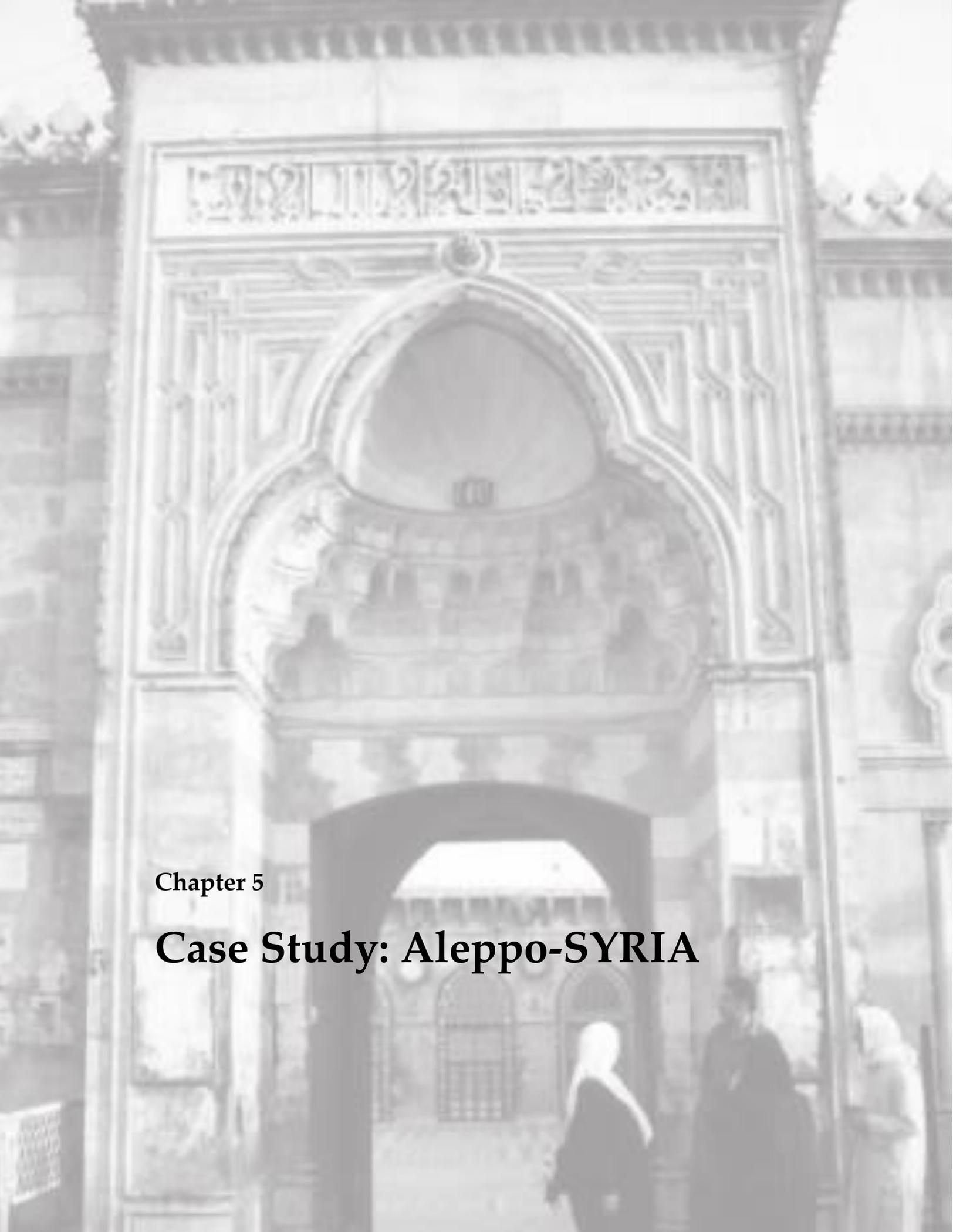
Learning from the shortcomings of the Lebanese cases is critical to propose a successful reconstruction plan for Aleppo/Syria. The resemblance of the case of Lebanon to Syria is because of similar geo-political factors, the sectarian division among the populations, and particularly Beirut to Aleppo:

- The most destroyed city of the war, uricide.
- The largest city in the country
- Divided into two separate entities
- Inequality and slums being the main characteristics of the pre-war city
- Historic old city exists in both

Drawing on the reconstruction of Beirut in 1980s and in the recent 2006 wars, we conclude for our case study the following factors for consideration.

- The objective of the reconstruction is the most-vulnerable people, not the elite international business men, hence planning the reconstruction should revolve around housing the displaced not reviving the central business district to meet the needs of only the wealthy and wasting all valuable resources on such process.
- When the city center is revived, it should also be inclusive of the residents as much as the investors and tourists. Local businesses are the key in reviving the economy.
- The most vulnerable in the case of Aleppo are the people who made the industry of the city, factory owners and workers, because this business will help provide employment and secure a big number of families financially, and like the fishermen in the Beirut case, these were most affected when their working environment was destroyed in the war.
- The heterogeneity of the city is sacred, by no means should planning exclude a certain group of the community for reasons whether sectarian, financial, religious, ethnic, etc.
- Academic entities (like AUB) in our case Aleppo University can play an important role as an expert neutral party to help in assessment, field measurements, surveys, this could all be part of the curriculum of senior architecture and planning students.
- Making planning decisions on business interests or political views is destructive for an ideal reconstruction, based on social equity, representation, and inclusion.
- Restoring the old city and monuments should refrain from the model in Beirut 1990s, where the traditional souks were demolished and the soul of the old city was not represented in the reconstruction. Aleppo has been a touristic attraction for decades because of the authentic old city, this should be restored with respect to the culture and functions of the place as an economic hub as well.

- Non-state actors functioning in parallel to the ruling government cause chaos and dissatisfaction. Decentralization is key to facilitate the process, but coordination with the central government is necessary not to cause the conflict of interest that occurred in southern Beirut 2006, when Hizbollah had plans that were different than the state's and that complicates the process and gives people the sense of instability and indecisiveness.



Chapter 5

Case Study: Aleppo-SYRIA

Ancient Syria is where the first alphabet man has ever created was found, one of the places where the most ancient civilizations on earth have prospered. It holds the oldest continuously inhabited city in the world, and 6 UNESCO heritage sites. (Slim & Trombetta, 2014). On the contrary, modern Syria is a country in a humanitarian emergency, the worst crisis in the world since World War II, and the country that produced 4.9 million refugees, more refugees than anywhere else in the world according to UNHCR (UNHCR, 2015a).

To understand this drastic change, Syria was conquered by several nations, starting from Romans, Persians, then Arab Muslims and Ottomans, last the French Mandate, and since 1946 has gained independence. Up until 2011, the economy was growing steadily, development was at its peak, the Syrians have a high level of integrity, with good education. A high percentage of 91% owned their own house, strong health indicators, and “70% of medications were locally produced” (Slim & Trombetta, 2014).

The people of Syria however, were in a vulnerable state for several reasons: economic inequalities, authoritarian government, bureaucracy, and the constant sectarian tension formed solid ground for the uprising. With the heat of Arab Spring, that flared in Tunis and hit across North Africa to Syria, where nonviolent protests started at first, with certain demands from the government.

Being a “key piece of the middle east” (Slim & Trombetta, 2014) was not in the favor of the Syrian people. As these factors all together, led to Syria dominating the news headlines for 5 years now (May 2017). There is a complicated grid of alliances and rivalries, each wanted to ensure Syria was within their influence, and feared this internal matter would pose a threat on them and affect their interests. The result is a country split up in control, each part belonging to one of the powers. Figure 15 shows the different control on each territory of Syria today.

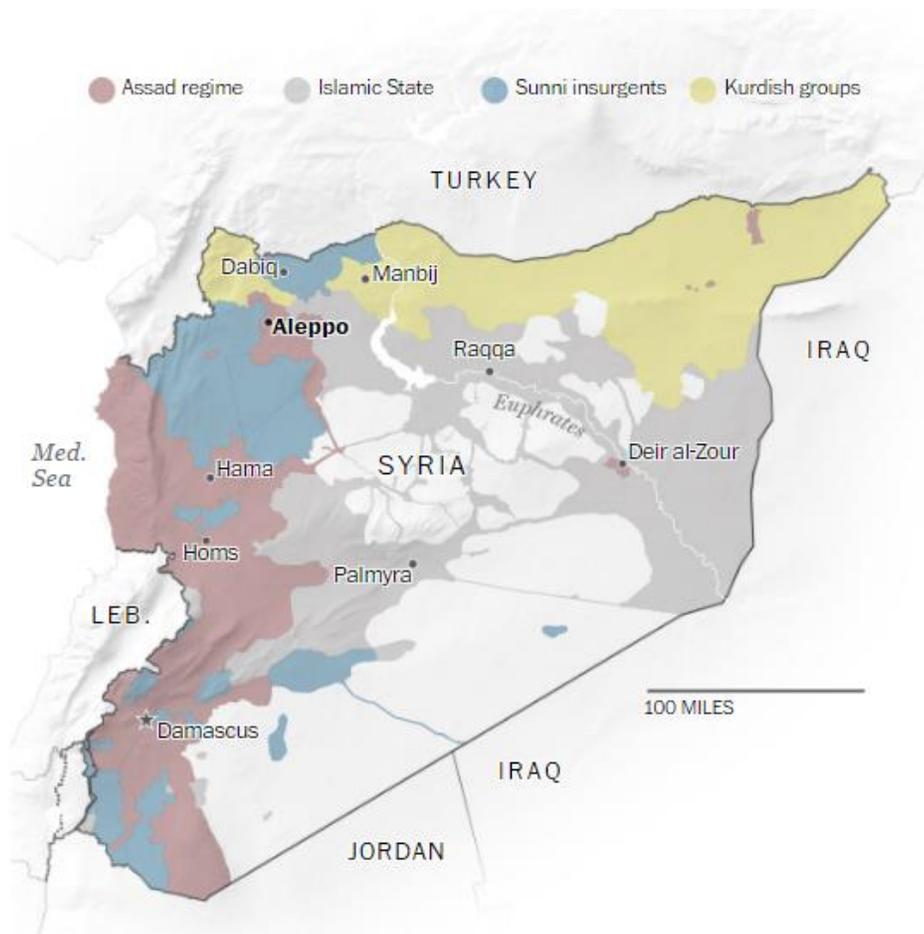


Figure 15 Syria's current territorial control map (Karklis, 2016)

5.1 Roots of the conflict

Looking back at Syria in the pre-conflict era shows us clearly that the social aspect was one of the predominant issues that caused the protests in the first place. The authoritarian rule for 5 decades under systematic oppression where formal and informal powers controlled governance and acted above the institution. All these factors and more made people struggle to redefine their roles (Zainedin, 2014).

Economic inequalities dominated the ruling theme, where the economic growth was not inclusive of certain parts of the population. To sum up the context was characterised by oligarchy and the youth were not given the opportunities they deserved in a country with abundant resources. The drive behind the uprising was “socio-economic and political” (Zainedin, 2014).

Al Sabouni (2016) looked at the relationship between urbanism/architecture and the Syrian conflict. She argues that sectarian divisions were nurtured by divisive

urbanism where communities are zoned by social class, or ethnic backgrounds, and this sense of not sharing the city or belonging to it “has made it a lot easier to destroy” (Al-Sabouni, 2016).

The fact that 40% of the Syrian population was living in informal settlements without proper infrastructure and basic services paved the road towards instability (Al-Sabouni, 2016).

5.2 Impact of the conflict

The conflict started in early 2011, in a few minor cities, but unfortunately it intensified and exaggerated, due to various political, religious, and sectarian reasons, into a war that has torn the country apart, and resulted in a catastrophe of destruction in many cities. The number of refugees escalated in just 4 years. Figure 16 shows the growing number of refugees since 2012 until 2016.

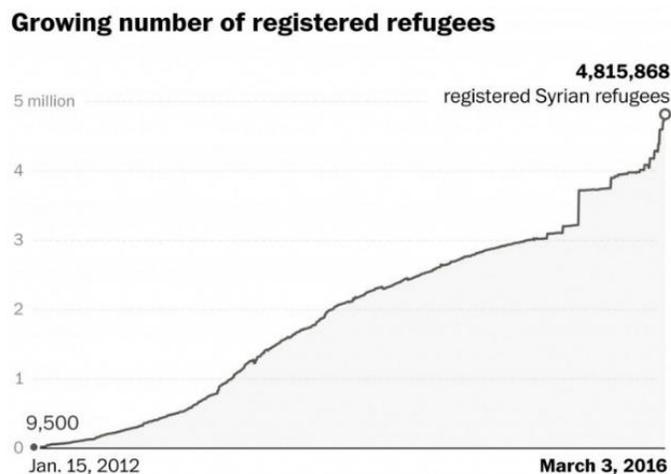


Figure 16 Growing number of registered refugees (Harness and Stamm, 2016)

The country that was once home to 21 million Syrians, is now war torn, with lack of basic human services, such as water and electricity. Damage hitting all six UNESCO World Heritage Sites in the country, destroyed

- 36% of healthcare facilities,
- 400 schools,
- nearly 1,2 million homes,
- 50% of the main cities destroyed (Aljazeera.com, 2016).

Obviously, the social welfare systems collapsed in the middle of this mega scale crisis, as did the economy, education, and many systems of the government.

Another victim of this war is the environment. All the pollution, weapons, rubble, and debris produced by this conflict poses a threat to civilians health and wellbeing, on both short and long term, with no prospect of the government to be able to deal with this challenge, threatening the lives and wellbeing of civilian people who stayed or intend on returning to their hometowns (Zwijnenburg & Pas 2015). Another challenge that faces organizations that might want to assess the environmental damage is lack of systematic field measurements due to the prevailing situation.

In his report, Zwijnenburg and Pas (2015) identified four main environmental linked health hazards because of the conflict:

- Industrial pollution as a result of targeting industrial facilities
- Exposure to building rubble in residential areas, asbestos, dust, cement, etc.
- Weapons use, residues of explosive weapons that were used intensely in residential areas
- The collapse of environmental services, such as waste management and sewage systems, which could lead to air and ground water pollution.

When physical destruction stops, and the war is over, there will definitely be a mega scale reconstruction process, which will require the society's involvement, and have an identity, rules, techniques, to convince the decision makers. International organisations, government bodies, civil society, and private sector should all be part of this process (Soufan & Reforms 2015).

5.3 Aleppo

This research will focus on this city because it is the most destructed in this devastating war, accounting alone to 40% of the total destruction in Syria. This is not a coincidence, because the battle for Aleppo was the fiercest of all battles in the Syrian civil war, due to its significance as an economic capital of the country, and its strategic location.

5.3.1 Historically

Syria's largest city, and one of the oldest continuously inhabited cities in the world, the historic Old City is a UNESCO World Heritage Site. The strategic location of this city has helped make it an economic hub since the medieval era, where all the riches of China and India pooled in to Aleppo, which hosted the

caravanserais where traders would stop by on their roads, meet, buy and sell goods. It was mentioned in *Macbeth*, by Shakespeare to symbol a faraway city that holds much mystery, and majesty (Tharoor, 2016).

The city's architectural identity is affected by all this influx of cosmopolitan through the ages, as it was the capital of Yamkhad kingdom, in the 18th century BC, and a trading post for merchants in the Hellenistic period, then the Byzantine (BBC News, 2016). The ancient Citadel, built in the 13th century, where a temple from the year 3000 BC was found, and the Great Mosque, in the 8th century, are examples of edifices built on earlier Roman and Byzantine remains (Tharoor, 2016).

Many cultures and different ruling governments have conquered Aleppo, the Crusades, the Kurds, the Turks, the Mongol Timur in 1400, which left the city "piled high with skulls outside city gates." For another 4 centuries, the Ottoman Empire took over Aleppo, then the French mandate, and last after Syria's independence, Aleppo became the main industrial and commercial hub, and the population grew from 300,000 to 2.3 million in 2005 (BBC News, 2016). being the largest industrial zone in Syria around 40,000 workers were employed in the city relying on the industry supporting their families (Oberger 2016). It consisted of many different religions and ethnicities, co-living in peace, Arabs, Turkmenstan, Kurds, Armenians, Muslim, Christian and Jewish.

We identified two parts of the problems, ne that predated the war and one that was caused by the destruction starting 2011 uptill now.

We will look at these two timeframes separately

5.3.2 Modern Aleppo Urban Problems

Before the war, the city was far from ideal when it came to urbanism and sustainability. Vendemini and Villani, (2016) identified in their research on Aleppo several major shortcomings, that coincide with Al Sabouni's (2016) findings on slums and informal settlements in cities.

Figure 17 shows the amount and distribution of informal settlements in Aleppo in 2007 (pre-war) and that accounts to half of the total population living in these 22 areas. Urban characteristics of these neighborhoods are mainly:

- Population density is above standards
- Substandard water and sewerage provisions

- Inadequate health and education services – schools have poor quality service
- Housing standards are poor, some are self-built
- Buildings are two-story with vertical expansion due to lack of empty plots.
- No recreation space
- Roads are narrow, not enough lighting (Vendemini & Villani, 2016)

Many regulations have been set to limit the expansion of slums in Syria by the responsible ministry, but lack of implementation, and also lack of a comprehensive inclusive plan that would give indemnities or proper relocation of the people affected, all of that meant the slums in all Syria were expanding and no proper mitigation was taken.

Water provision in Aleppo was inadequate (Vendemini & Villani, 2016) only 40% of sewage water was treated. Less focus on agriculture and the industrial flourishing of the city has led to more migration from rural areas to the city and workers turning from agriculture to industry.

The capacity of urban planning in Syria in general was not a high standard one before the war. Sustainability and environmental considerations were not clearly evident in the planning, and implementation of planning law was weak as well. That led to the huge expansion of slums, and even illegal extensions of buildings in legal areas. Corruption and lack of accountability of the government is a main reason behind this and the revolution as well.

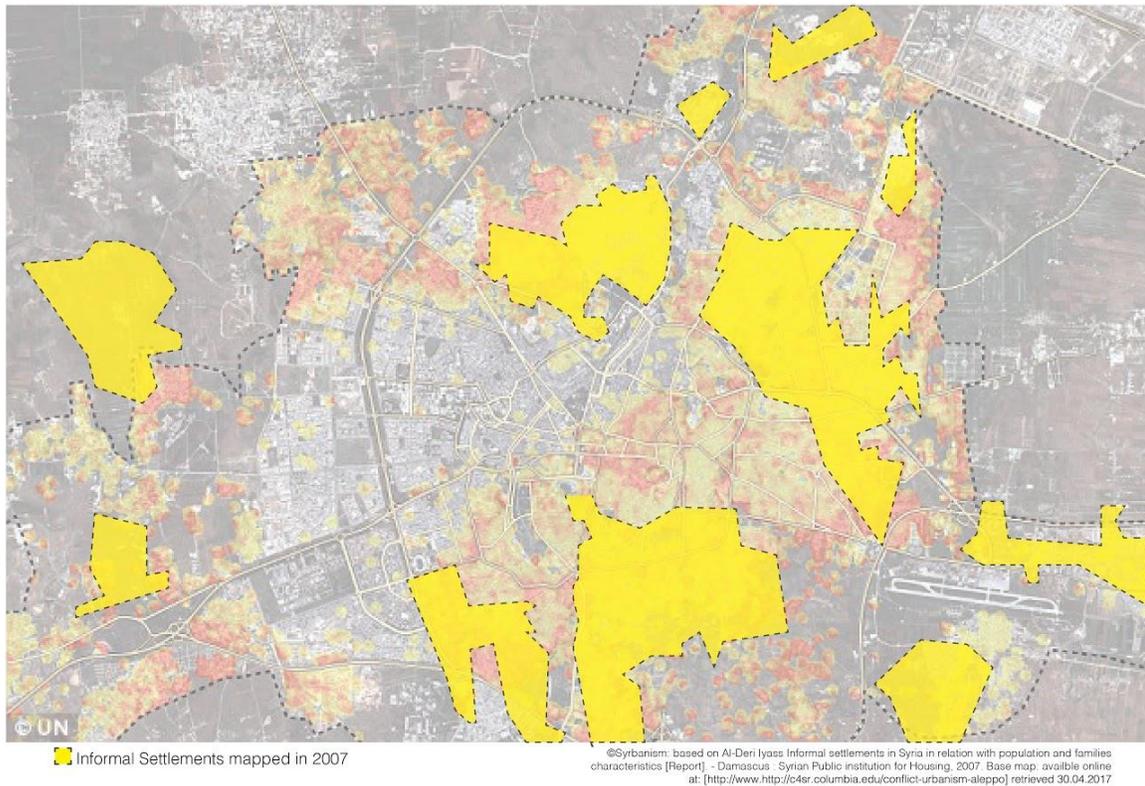


Figure 17 Urban informal settlements in Aleppo prewar (UN, 2017)

5.3.3 The Destruction Post War Issues.

In 2011, when the uprising started in southern Syria, Daraa, and Damascus, the authorities were cautious this would not spread to Aleppo. It was under control for over one year and a half after that, until demonstrations started in the outlying suburbs and extended to the heart of the city, so Aleppo was caught up in the turbulence.

The Aleppo battle was triggered in mid-2012, when the anti-government forces took over a few districts around the city, and the government forces started bombing those areas to conquer them again. The fighting escalated very quickly to arrive to the historic city center, the UNESCO world heritage site, and According to the UN, an estimated 60 percent of the Old City has been destroyed (Jazeera , 2016), including the minaret of the Umayyad great mosque, which dates back to the 11th century.

This bombing and shelling has been continuous since July 2012, up until December 2016. It focused mainly the outskirts of Aleppo, then when the rebels took over a part of the city, it was divided into eastern and western Aleppo:

- Eastern Aleppo was mainly conquered by the anti-government rebels (has been bombed severely by government forces and their allies)
- Western Aleppo is ruled by the government and is relatively safer and experienced less shelling. Figure 18 shows the segregation between the two parts.

While in the western part, the damage is relatively less, as it is more under control of the government, and the shelling is minor. Nevertheless, certain areas that fall under the shooting range of the rebels, experience constant shelling, with weapons that are developing with time and support from the international allies to each side of the conflict. That made the battle of Aleppo just more problematic, as neither sides is ready to let go of this strategic city, even though the lives of the original inhabitants are at stake.

In May 2015, reports by Amnesty warned that life is “increasingly unbearable” for civilians in either side of this city, (BBC News, 2016) where the basic life systems are a luxury, the governmental electricity supply on western Aleppo is practically nonexistent, and they are relying on local providers for a small share of electricity per day, at an extremely high price. The same goes for water, where for days the whole city could go thirsty when the main supply is cut, and civilians would buy their water from anyone who has clean water wells.

In the rebel held eastern Aleppo, air strikes hit any minute. Many people couldn't afford to flee the area, and were at constant risk each day.

Plus the siege by government forces which has occurred a few times during the last few years, in a scenario that has occurred in outskirts of Damascus before, which led to famine and hundreds of people died of starvation.

The main turning point in the battle was in December 2016 when a cease fire was reached and the rebels lost eastern Aleppo to the government forces.

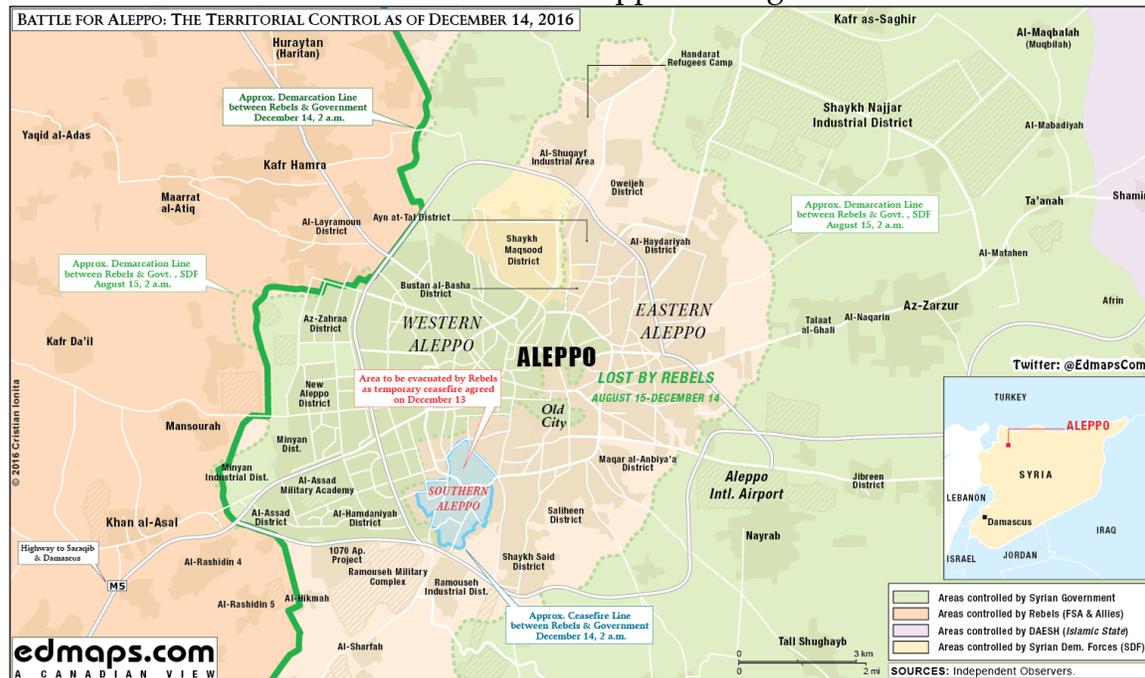


Figure 18 The figure show the massive part of Eastern Aleppo that was under rebel's rule 2012 to 2016 (Edmaps.com, 2017)

Oberg (2016) who has seen various destroyed cities before notes:

I've seen the destruction of places like Sarajevo, Vukovar, Krajina, East and West Slavonia, Abkhazia and South Ossetia. This was worse. It reminded me partly of the images from the Second World War, partly of Hiroshima.

Figure 19 shows graphically the amount of destruction throughout the city.

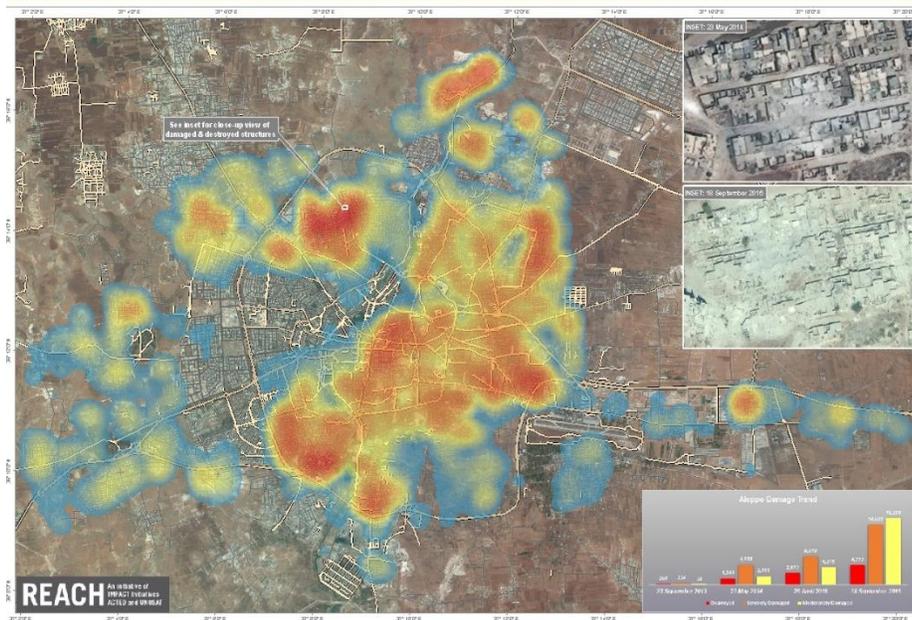


Figure 19 UNOSAT analysis between 2009 and 2015 imagery. Map of destruction in Aleppo (UNITAR United Nations Institution for Training and Research, 2016)

5.4 Assessing Levels of destruction

Drawing on information by reporters, photography, satellite imagery using Google Earth Pro, we find three main categories for the destruction in the city of Aleppo:

- 1- Level I: Minor damages to buildings only.
- 2- Level II: The infrastructure is still functioning but the buildings are severely damaged.
- 3- Level III: The infrastructure and buildings are mainly demolished/incapacitated

Level I: Minor damages to buildings only.

In some of the districts in Aleppo, mainly where the government rule was there were rarely any airstrikes and the bombing was caused by local made weapons like “Hell Canon” bombs and gas canister missiles (Henningsen 2017).

The figures 20, 21, 22 below show incidents of the destruction in the west mainly, e.g. balconies of buildings, entrance to the building is damaged, exterior facades, doors and windows. Such buildings are still functioning properly and many of the residents have paid to repair their homes themselves, since this is mainly the more wealthy part where the population can afford it, and the shelling is minor.



Figure 21 Samples of Level I destruction - a balcony



Figure 20 Samples of Level I destruction - windows



Figure 22 Samples of Level I destruction - cladding and entrance of building

Level II: The infrastructure is still functioning but the buildings are severely damaged.

Figures 23, 24 show samples of building destruction in this classified level, mainly the damage is severe, but on buildings level, it rarely exceeds it to infrastructure, roads, bridges, etc. However, public buildings such as schools and hospitals were also targeted and many levelled.

The figure 25 below (Pecanha and White, 2017) is map showing destruction points, where we can clearly identify a number of dots on the western side that are destroyed, not red however, indicating less damage than in the eastern part.



Figure 24 Sample of building destruction in Level II

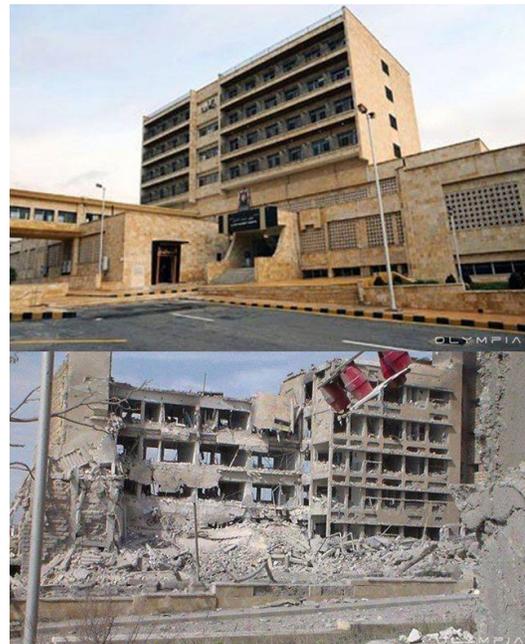


Figure 23 Sample of school destruction in Level II

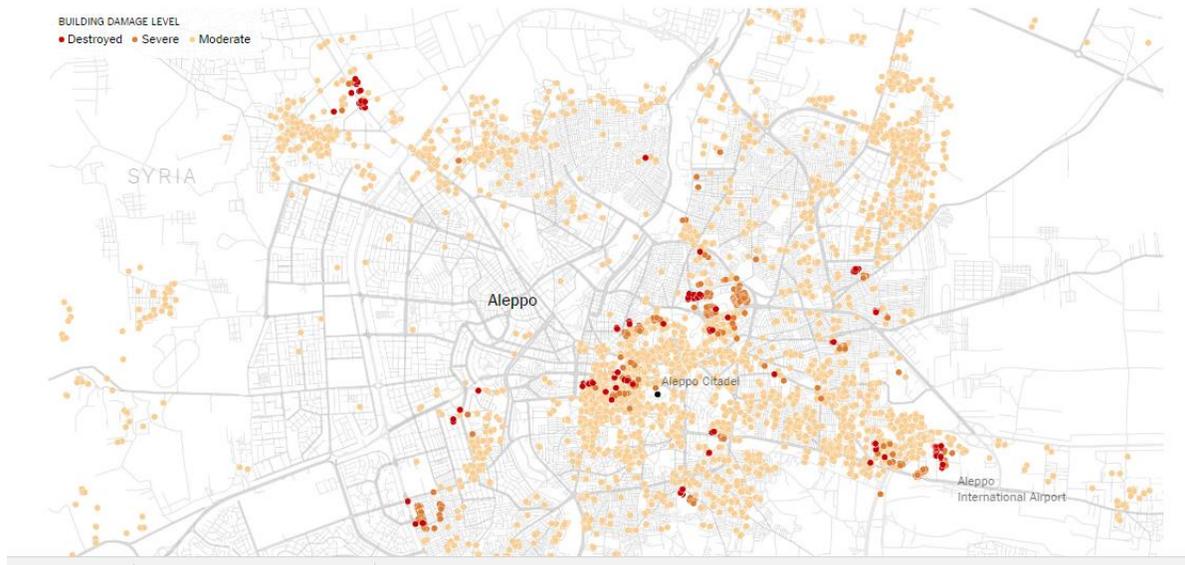


Figure 25 Map showing destruction by points throughout the city (Pecanha and White, 2017).

Figures 26, 27 show destruction in the industrial zones, Layramoun and Sheikh Najjar Industrial area, those are of great importance to the economic stability of Aleppo and Syria as a whole.



Figure 26 is one factory that belongs to Faris Shehabi and was taken over and destroyed by militants (Henningesen, 2017)



Figure 27 shows the Layramoun district which used to be the textile manufacturing hub of Aleppo (Henningesen, 2017)

Level III: The infrastructure and buildings are mainly demolished/ incapacitated

Airstrikes by the government and their allies were concentrated on rebel held areas (east Aleppo) using airstrikes, barrel bombs, “artillery, tank ordinances and heavy gun fire” (Henningsen, 2017), which caused the damage to be severe in these neighborhoods. According to Kesklir (2016) the Al Aqabeh neighborhood had 65% of residential buildings damaged, also Sheikh Maq̄soud and Rasafeh (Karklis, 2016). Figure 28 shows the progress of damage during 4 years of the war.

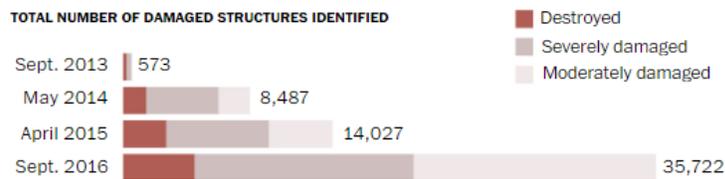


Figure 28 Total number of damaged structures identified (Karklis, 2016)

Figure 29 is a sample of an ancient building in the old city, and shows the extent of damage that most houses in this area experienced.

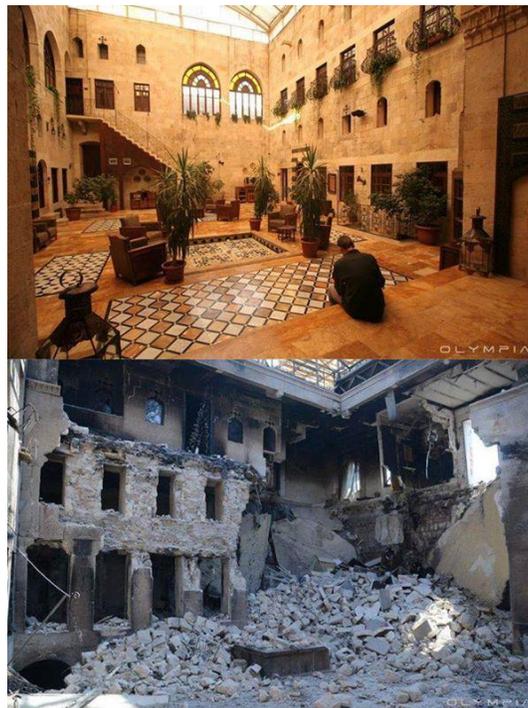


Figure 29 Sample of destruction of an old house in the old city (Facebook.com, 2014).

Figure 30 shows destroyed areas in the old city with several colors to distinguish levels of destruction. The famous citadel of Aleppo that has always been the most distinguished landmark of the city bore the brunt of the most devastating destruction of its periphery. Figure 31 is a before and after satellite imagery of the area, showing the amount of destruction around it.

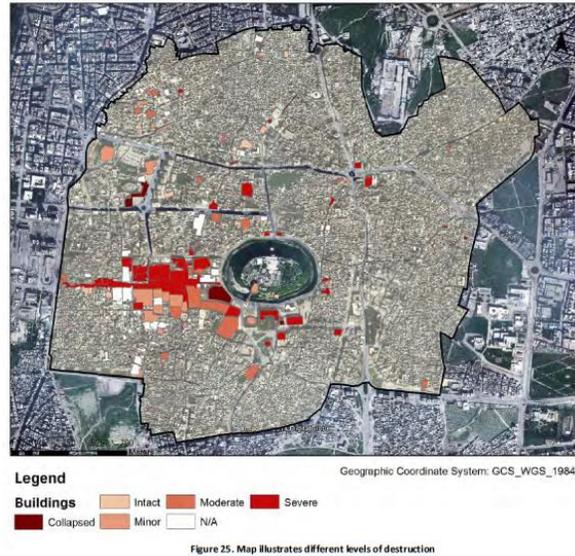


Figure 30 entire buildings were levelled in the periphery of the ancient citadel of Aleppo as shown by Google Earth shots 2011 and 2016

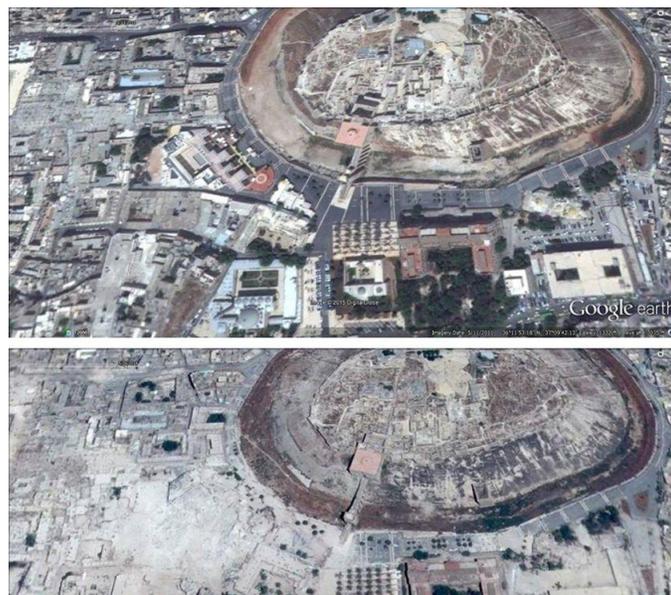


Figure 31 entire buildings were levelled in the periphery of the ancient citadel of Aleppo as shown by Google Earth shots 2011 and 2016

Unfortunately, the destruction of the world heritage UNESCO site of ancient Aleppo was severe, and though bombing has stopped now (May 2017) the damage is indiscriminate of historic buildings that surrounded the citadel. Due to the cultural value of this area, several research projects are considering documenting it. Refer to a *Post-Conflict Cultural Safeguarding And Reconstruction Plan* developed by Lababidi (Lababidi, 2014). Figures 32, 33, 34 show more samples of destruction in buildings on the periphery of the citadel. To document damage in infrastructure such as bridges, hospitals, Figures 35, 36, 37 show samples of that destruction.



Figure 32 The previous Ottoman national hospital aerial photos before and after (Lababidi, 2014)

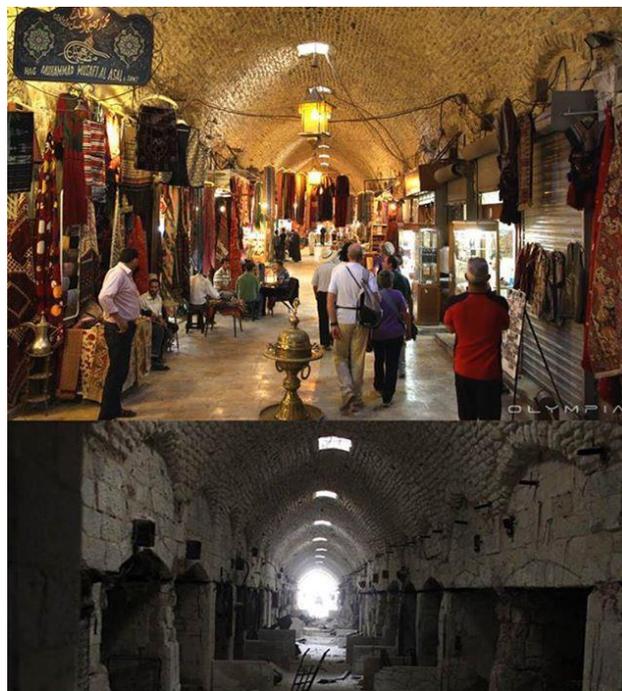


Figure 33 One of the old souks in the city, before and after (Facebook.com,2015)

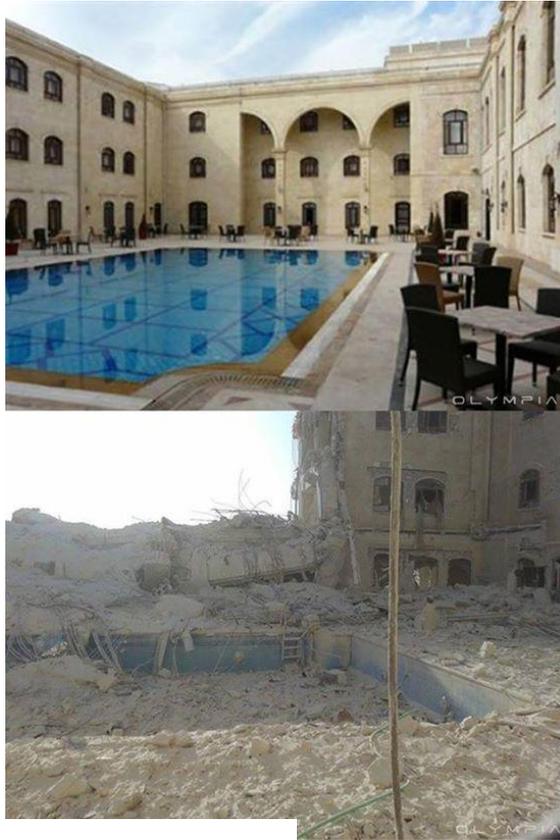


Figure 34 The previous Ottoman national hospital before and after an explosion that targetted it. (Facebook.com,2015)



Figure 35 Infrastructure damage sample, Al Hajj Bridge in AlShaar area (Yagan, 2015)



Figure 36 Random building destruction sample from Level III (Yagan, 2015)



Figure 37 Destruction in Al Kindi Hospital in Handarat area, one of the leading public hospitals in the city (Facebook, 2015)

To make the three levels of destruction visually comprehensible, the author has made a map by layering several maps that document and define areas of destruction, to be able to make a rough estimate of the distribution of the 3 levels. Figure 5.23 shows this analysis.

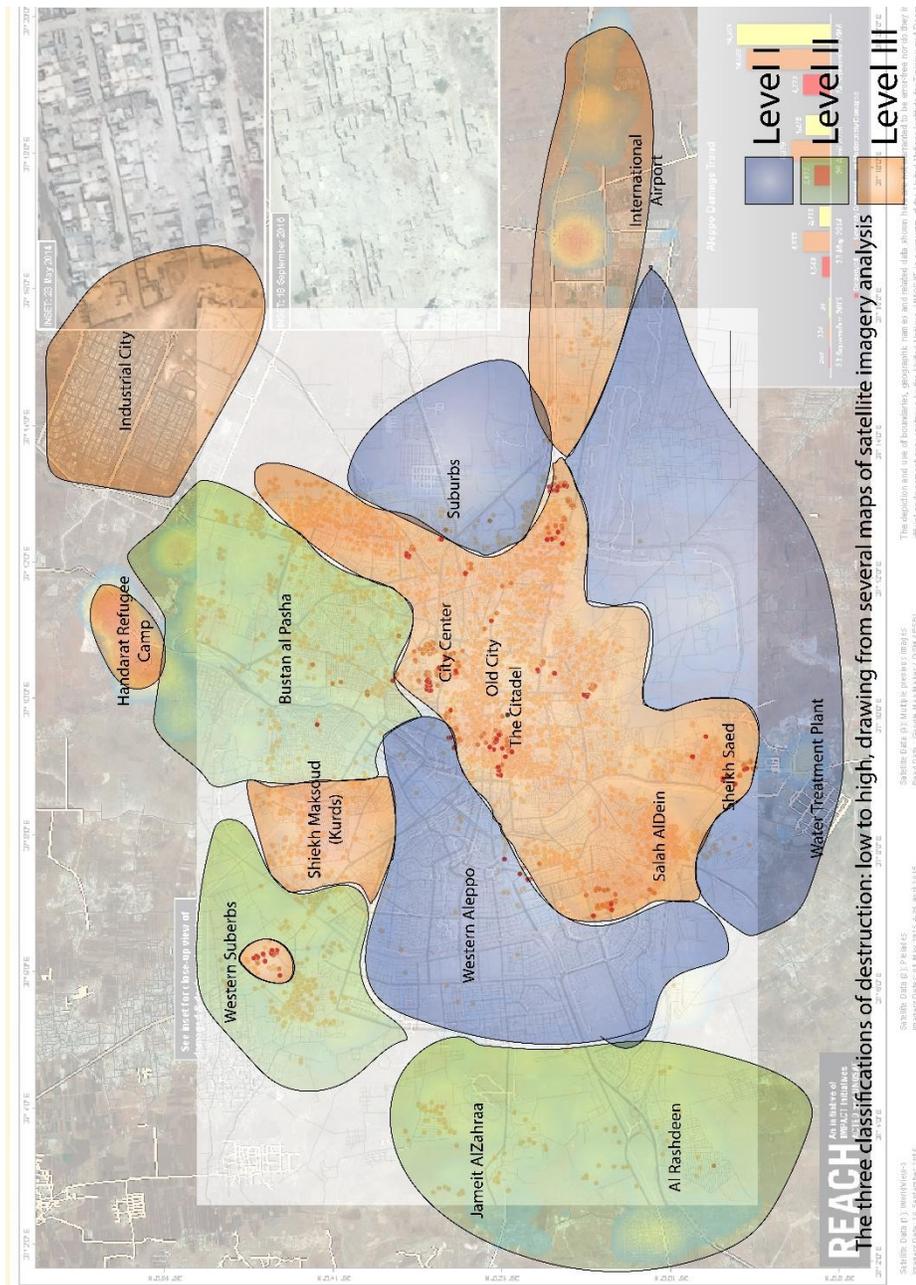
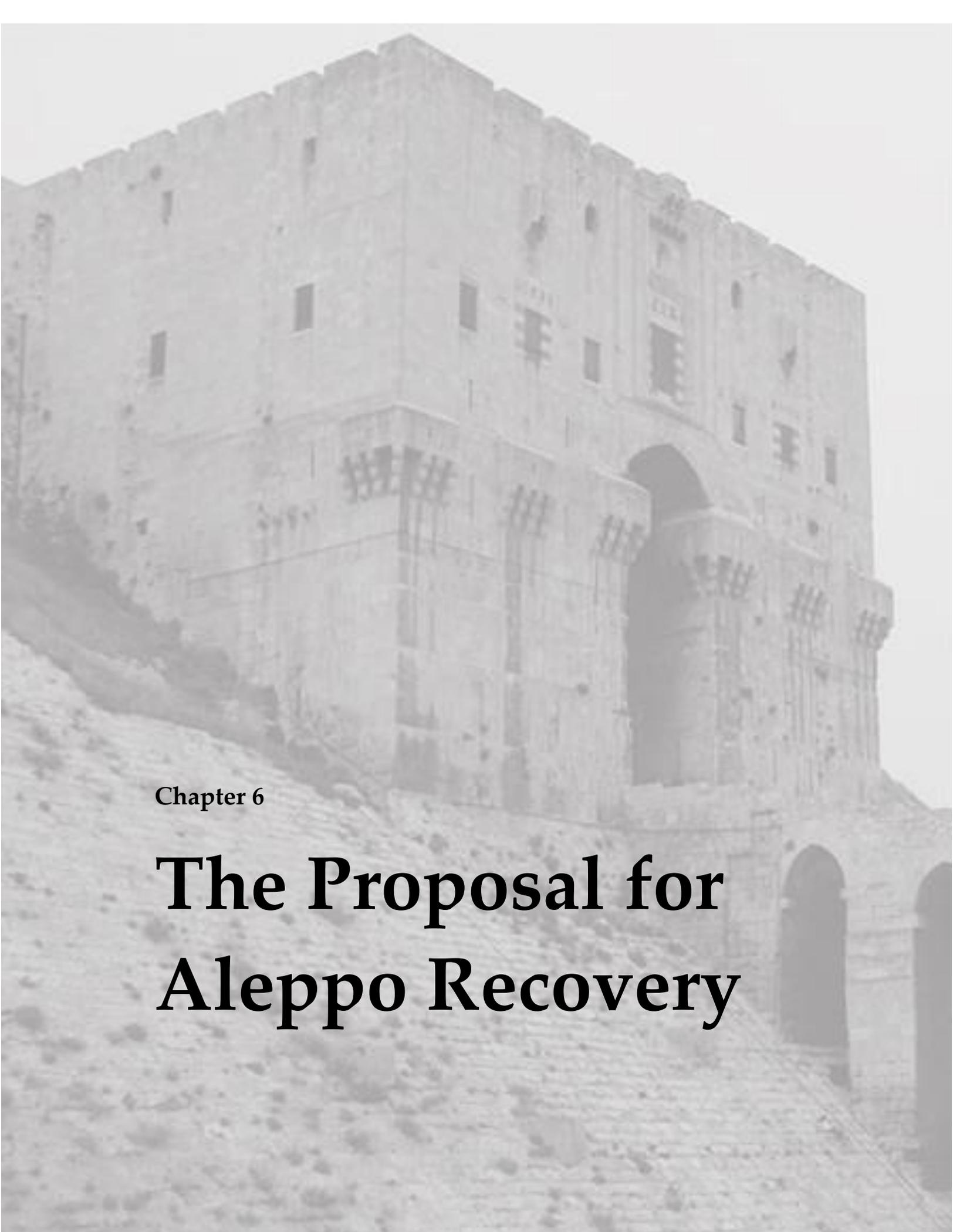


Figure 38 Analysis by the author of several maps to make up the distribution of three categories/levels of destruction defined.



Chapter 6

The Proposal for Aleppo Recovery

6.1 Proposed framework for post-war reconstruction of Aleppo:

The methodology is to propose a frame work based on previous studies/cases, assess the proposal through expert interview then refine the framework base on the feedback received.

An initial proposed framework for the case study of Aleppo is designed to cover several timeframes: short, medium and long term. Many concerns were taken, generic ones like infrastructure, housing, and temporary shelters, and case specific ones like the historical city, the different approaches between rural and urban areas, and the social aspect of post-conflict times.

6.1.1 Data collection and assessment

Thorough detailed assessment of damaged buildings and infrastructure was conducted on site using photogrammetry to facilitate estimating the damaged areas and locating them. In her study on *Rebuilding Old Aleppo*, Qudsi (2016) suggested a unified data gathering system that is open-source and can be accessed by all parties to guarantee transparency, and help investors and potential donors make a clear decision.

Drawing on the history of reconstruction in Syria before (the Hama and Damascus case) one main player in the design process was the university units, this can be utilized again for brainstorming and even design work by senior engineering students as part of their curriculum or workshops at university. A reconstruction unit at Aleppo University is suggested as explained in section 4.6 of this dissertation.

People with documents proving their property ownership should come and present these papers to the authorities to be able to prove they belong to a certain area and deserve an indemnity.

6.1.2 Decentralization and Independent Reconstruction Council

Drawing from the literature, in most cases of major post-disaster reconstruction, a dedicated ministry/entity is a successful approach to recovery, to handle the challenges of this critical transitional period, and amplify efficiency through an institution responsible for all tactics and dynamics of the process (Mannakkara & Wilkinson 2016). This Independent Reconstruction Council (IRC) would include

researchers, representatives of the local communities, the ruling government, urban planners, architects, and policy makers to macro manage the details of the recovery plan. As Qudsi (2016) puts it:

The details of the committee's structure ... would be entirely dependent on the uncertain political outcome of the war, the goal however, should be to represent all stakeholders without exclusion of certain political or ethnic groups.

The planning directorate of Aleppo has always been under the central Ministry of Planning and Development, however, the post-war situation of Aleppo accounting for an estimated 40% of the total destruction in the war-torn country dictates decentralization, and the reconstruction council of Aleppo to be independent (but in line with) central government bodies to facilitate decisions, and limit bureaucracy. In view of the amount of destruction and the need to update the master plan of the city to overcome the urban problems that predated the war, the IRC should proposed a new master plan in order to coordinate and macro-manage the reconstruction process.

6.1.3 Potential donors and funding

This is a controversial part of the process, especially as the estimates are that Aleppo alone with require tens of billions of dollars to rebuild (Mroue and El Deeb, 2017). As the shape of the eventual political settlement of the civil war will dictate much of the funding issue, for instance, the US and EU are quite unlikely to fund the current government, which is under economic sanctions. When it comes to the allies of this government namely Russia, China and Iran, they have not expressed interest in large scale investments in rebuilding the country, yet. A *Marshall Plan* style recovery scheme has not proposed yet as the instability of the situation geopolitically makes it far from feasible currently (May, 2017).

But drawing on the example of Lebanon 2006 explained in section 4.6 of this dissertation, and since the Syrian situation has triggered so much humanitarian relief and global attention to help the population, a global meeting hosting all interested countries or organizations might be held to define the roles and sums of donations and contributions to Syria/Aleppo. The key players are expected to be The World Bank and on similar grounds to the Lebanese case would be the United Nations organizations such as UNDP.

Qudsi (2016) identified certain donors based on the incoming funds before the war to the old city of Aleppo as shown in Figure 39.

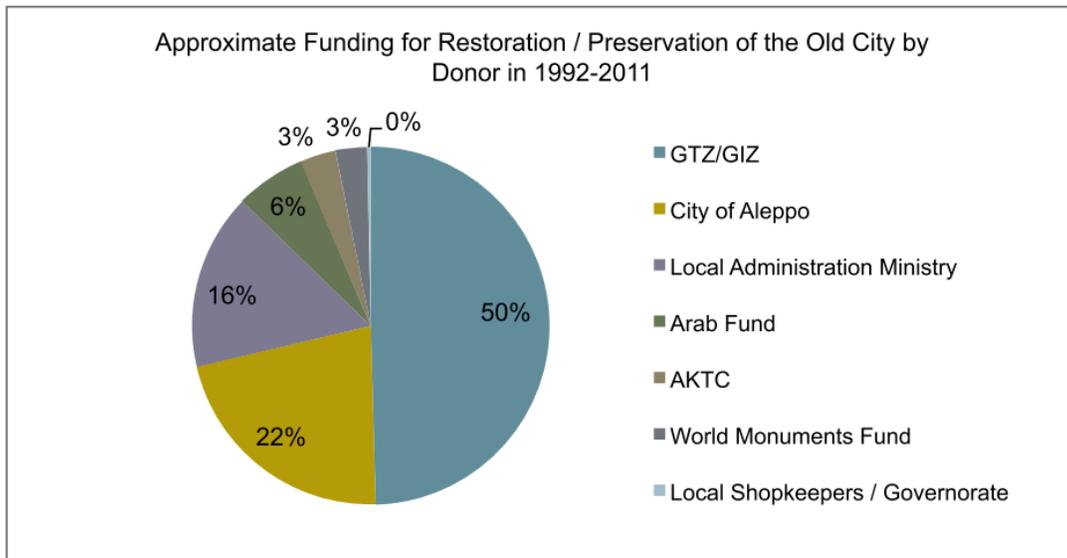


Figure 39 Donations to Old City restoration and preservation as percent of total (Qudsi, 2016)

Managing the process of reconstruction after conflict holds controversy especially in the case of a civil war, where several parties exist, and their allies from population are biased to their decisions on the process. Hence the director of the process should ideally be a neutral party, like UNDP, and at the same time cooperation from the ruling government is a must. The state's responsibility of the recovery process is essential to restore its credibility and the population's belief that the people in charge after all the conflict and turmoil do have their interests at heart, and genuinely aspire to assist them in returning to normality. This trust in the government is essential to sustain peace after a conflict.

6.1.4 Recycling disaster waste

Al Saleh (2017) in her study on recycling disaster waste notes that debris in Aleppo is estimated at 50 million cubic meters of all sorts of rubble. She proposed certain sustainable materials that could be developed and manufactured from disaster waste. Her suggestions included recycling them to concrete blocks, asphalt from the aggregate in parks and on roads, her proposal was adopted by the Ministry of Environment in Syria in early 2016 to be implemented. One of the main decisions regarding recycling debris is whether to separate the waste on-site or off-site (Brown & Milke 2016). The factors affecting this are: 1) Time

constraints (2) Resource availability (3) Degree of mixing of wastes and (4) Human and environmental hazards.

The main problem is space and ability to separate the waste into recyclable and non-recyclable, as well as storing and transporting it. “The volume of waste, relative to the existing waste management capacity of a community, can significantly influence the decision to recycle or not” (Brown and Milke, 2016). This is an extremely important aspect when reflected to this dissertation’s focus, which takes place in a developing country, where regular waste management is not well developed, and the scale of destruction is massive.

Brown and Milke (2016) summarized the factors that should be considered to define the feasibility of disaster waste recycling:

volume of waste; degree of mixing of waste; human and environmental health hazards; areal extent of the waste; community priorities; funding mechanisms; and existing and disaster-specific regulations.

From the German example in section 2.11 we suggest including the returnees in the process of clearing rubble, by providing incentives or wages for those who participate. This method was effective in the post WWII case and it intrigued inclusion and responsibility by the people. Clearing rubble is essential to restore movement around the city, and collecting it to recycle will save revenue overtime (Qudsi, 2016).

6.1.5 Infrastructure recovery

Drawing on the case explained in section 4.6 of this report, the adoption scheme was successful when it came to infrastructure, hence we propose a similar solution, for countries or NGOs willing to provide aid to Aleppo. Since infrastructure is a public property, feelings of exclusion of adopting a neighborhood/village and not the other would be limited in this scenario. However it is advised since the city has been classified into two separate parts: east and west, each representing a part of the population, to ensure equity: adoption of public structures should take into consideration the different needs of each part of the city. That would be facilitated by the IRC, which would assess needs and decide on the priority of implementation, whether it be on the East or West parts of Aleppo.

This approach has proven effective in the Lebanese case, is quite fast in execution since it is a defined entity to rebuild, and must be in coordination with the reconstruction council and the planning department of the city.

A survey amongst Aleppians residing in refugee camps in Turkey was held by the *Aleppo Project* team and summed up the infrastructure provisions priorities as seen by the residents, Figure 40.

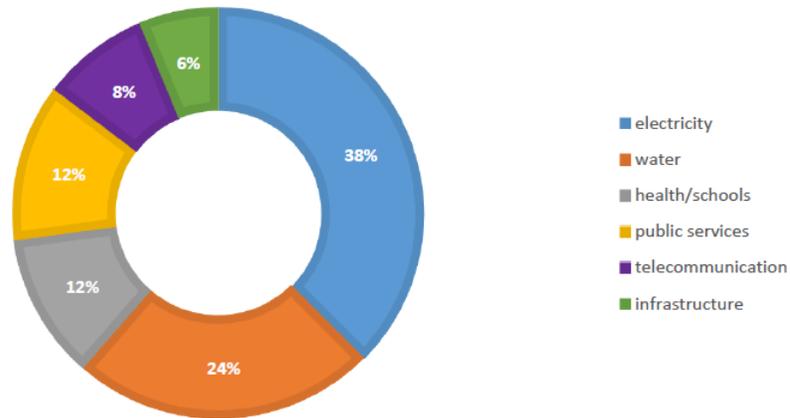


Figure 40 Which public services should resume first questionnaire (The Aleppo Project, 2015)

6.1.6 Urban areas

Approach to Level destruction I:

The amount of destruction in Level I is amendable by the locals themselves, through local firms and contractors, the responsibility in reconstruction may be an indemnity to the people affected. This should be given to compensate for the damage and assist them in repairing it as part of the reconstruction process and from the designated funds of reconstruction by IRC.

IRC is to define the level of damage hence the indemnity value and coordinate the release of funding ensuring fairness and impartiality, to avoid dispute between owners on the right to be compensated.

Approach to Level destruction II:

Demolishing building remnants and designing and rebuilding the new proposed buildings in place are the main task of these areas. We propose that the design of this reconstruction is done by IRC itself, to ensure coordination with the proposed master plan of the city. Contracting jobs for this area could be handed to the local firms which are already familiar with the buildings codes and materials, and this can play an important role to creates jobs and limit unemployment, resulting in stabilizing the population a little more, and helping them to return to normality by making a living and being an active rather than passive part of the reconstruction.

Approach to Level destruction III:

These areas need looking at their infrastructure first, before restoring individual buildings, hence the main scheme is adoption, as was stated in section 6.3. Within these areas falls the old city which has its own section, 6.9, to highlight its uniqueness. The major part and funding of the reconstruction process would go to these areas. Building Back Better is the principle that works best for them since the majority of these neighborhoods prewar were above standard density, lacking basic services and amenities, and even a big part of them were illegal slums which made them more vulnerable to the conflict both physically and demographically. Restoring these areas should be more of a *tabula rasa* process than restoring the *status quo ante*. First because the amount of destruction allows a new master plan, and second because the prewar status was less than satisfactory.

6.1.7 Rural areas

Most rural areas of the province of Aleppo fall under the level II classification, where damage is limited to buildings but sometimes extends to basic services too, but not as severe as the level III, since the urban fabric of those towns and villages was not as dense and crowded to begin with. Even the level of services was minimal; most villages in Aleppo used to survive on private water supplies not governmental services, rarely any parks or public services except from poorly designed schools and basic healthcare services. Again the issue here is – like the issue of eastern Aleppo - one of inclusion. When the residents of rural areas are not equitable to the elite of city, they will migrate. When their basic business as farmers is not supported by the state they will turn more to industry or become workers at the city, which directly affects the production of corps that make up

an important source of revenue for them, and keeps the environmental stability of an agricultural land originally.

In rural areas, people are used to building their own homes, or with little assistance of local firms and workers from their own villages. The proposal for these areas is the cooperative approach, where workshops can be held to give them the know-how of building, or grants with supervision and follow up to make sure the money is used in rebuilding their homes, as explained in section 2.2.3 of this dissertation.

6.1.8 Considerations of temporary shelters for returnees

The need for temporary shelters in the discourse of post-disaster reconstruction is inevitable. When peace is declared in the city of Aleppo, and an agreement is reached, it is projected that a large number of the original inhabitants will want to come back, mostly the internally displaced. The reconstruction of residential units will consume a huge amount of time, a couple of years in an ideal situation. During this time, temporary shelters should be provided. Qudsi (2016) suggested designating certain open spaces close to the old city to host the influx of people until the main amenities are restored.

The trend in temporary shelters –if stayed longer than originally expected and no efficient housing solution was provided- that they turn to permanent settlements. This would contradict with the master plan and all urban planning efforts to legalize residential areas and provide them with sufficient services to higher the standards of living in the city.

UNHCR has already commissioned IKEA for the Syrian Refugee crisis to design “Better Shelters”. The design was created that is just under 18 m² and shelters 5 people maximum (Qudsi, 2016). Qudsi (2016) argued that the open spaces are kept government held, and not sold to investors or developers, converting them to parks after housing provision is promising.

6.1.9 Considerations for the historic old city

Many NGOs have interest in the old city of Aleppo because of cultural and heritage reasons, these must be looked at closely and examined to pick the one closest to restoring the city as it was, and with motives that are most justified.

The old city is a UNESCO world heritage site; the German Technical Group (GTZ) and the Agha Khan Trust for Culture have both conducted preservation projects

in the old city before the war (Qudsi, 2016). These international NGOs will definitely have a key role to play in the reconstruction of the old city specifically. Another entity is a local one: The Directorate of the Old City (DOC) which was founded in 2002, which is a government entity that managed the preservation of the old city before the war. DOC worked as a channel to facilitate receiving funds from the government and it should be kept intact to ensure independence of the old city.

Referring to the case of Bint Jbeil reconstruction in south Lebanon where Qatar funded the process and the municipality in charge looked at developing a “better” town for the inhabitants. In this process of modernization the old city and monuments were planned to be demolished and the RU of the AUB intervened to change the plans and save the heritage (Al-Harithy, 2010).

Such incidents are result to overlapping responsibilities of post-war reconstruction, inflated in the case of heritage preservation when the people are in temporary shelters and the priority is just providing housing and returning to normality. When reconstruction was left to the political party (Hizbollah in that case) who saw in the city its strategic capital and wanted it modernized and built anew in a short time, this lead to negligence of the importance of such heritage and marginalized the need to restore it *vis a vis* house the homeless. The old city in Aleppo was an economic hub, a touristic attraction, as well as home to many original Aleppians. These functions should be preserved in plans of restoration of the old city.

Skilled laborours are an important part of restoring the buildings due to a big amount of handmade work like carpenters, stonemasons, painters, and general labor workers (Qudsi, 2016). This is likely to be a challenge in the absence of the original inhabitants who are familiar with these processes, hence “returning able-bodied individuals can be included in the reconstruction effort” (Qudsi, 2016).

On their study on *Sustainable Reconstruction for Aleppo*, Bisutti et al. (2016) suggested a buffer zone around the historical center to protect it during the reconstruction process. Such suggestions promote more exclusion and isolation than inclusion and cooperation. The old fabric of the city was well connected: the historic center, the new city center around it, the expansion of the city around it, then the suburbs. By no means is this dense fabric meant to be interrupted by buffer zones within the city. But rather laws and regulations of preservation of the center. The direct advisory from the University of Aleppo would assist, since

the professors have a long history in dealing with the historic old city and as academics, they prioritize culture and heritage over economics or revenue.

6.1.10 Building Back Better

Every major destruction case holds within it an opportunity and responsibility to take the urban planning and architecture to a better level and correct the mistakes that were challenging to face, had the urban fabric remained intact. In our case study, the major issue that needs closer analysis and correction is the slums that made up 40% of the city (Vendemini & Villani, 2016), and the low standards of living in many neighbourhoods that are considered legal.

Population density in these areas was far above the standard norms of 200 persons per hectare, reaching up to 1000 (Vendemini & Villani, 2016). Stacking buildings with little or no setbacks and narrow streets, even licensing industries such as car repair shops within these residential areas was very common. This all should be considered in the light of the new laws and planning of the city after a large number of these buildings has already been demolished or no longer habitable and in need of restoration. Owners of industrial shops in these areas must be compensated in plots in the industrial city or other similarly designated areas for this function. Introducing green areas and open public spaces is advised to make up for the lack of public open spaces that the city had suffered.

In contrast to the Lebanese case of 2006, where the war was for only 34 days, the Syrian war has been going on since March 2011, making it more than 5 years already, as of the time this dissertation is being written. This resulted in a big number of people who have already sought refuge in the west (Europe, Canada, Australia, and the US mainly). These people have started a life in their new asylum and are not looking to returning to their country any time soon. This indicates that the number of people looking to go back to Aleppo for instance are less than the number of people who left it since the war started (there are an estimated 1 million Syrians are in Europe alone). Figure 6.3 shows the number of people that had left the city on both sides.

Table 3 Varying population losses between east and west Aleppo (Qudsi, 2016)

	Condition at the beginning of 2011 to present				
	% of total population	Estimated inhabitants in early 2011	Estimated remaining inhabitants	Estimated % population remaining	Estimated % of emigration
In zones controlled by the regime	40	1,660,000 to 2,000,000	996,000 to 1,200,000	55% to 65%	35% to 45%
In zones controlled by the free army	60	2,490,000 to 3,000,000	747,000 to 900,000	20% to 40%	60% to 80%
Aleppo	100	4,150,000 to 5,000,000	1,743,000 to 2,100,000	36% to 42%	58% to 64%

6.2 Feedback by Experts on the proposed framework

In order to make this study closer to application than a mere idealist academic proposal, several one-on-one online interviews were conducted with experts in the field of PDR, and specifically ones related to studying the case of Syria.

To sum up their opinions and modifications on the proposed framework:

1) **Fatima Kourdi** a Professor in Architecture. Prof Kourdi is a guest Professor in Dresden University, and teaches in a European program online on Post-war reconstruction (refer to Appendix 1 for full feedback). Her main feedback was that the major focus must be on rebuilding the slums, as they house 50% of the city's inhabitation and form the major distributor of immigrants. Mainly she sees two major topics: the slums, and the old city, that she suggests having two clear and different approaches to. She also notes that the legislation for reconstruction is a key issue by cooperation between investors, owners, and city council. She adds to the pre-war urban problems the limitless growth of the urban areas of Aleppo, to avoid extending behind the green zones surrounding the city.

2) **Yasser Dashwali** a Professor in Sustainable Architecture at Aleppo University (refer to Appendix 2 for full feedback). His main feedback was that considering the properties owned by the endowments ministry in Aleppo is crucial since they make up a considerable amount of the city center properties. The endowments are basically owned by the government itself, and all the apartments in such a building would be only rented by the end-users. He found the violations on the

archeological city that existed pre-war are a big threat, and must be addressed properly by the IRC in the post-war era. He also identified “funding” to be the major issue when applying the PCR.

3) **Norah Al Saleh** a PhD student doing her dissertation on PCR in Aleppo at Cottbus University in Germany (refer to Appendix 3 for full feedback). She identified a few issues in the implementation of the framework. Namely she questioned stability in the post-war phase, and the different agendas of the potential donors. She suggests that the building regulations need to be revised for this critical phase. Also she noted an important issue in the case of Syria and that is ensuring the transparency of the reconstruction council. The main question she raised is: Who are the people we are building for? Is it the displaced people or a new community? And also she questioned the fact that some areas are wiped out and will be built anew, what about the values and identity of these areas and their attribution to the overall urban identity of the city?

4) **Sawsan Abu Zeindien** an Architect and a researcher at University College London (refer to Appendix 4 for full feedback). Her main feedback was that politics will play the major role in the process, even university units which were assumed to be a neutral academic entity are subjected to politics. She points out to an important factor that must be considered in land claims: which is claims over rights of informal settlers who have occupied the land for years but have no documents to prove it. Warning that post-war reconstruction can be used to evict informal settlers and accommodate new market-driven developments, especially that the old system has produced this inequitable status. She questions power dynamics and the fact that the current government is an actor in the conflict. Any injustice in the reconstruction process will be fragile and break into new forms of conflict sooner or later.

She highlights the effect of power politics again in the adoption scheme, where the public opinion has a classification to each part of the city to be either the holder of terrorists or the supporters of the regime, so she warns that reconstruction might be a factor to deepen the division instead of connect the two parts of the city.

When it comes to different approaches in handling urban and rural areas she suggests acknowledging a ‘rural-urban continuum’ as the rural areas are an extension of urban ones in supply and demand. She focuses on the dynamics between the two, and the fact that many rural areas were urbanized.

On the issue of informal settlements she looked at it with a broad perspective stating that there was a root cause for people to start building for themselves and innovating because of a certain shortage of supply by governments, and there are good practices in these settlements that could be used and improved. Even the fact that there is industrial activities taking place in residential areas isn't always a matter of loose application of rules or lack thereof, but of unaddressed needs that we need to look at closely and find a solution to make sure that such occurrences don't happen again even if we demolished them now.

Finally she highlights an important issue: "Would enforcing higher standards in building regulations contribute to having more slums as people won't afford it?" and this is a critical question that implied taking into consideration the local traditions and standards.

5) **Reem Lababidi** a researcher on heritage conservation and Architect. Her main feedback was that adding a new step to the framework: Situation Analysis to assess the physical condition, and potential donors and actors and assess resources. She highlights the importance of reforming the systems of the community, such as legal, educational, and health. She recommends using a crowdsourcing tool such as: ushahidi.com which was implemented by ICCROM in Nepal in 2015.

The major issue she identifies is that monitoring reconstruction is crucial to ensure no corruption or manipulation occurs on the huge financial resources by local or international actors, again she questions the neutrality of the UN and refers to cases of bias to certain entities by it.

The main corrections and additions that were noted by the experts are as follows, in the same order of the original framework:

Data and assessment and situation analysis

A situation analysis is to be conducted in order to assess the needs, availability of resources and the potential donors and main actors of the process.

Decentralization and Independent Reconstruction Council

One of the major jobs for the IRC is relooking at building regulations in the light of the new conflict and destruction. The regulations in Syria generally are not strict and binding, and when they are enforced, they lack looking at the root cause of urban problems rather than merely dealing with the end-result and attempting

to eliminate it. One of the major issues and it housed half of the population: the informal settlements in Aleppo. The old approach in Syria was to regulate a law to ban them, and sometimes evict the people to destroy the illegal buildings. The settlements are an innovative solution proposed spontaneously by the poor to house themselves, in the light of lack of legal affordable housing. This should be considered before banning illegal housing, and maybe accommodating these settlements in a way to include it in the master plan and legalize it would be a more just option than radically banning them.

New zoning strategies have to be considered in order to correct the old zoning of the city and be suitable to the new situation.

IRC is responsible for monitoring the financial resources that are channeled for the reconstruction process, and making sure they are used as per needs, with no corruption or manipulation. Representatives of NGOs may be hired as part of this council to ensure neutrality and non-bias of this council.

Potential donors and funding

All donors have agendas to fulfill, this is the first consideration when it comes to where the revenues come from: what is the payback?

Recycling disaster waste

Recycling is efficient, however in the old city zone it must be handled in more of a preserving than recycling manner.

Infrastructure recovery

The fact that the west part of the city was under the rule of the government for the length of the conflict should not affect such decisions to adopt or develop, as any segregation in reconstruction could cause a new revolution/turbulence to evolve.

Urban areas

Regarding the informal settlements rebuilding: the identity of the place and the sense of belonging that is related to it can't be marginalized. In previous PDR projects, drastic changes of the physical built environment were not welcomed by the residents who are supposed to come back to inhabit the new buildings. This is also to state that the main people building back is directed to serve are the returnees, the original inhabitants of the city. Though not every immigrant intends on returning back to Aleppo, many of the immigrants haven't found a

stable ground to settle outside yet, and would return shall the circumstances allow, hence they are the target of the reconstruction. Investors, engineers, and many other categories of people might express interest in inhabiting Aleppo in the post-war era, but by no means are they a replacement to the original inhabitants who have the right to land, and the priority to inhabit their own neighbourhoods.

To conclude, the areas in level III that have faced major destruction shall be redesigned to a better standard of living, but with similar materials, and sense of space that used to be, to ensure the ambience of the space doesn't undergo a radical change and repel the people it is designed to attract.

Rural areas

In Aleppo there are the far rural areas which are considered villages and not urbanized, and there are some towns that are considered an extension of the city itself, approximately close and urbanely are a continuum of the city itself.

Other rural areas that are more of suburbs and mostly their residents were people who commute to the city everyday for work, the approach to rebuilding those areas can be similar to that of urbanized areas, taking into consideration the special design patterns of these areas and less density that contrasts to that of other urban parts of Aleppo. City boundaries have to grow to accommodate the extensions or close suburbs keeping the green buffer zones and agricultural areas intact.

Linking these areas to the heart of the city via advanced public transportation (at a later stage of reconstruction) would assist in making people settle in their towns/suburbs and commute to the city for a living. This would be on the plan after acute needs are met.

Considerations of temporary shelters for returnees

The main question around these is: who are the returnees? Is it the original people or is the city meant to host a new population as per a political agenda?

Considerations for the historic old city

The approach for this part of the reconstruction is mainly different to any other part, because of the historic value of the place. While in regular modern parts of the city recycling waste massively is an option, in the old city building remnants are to be looked at differently, and to be preserved for restoring due to the value they hold.

Worth noting that the ownership of many of the plots and buildings in the old city is an endowment that belongs to the ministry of endowments in Syria.

Building Back Better

Though this concept sounds physical, but building back better includes more than just the built environment to be restored to a status that is better than before, but the entities and systems of the community to be also restored in a way that will sustain the physical environment and provide peace and stability rather than exclusion and segregation of different community

6.3 Outline of the revised and final framework

After the extended discussion of the framework and the corrections and suggestions given by the experts, here's the main list to sum up the points of the final resulted framework, that was originally the aim of this research, to develop it and conclude from the literature, and similar previous projects on post-war reconstruction, an applicable framework that takes into account the urgency and uniqueness of the situation in Aleppo:

6.3.1 Data and assessment

- Situation analysis to assess needs, availability of resources, donors and actors
- Assessment of damage
- Including universities and students as part of the planning team
- People with ownership proof to present it at this stage.
- Crowdsourcing tool to collect data in this phase can be proposed.

6.3.2 Decentralization and Independent Reconstruction Council

- An essential part to macro-manage the process
- Includes researchers, representatives of the local people and the ruling government, urban planners, architects, and policy makers
- New master plan and zoning of the city to be proposed.
- IRC monitors the financial resources channeled for reconstruction
- Ensuring this entity is unbiased is key to a successful sustainable reconstruction.

6.3.3 Potential donors and funding

- Global conference hosting all interested countries is proposed
- The World Bank and UNDP are key players
- The state is responsible for reconstruction to restore faith in it.

6.3.4 Recycling disaster waste

- Estimated 50 million cubic meters of rubble.
- To be recycled into concrete blocks, asphalt for parks and roads
- Returnees may be part of this process with an incentive
- In the old city materials should be preserved and handled with extra delicacy to assist in restoring ancient buildings.

6.3.5 Infrastructure recovery

- The adoption scheme to be utilized.
- Equity in restoring services across the city east and west.
- This system is fast in execution and proved effective.
- Vote by the people suggested the first amenity they want restored is electricity

6.3.6 Urban areas

- In Level destruction I an indemnity to the people affected is proposed.
- In Level destruction II design and rebuilding to be proposed by IRC, contracting jobs can be given to local firms
- In Level destruction III restoring infrastructure is the first task and adoption scheme is proposed, taking into consideration most of the old plans were over-crowded, restoring them required change, in a way that is not drastic to repel the original people and in the same time to accommodate them in a decent residential place.

6.3.7 Rural areas

- Mainly the cooperative approach is proposed for the rural areas
- Reducing migration to the city is key in stability of crops, eco system and the economy.
- Rural areas that have developed rapidly on the outskirts of the city shall be re-planned to accommodate the needs, yet be well connected to the mother city

6.3.8 Considerations of temporary shelters for returnees

- These shelters have the habit of turning into permanent shelters if poorly located or designed to allow extension
- Picking the right location is key, as well as the building materials that don't allow growth or long term settling.

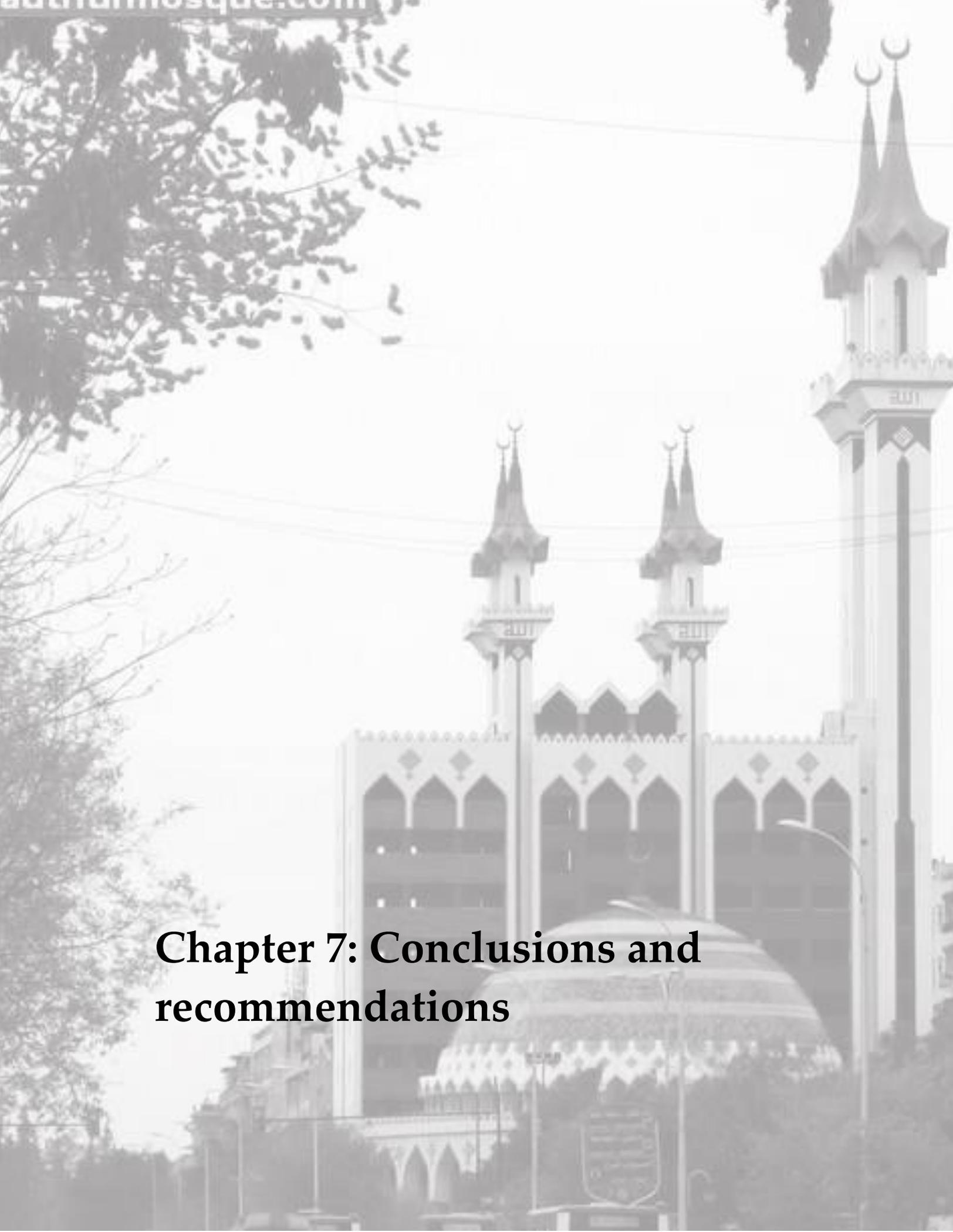
6.3.9 Considerations for the historic old city

- Multiple donors and NGOs have interest in this area
- Picking the developer will dictate the future of the old city
- The Directorate of the Old City should be restored and decentralized
- The original functions were tourism, commerce, and residence, and that should be preserved in plans of restoration of the old city.
- Skilled labourers are an important part of restoring the buildings due to a big amount of handmade work like carpenters, stonemasons, painters, and general labor workers

6.3.10 Building Back Better

- Attention to slums/the main problematic issue in the planning of the city. Strict regulations and compensation to owners to stop the sprawling of illegal settlements within the city or in the suburbs.
- The reason behind the slums is lack of affordable low-income housing, providing this should aid in solving the problem.
- Higher standards of living in all neighborhoods, ensuring functions are in line with global standards of livelihoods such as mixing industrial and residential functions should be eliminated.
- Introducing the concept of urban open spaces for people to interact, community centers and facilities for the younger generation in particular, to give them a sense of inclusion and belonging to the city, rather than repression or negligence.
- Better infrastructure and integrating sustainable energy solutions
- Having the people participate in polls and meet ups organized by their local municipality to engage in the planning process, a feedback from the residents, include them in the planning process rather than a purely top down approach to planning means more satisfaction with the end result and less complaints and rebellions. This is more critical in the case where international players are participating in the process without knowledge of the local context.

- Corruption within the government entities makes it lose its integrity, the faith of the people in it, and leads to a disorganized urban environment which was the case before. Transparency and honesty is key in all efforts to rebuild or develop.
- Social equity was missing in the Syrian context in general, and must be introduced again to stabilize peace and include all levels of society in the rebuilding.



Chapter 7: Conclusions and recommendations

7.1 Conclusions

This research has started from the rubble of the city to try to find ways to rebuild, but after this extensive reading and literature reviews of previous wars and the cities they left behind, the case of Aleppo is, though tragic, not unique. In all previous incidents of war or turbulence, there comes a time when political stability is achieved, and the light would then be shed on rebuilding and restoring the city.

In this dissertation, many examples have been shown in detail to analyze the factors that led to a satisfactory or less than satisfactory result of reconstruction. Despite the difference in all factors of wars or disasters, the tragedy of urbicide (violence against cities) is the same, and the approaches to treating it are all similar.

7.2 Summary of Research Contributions

The researcher started with an aim to specify factors to facilitate the process of reconstructing this historical city, and the framework that has developed was the result. Through corrections by experts on the matter might have matured it, nevertheless, this is the first step on the way to reconstruction, and many more meetings with policy makers and planners of the city must take place before implementing it.

The main point of the research is building back better, and through analyzing the urban problems that pre-dated the war, the main issues have been identified. Normally reconstruction states an urgency to rebuild and house the returnees, but especially in the case study of Aleppo-SYRIA, there are major drawbacks of the original built environment that dictate change.

Potential problems in implementing the suggested framework are many, since the case is by no means an ideal one. The fact that there is an ongoing conflict, even a political settlement hasn't been reached yet, this makes consensus on reconstruction a challenging task. In parts of the country where the fighting has stopped and the government ruled again, there is dissatisfaction by the original residents who opposed the government during the turbulence, and hence there is lack of trust.

Syria as a third world country faced major problems when it comes to urban planning, sustainability and the built environment. These problems have only piled up after the conflict and several Syrian cities have reached an alarming stage. Proposing an ideal scenario framework is an attempt to reach Building Back Better, especially that foreign intervention in reconstruction is a given now, that the scale of destruction exceeds the state's economic and governance capabilities.

Corruption is a major drawback that has affected Syrian public system's efficiency directly. This would occur as a problem again especially with the external funding and influx of resources. Another face to corruption is favoring certain neighborhoods/people for a faster reconstruction. Without close monitoring and a system that is so intact with any proposed reconstruction plan, this is inevitable. This is an opportunity to reach consensus with policy makers on developing master plans that consider social equity, people's interaction with each other, enough open spaces and public services.

7.3 Recommendations for Further Research

The field of post disaster reconstruction is a vast one. It is constantly developing and new means of temporary sheltering, more practical materials, and different ways of assessing damage through photogrammetry, all of these are potential subjects for further research on this case. To be specific, in the case of Syria:

- Research on building materials that suit the vernacular architecture and could be derived from recycling disaster waste is a suggestion.
- Quantitative research through satellite imagery analysis can be valuable since the urban textures of the city have varied widely after the conflict. This could assist in exact damage assessments, suggestions for relocation or temporary sheltering, count of destroyed buildings and financing estimates.
- On social and political aspects much more research can be done to find innovative ways to include the people in decision making and integrate the NGOs and foreign contributors and donors in the reconstruction process along with the state government.
- The topic of old Aleppo city has taken much exposure by several researchers due to the cultural value of the place and many researches are cited in this dissertation, but the topic is still open for suggestions and contributions for Old Aleppo City.

- Research on the ideal way to deal with informal settlements/slums in the reconstruction process, with innovative techniques to house the people and provide basic services in a legal way is also a suggestion for further research.
- On the economic topic much is to be done on Aleppo, being the economic hub of the country, and the amount of damage that the war has had on the economy, how inflation affected the currency, ways to recovering the economy after the war considering the funding that is expected to come through.

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Appendices

Appendix 1

Prof. Fatina Kourdi's answers

Questionnaire Regarding Aleppo Reconstruction Proposed Framework – <i>survey</i>					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
<i>The proposed framework is sound in terms of scope</i>		*			
<i>The proposed framework is comprehensive and include all major elements needed for the reconstruction process</i>	*				
<i>The sequence of the steps is logical and applicable</i>		*			
<i>The proposed framework takes into consideration the uniqueness of the post-conflict situation in terms of rebuilding</i>	*				
<i>No unnecessary elements are included in the framework proposed</i>		*			
<i>No redundant elements are included in the framework proposed</i>					
<i>The framework is applicable</i>		*			
<i>The independent reconstruction council is a necessary entity to manage the process</i>	*				

<i>The independent reconstruction council is the most appropriate entity to LEAD the process</i>	*				
<i>Urban issues that predated the starting/continuation of the war are well articulated</i>			*		
<i>The social aspect issues were addressed in the proposed framework</i>			*		
<i>The economic equality issues were addressed in the proposed framework</i>		*			
<i>The religious and ethnic background diversity was addressed in the proposed framework</i>			*		
<i>Political allegiance was overcome in the proposed framework</i>		*			
<i>Protecting/rehabilitation of the heritage and old city was well considered in the proposal</i>			*		
<i>The solutions proposed to each level of destruction identified are appropriate</i>			*		
<i>The proposed approach to infrastructure reconstruction is suitable to the context</i>			*		
<i>The considerations given for recycling disaster waste are rational</i>			*		

<i>Types of potential donors have been identified correctly</i>		*			
<i>Motivations, expectations, and long term interaction of donors was well thought of</i>			*		
<i>The factors explained of building back better are applicable</i>		*			
<i>Adapting this framework is likely to enhance the reconstruction process</i>			*		

Questionnaire Regarding Aleppo Reconstruction Proposed Framework - open end questions	
<i>Do you find the order of the steps is correct? Or does it need revision? If so, why?</i>	It is correct
<i>Are there any elements that you suggest adding to the framework?</i>	
<i>If you found any elements redundant, please define which ones, and explain, why?</i>	Slum settlement need more intention, especially because this area is the most destroyed area, The Area is nearly 50% of the city inhabitation and the majority of immigrants are from this areas
<i>Can you identify/foresee any major issue in the implementation of this framework</i>	Legislation for reconstruction of destroyed area are not mentioned. As example cooperation between investors, owners and city.
<i>Do you have more suggestions to correct urban issues that predated</i>	Discussion of endless extension of the city of Aleppo. avoid growing of the city on the coast of green zones surrounding the city

<i>the war through the post-war reconstruction framework?</i>	
<i>Based on your experience/knowledge, how does the proposed framework compare to previous post-war reconstruction frameworks/plans</i>	There is for sure a big different and must be. This topic could be clearer.
<i>Any other comments or suggestions that you feel will help improve the scope, focus or the applicability of the proposed framework.</i>	The post-war construction should focus on 2 major topics. Old city and illegal settlement. These 2 areas should have completely different approaches. I strongly recommend the researcher to differentiate between the 2 approaches.

Appendix 2

Prof. Yasser Dachwali's answers

Questionnaire Regarding Aleppo Reconstruction					
Proposed Framework – survey					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
<i>The proposed framework is sound in terms of scope</i>	✓				
<i>The proposed framework is comprehensive and include all major elements needed for the reconstruction process</i>	✓				
<i>The sequence of the steps is logical and applicable</i>	✓				
<i>The proposed framework takes into consideration the uniqueness of the post-conflict situation in terms of rebuilding</i>		✓			
<i>No unnecessary elements are included in the framework proposed</i>		✓			
<i>No redundant elements are included in the framework proposed</i>			✓		
<i>The framework is applicable</i>		✓			
<i>The independent reconstruction council is a necessary entity to manage the process</i>	✓				
<i>The independent reconstruction council is the most appropriate</i>	✓				

<i>entity to LEAD the process</i>					
<i>Urban issues that predated the starting/continuation of the war are well articulated</i>			✓		
<i>The social aspect issues were addressed in the proposed framework</i>			✓		
<i>The economic equality issues were addressed in the proposed framework</i>		✓			
<i>The religious and ethnic background diversity was addressed in the proposed framework</i>		✓			
<i>Political allegiance was overcome in the proposed framework</i>	✓				
<i>Protecting/rehabilitation of the heritage and old city was well considered in the proposal</i>		✓			
<i>The solutions proposed to each level of destruction identified are appropriate</i>		✓			
<i>The proposed approach to infrastructure reconstruction is suitable to the context</i>		✓			
<i>The considerations given for recycling disaster waste are rational</i>			✓		
<i>Types of potential donors have been identified correctly</i>		✓			

Motivations, expectations, and long term interaction of donors was well thought of		✓			
The factors explained of building back better are applicable		✓			
Adapting this framework is likely to enhance the reconstruction process		✓			

Questionnaire Regarding Aleppo Reconstruction Proposed Framework - open end questions	
Do you find the order of the steps is correct? Or does it need revision? If so, why?	Good and suitable
Are there any elements that you suggest adding to the framework?	Studying the properties of Islamic endowments in the city of Aleppo دراسة املاك الاوقاف الاسلامية لمدينة حلب
If you found any elements redundant, please define which ones, and explain, why?	No
Can you identify/foresee any major issue in the implementation of this framework	التمويل Finance
Do you have more suggestions to correct urban issues that predated the war through the post-war reconstruction framework?	الغاء بعض المخالفات والتعدييات على المدينة الاثرية والتي كانت قبل الازمة The cancellation of some irregularities and violations of the archaeological city, which was before the crisis

<p><i>Based on your experience/knowledge, how does the proposed framework compare to previous post-war reconstruction frameworks/plans</i></p>	<p>Good and suitable</p>
<p><i>Any other comments or suggestions that you feel will help improve the scope, focus or the applicability of the proposed framework.</i></p>	<p>يجب (البند 6) تحديد أسس التقييم التي يمكن اعتمادها فوق الأسس هذه يمكن التفريق ما بين إعادة الاعمار او إعادة التاهيل</p>

Appendix 3

Nourah Al Saleh's answers

Questionnaire Regarding Aleppo Reconstruction Proposed Framework – <i>survey</i>					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
<i>The proposed framework is sound in terms of scope</i>			X		
<i>The proposed framework is comprehensive and include all major elements needed for the reconstruction process</i>				X	
<i>The sequence of the steps is logical and applicable</i>			X		
<i>The proposed framework takes into consideration the uniqueness of the post-conflict situation in terms of rebuilding</i>		X			
<i>No unnecessary elements are included in the framework proposed</i>		X			
<i>No redundant elements are included in the framework proposed</i>		X			
<i>The framework is applicable</i>			X		
<i>The independent reconstruction council is a necessary entity to manage the process</i>	X				
<i>The independent reconstruction council is the most appropriate entity to LEAD the process</i>		X			
<i>Urban issues that predated the starting/continuation</i>			X		

<i>of the war are well articulated</i>					
<i>The social aspect issues were addressed in the proposed framework</i>				X	
<i>The economic equality issues were addressed in the proposed framework</i>				X	
<i>The religious and ethnic background diversity was addressed in the proposed framework</i>				X	
<i>Political allegiance was overcome in the proposed framework</i>			X		
<i>Protecting/rehabilitation of the heritage and old city was well considered in the proposal</i>					X
<i>The solutions proposed to each level of destruction identified are appropriate</i>			X		
<i>The proposed approach to infrastructure reconstruction is suitable to the context</i>		X			
<i>The considerations given for recycling disaster waste are rational</i>					
<i>Types of potential donors have been identified correctly</i>				X	
<i>Motivations, expectations, and long term interaction of donors was well thought of</i>				X	
<i>The factors explained of building back better are applicable</i>			X		

<i>Adapting this framework is likely to enhance the reconstruction process</i>			X		
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<p style="text-align: center;">Questionnaire Regarding Aleppo Reconstruction Proposed Framework - <i>open end questions</i></p>	
<i>Do you find the order of the steps is correct? Or does it need revision? If so, why?</i>	Correct, no need for revision
<i>Are there any elements that you suggest adding to the framework?</i>	<ul style="list-style-type: none"> • Revised/new laws for reconstruction • Participation of stakeholders, actors in collaborative organizations • Economic recovery • Assessment of needs and capacities
<i>If you found any elements redundant, please define which ones, and explain, why?</i>	
<i>Can you identify/foresee any major issue in the implementation of this framework</i>	<ul style="list-style-type: none"> • Stability in the post-war phase • Who decides what • Possible donors = different agenda • Needs of laws and regulations • Local community participation
<i>Do you have more suggestions to correct urban issues that predated the war through the post-war reconstruction framework?</i>	<p>I think you should go more in details when discussing the importance of the old city as its approach will differ completely from the other approaches you suggested</p> <p>There was no discussion of the values of the areas you identified, what was their identity? their attribution to the overall urban identity of Aleppo?</p> <p>Who is going to form the independent reconstruction council and how to assure its transparency?</p> <p>Who are the people we are building for? The displaced? New community?</p>
<i>Based on your experience/knowledge, how does the proposed framework</i>	--> each case differs, I'm not sure a proposed framework was created with these specifics

<p><i>compare to previous post-war reconstruction frameworks/plans</i></p>	<p>In the German cases it was mostly recreating the past to gain the identity back</p> <p>In Beirut it was more about the post-conflict phase of instability and absence of laws, economic-based reconstruction, the donor gets to choose it all</p> <p>The Balkan cases show a negative intervention of the international community and wrong use of resources</p>
<p><i>Any other comments or suggestions that you feel will help improve the scope, focus or the applicability of the proposed framework.</i></p>	

Appendix 4

Sawsan Abu Zeindien answers

Questionnaire Regarding Aleppo Reconstruction Proposed Framework – survey					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
<i>The proposed framework is sound in terms of scope</i>		X			
<i>The proposed framework is comprehensive and include all major elements needed for the reconstruction process</i>		X			
<i>The sequence of the steps is logical and applicable</i>			x		
<i>The proposed framework takes into consideration the uniqueness of the post-conflict situation in terms of rebuilding</i>			x		
<i>No unnecessary elements are included in the framework proposed</i>			x		
<i>No redundant elements are included in the framework proposed</i>		X			
<i>The framework is applicable</i>		X			
<i>The independent reconstruction council is a necessary entity to manage the process</i>	x				
<i>The independent reconstruction council is</i>		x			

<i>the most appropriate entity to LEAD the process</i>					
<i>Urban issues that predated the starting/continuation of the war are well articulated</i>			x		
<i>The social aspect issues were addressed in the proposed framework</i>		X			
<i>The economic equality issues were addressed in the proposed framework</i>			x		
<i>The religious and ethnic background diversity was addressed in the proposed framework</i>			x		
<i>Political allegiance was overcome in the proposed framework</i>		X			
<i>Protecting/rehabilitation of the heritage and old city was well considered in the proposal</i>		X			
<i>The solutions proposed to each level of destruction identified are appropriate</i>		X			
<i>The proposed approach to infrastructure reconstruction is suitable to the context</i>		X			
<i>The considerations given for recycling disaster waste are rational</i>			x		

<i>Types of potential donors have been identified correctly</i>	x				
<i>Motivations, expectations, and long term interaction of donors was well thought of</i>		X			
<i>The factors explained of building back better are applicable</i>		X			
<i>Adapting this framework is likely to enhance the reconstruction process</i>		X			

Questionnaire Regarding Aleppo Reconstruction
Proposed Framework - open end questions

<i>Do you find the order of the steps is correct? Or does it need revision? If so, why?</i>	The steps assume that we have a functioning and legitimate government in place. It is good to at least acknowledge that the current government is one of the main actors in the conflict. In all cases, if this proposal suggests that a legitimate government is in place to macro manage the process, then this means that we are talking about very long term plans. I personally advocate for during conflict reconstruction, rather than post conflict one. And this means looking into the current dynamics and taking all the complications (and politics) of it into consideration. Unjust reconstruction processes led by entities that are seen to be part of or aligned to one part of the conflict will definitely be very fragile and will break out into new forms of conflict sooner or later.
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<i>Are there any elements that you suggest adding to the framework?</i>	More focus on politics.
<i>If you found any elements redundant, please define which ones, and explain, why?</i>	None
<i>Can you identify/foresee any major issue in the implementation of this framework</i>	Claims over rights (especially properties) is a subjective issue. What about the question of informal settlers? Don't they have claims over the land on which they lived for generations? Post-conflict reconstruction has mostly been used as an excuse to evict informal settlers and accommodate new market-driven developments. Rights can't be identified by official documents only, especially when authorities are looked at as part of the conflict. When looking into property claims, it is crucial to be aware of the system that produced the status quo and to question its legibility. Those deprived access to land or to housing before the conflict should not be neglected after.
<i>Do you have more suggestions to correct urban issues that predated the war through the post-war reconstruction framework?</i>	Again power politics! Residents of the east are mostly the poor occupying informal settlements. Those in the west are mostly the ones indulged in businesses and are generally the 'better-off'. Also, those in the east are seen to be the 'terrorists' or the host of 'terrorists'. Those in the west are seen to be the supporters of the current regime. All generic and false classifications but in a way or another they shape the public opinion. So depending on the time in which this framework will be applicable and the power structure at that time, things can be subjective. In general, it is great to look at infrastructure as a connector for two divided areas. But one must be aware of factors that can make such projects a further division, rather than a connector. The thing is that each of the steps in this framework is a huge one

	<p>that needs a proper research on its own. The least we can do when we have such limited space to discuss is to highlight barriers and challenges that we need to be aware of when looking into each. What is crucial to be considered is WHY such practices emerged? Was there an alternative? How can we address the root causes that led to such practices rather than working on demolishing/preventing them, knowing that they will emerge again if not properly addressed. The best approach here is to look at informal settlements as innovative solutions for what governments had failed to deliver. And then take the good practices from them, and improve them, while working on addressing root causes to poverty and inequality.</p>
<p><i>Based on your experience/knowledge, how does the proposed framework compare to previous post-war reconstruction frameworks/plans</i></p>	
<p><i>Any other comments or suggestions that you feel will help improve the scope, focus or the applicability of the proposed framework.</i></p>	<p>Including universities is crucial, Yet, one should not forget that universities are subjected to politics. Depending on the power structure in the time of reconstruction, different layers of analysis can be emphasized or ignored by those in power (especially when looking into root causes of the conflict and the factors that contributed to it or those exacerbated by its legacy). Building back better is a huge and critical issue. And I am always very skeptical when it comes to discussing the issues of building back better. Because it mostly takes a physical connotation rather than an institutional one. Building back better is to ensure inclusion of previously excluded citizens into the institutional structures.</p>

Being aware of why in the first place they were based in informal settlements. Mostly this is because their governments were not able to provide for them. And so they were innovative in creating solutions for themselves to manage their everyday life. What does an informal settlement mean? Is it necessarily illegal? Is it a matter of land tenure rights? Building regulations? Given that informal settlers are mostly of the poor, would they new plans accommodate them? Or would they contribute to evicting them as they can't afford new developments? It is good to refer to these things to avoid ambiguity.

Appendix 5

Rim Lababidi's answers

Questionnaire Regarding Aleppo Reconstruction Proposed Framework – <i>survey</i>					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
<i>The proposed framework is sound in terms of scope</i>		-			
<i>The proposed framework is comprehensive and include all major elements needed for the reconstruction process</i>			-		
<i>The sequence of the steps is logical and applicable</i>			-		
<i>The proposed framework takes into consideration the uniqueness of the post-conflict situation in terms of rebuilding</i>		-			
<i>No unnecessary elements are included in the framework proposed</i>	-				
<i>No redundant elements are included in the framework proposed</i>	-				
<i>The framework is applicable</i>		-			
<i>The independent reconstruction council is a necessary entity to manage the process</i>	-				
<i>The independent reconstruction council is the most appropriate</i>				-	

<i>entity to LEAD the process</i>					
<i>Urban issues that predated the starting/continuation of the war are well articulated</i>	-				
<i>The social aspect issues were addressed in the proposed framework</i>		-			
<i>The economic equality issues were addressed in the proposed framework</i>	-				
<i>The religious and ethnic background diversity was addressed in the proposed framework</i>	-				
<i>Political allegiance was overcome in the proposed framework</i>			-		
<i>Protecting/rehabilitation of the heritage and old city was well considered in the proposal</i>			-		
<i>The solutions proposed to each level of destruction identified are appropriate</i>		-			
<i>The proposed approach to infrastructure reconstruction is suitable to the context</i>			-		
<i>The considerations given for recycling disaster waste are rational</i>	-				
<i>Types of potential donors have been identified correctly</i>	-				

<i>Motivations, expectations, and long term interaction of donors was well thought of</i>			-		
<i>The factors explained of building back better are applicable</i>		-			
<i>Adapting this framework is likely to enhance the reconstruction process</i>		-			

Questionnaire Regarding Aleppo Reconstruction Proposed Framework - open end questions	
<i>Do you find the order of the steps is correct? Or does it need revision? If so, why?</i>	I suggest to either create a new first step titled “situation analysis” or to broaden the data and assessment step in order to encompass a situation analysis. Situation analysis is a very important step at the start to assess the physical condition, potential donors, main and secondary actors in the process and availability of resources. Otherwise, the planning process will not meet the needs.
<i>Are there any elements that you suggest adding to the framework?</i>	I suggest to refer to the necessity to reform the educational, health and legal systems. Also suggesting a tool that can be used to monitor the reconstruction process
<i>If you found any elements redundant, please define which ones, and explain, why?</i>	none
<i>Can you identify/foresee any major issue in the implementation of this framework</i>	The complexity of reconstruction processes and the huge financial resources channeled through them, make them prone to manipulation and corruption by both local and international actors.

	In case of a weak legal system and the absence of a monitoring tool, the risk of corruption peaks.
<i>Do you have more suggestions to correct urban issues that predated the war through the post-war reconstruction framework?</i>	Education
<i>Based on your experience/knowledge, how does the proposed framework compare to previous post-war reconstruction frameworks/plans</i>	I think it sketches a very ideal vision of Syria, however, it'll be very difficult to implement, but never impossible.
<i>Any other comments or suggestions that you feel will help improve the scope, focus or the applicability of the proposed framework.</i>	