HOUSING

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03

3.1 INTRODUCTION

3.1.1 Housing on the global scale

By 2050, two out of every three people are likely to be living in cities or other urban centers, according to a UN report. The report also predicts that by 2030, there will be 43 megacities with more than 10 million inhabitants in each, and most of them are in developing countries. However, it is estimated that around 40% of the population of fast-growing cities in developing countries is dwelling in informal settlements without basic municipal services. (UN, 2018) How can future cities provide sustainable, liveable, and affordable living environments, and how can the constructed urban area be reshaped to accommodate the increasing and widespread changing population, have become a widely discussed challenge.

Under this circumstance, CLC Liveability Framework is proposed by Singapore's Centre for Liveable Cities (CLC), which offered a referable solution to improve liveability for cities with high density. The framework defines a liveable and sustainable city as a city that fulfills "high quality of life", "competitive economy", and "sustainable environment".(Khoo, 2012) (figure 3.1) Housing as an important role should also support and facilitate a city's liveability in these three aspects.

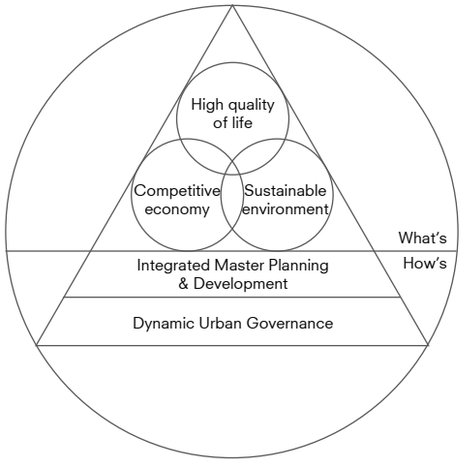


Figure 3.1: CLC Liveability Framework (Source: Hee, 2015)

Diverse ways of dwelling had emerged under the socio-demographic change the goal of liveability, such as sharing flats, multi-generational dwelling, mini-apartments, new cooperative housing, etc. Considering age, sex, lifestyle, social class, and background, trends of future housing are evolving towards individuality and pluralistic. Multifunctional housing concepts for different social groups seem to be the most sensible common goal for future housing. Flexibility therefore is becoming an important criterion. Communal form of living also provides a sound basis for integrating environmental measures at community scale. Economic, social, and ecological parameters need to be taken into account in drawing up forward-looking housing concepts. (Jonuschat, 2012)

3.1.2 Problem statement

The problem statement will be elaborate by 2 scales, housing in Beirut and housing in reconstruction neighbourhoods.

a. Housing in Beirut

The study of housing in Beirut involves both housing provision and other essential factors related to living condition.

- Housing Provision

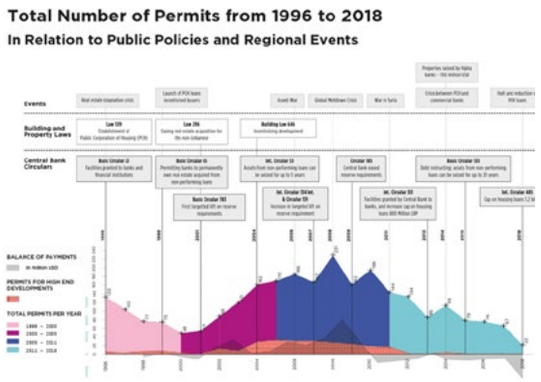


Figure 3.2: Total number of permits from 1996 to 2018 (Beirut Urban Lab, 2021)

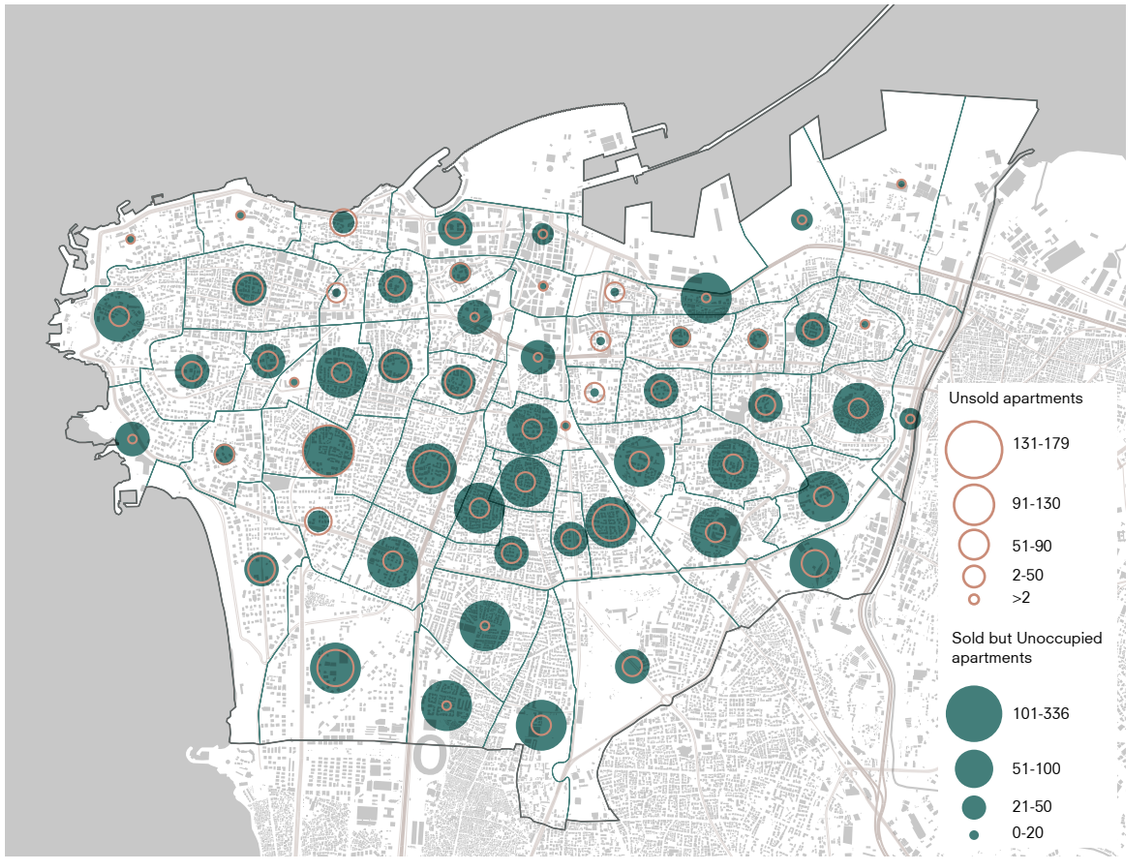


Figure 3.3: Vacancy map (Huang, 2021)

Housing provision in Beirut is dominated by private developers. The public sector in Lebanon lags behind in its responsibility to set and implement affordable housing strategies and production, resulting shortage of affordable housing units has been a long-standing urban issue for the past 20 years.

In the meantime, the "ghost" luxury residential tower is becoming Beirut's new urbanscape. After the civil war, a property-led redevelopment was implemented and leading to the construction boom (figure 3.2) (Beirut Urban Lab, 2021). Large groups of well-off Lebanese diaspora invested in housing properties in their homeland. Targeting these groups, apartments larger than 200 sqm were largely built. (Marot, 2018) The neglect of local demand in housing market resulted in a high proportion of vacant units in new housing projects, which include both unsold apartments and sold-but-unoccupied apartments. (figure 3.3) (Beirut Urban Lab, 2021) Nowadays, Beirut is having a vacancy rate of approximately 25% in apartments built after 1996, while 7% is considered to be a healthy vacancy rate (Sewell, 2019).

The unaffordable housing products drives a vast majority of middle to low-income people from the central area to suburb, exacerbating citizen's inaccessibility to public facilities, job opportunities, and social networks in the city center. (figure 3.4) It is also resulting in mass loss of high-educated youth, which is a waste of demographic dividend from which Lebanon should currently be benefiting. (Chaaban & Khoury, 2016) For future development, small-scale apartments which are more affordable for starters are highly demanded. Policies and financial support for related housing products are already under wide discussion.

- Essential Factors Related to Living Condition

Besides housing itself, essential factors that are closely related to liveability are also subpar, such as the electricity supply, water supply, and open space accessibility. Electricity cuts off for 3 hours each day, and 90% of the family in Beirut is suffering from poor water quality and intermittent supply. Most of the open space in neighbourhood scale is privately occupied. (RELIEF Centre & UN-Habitate Lebanon, 2020) (figure 3.5) These all add to the substandard living conditions.

b. Housing in Reconstruction Neighbourhoods

The reconstruction neighbourhoods that were damaged in the Explosion are the city's historical area, including Mar Mikheal, Gemmayze, Rmeil, and Karantina. These neighbourhoods are mainly accommodating low to middle-income families. (figure 3.6) (Beirut Urban Lab, 2021) In the damaged and need assessment by the World Bank group, housing is the most damaged sector in these neighbourhoods.

- Historical Housing

A large proportion of residents in historical neighbourhoods are old tenants benefitting from the rent control law, whose dwellings are mostly constructed before 1970. Statistic shows that dwellings constructed before 1970 take up to 60% of the total dwellings in Beirut. (CAS, ILO, EU, 2020) Historical buildings work as an important part of affordable housing stock, especially in the historical area. However, 80% of the historical buildings are not in good condition (Hamze and Hammoud, 2018) (figure 3.7), and are gradually being abandoned due to the high maintenance fee (NAHNOO, 2020). The disuse of historical residential buildings exacerbates the shortage of affordable housing.

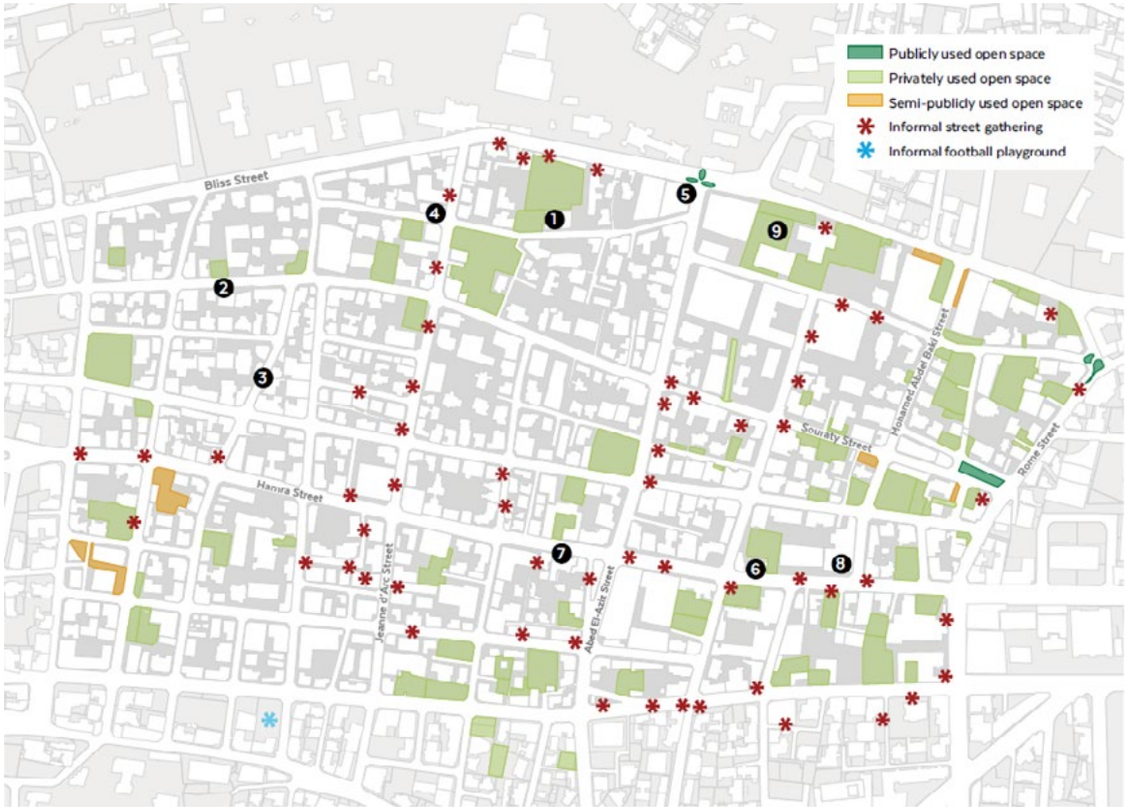


Figure 3.5: Open spaces in Hamra community (RELIEF Centre & UN-Habitate Lebanon. 2020)

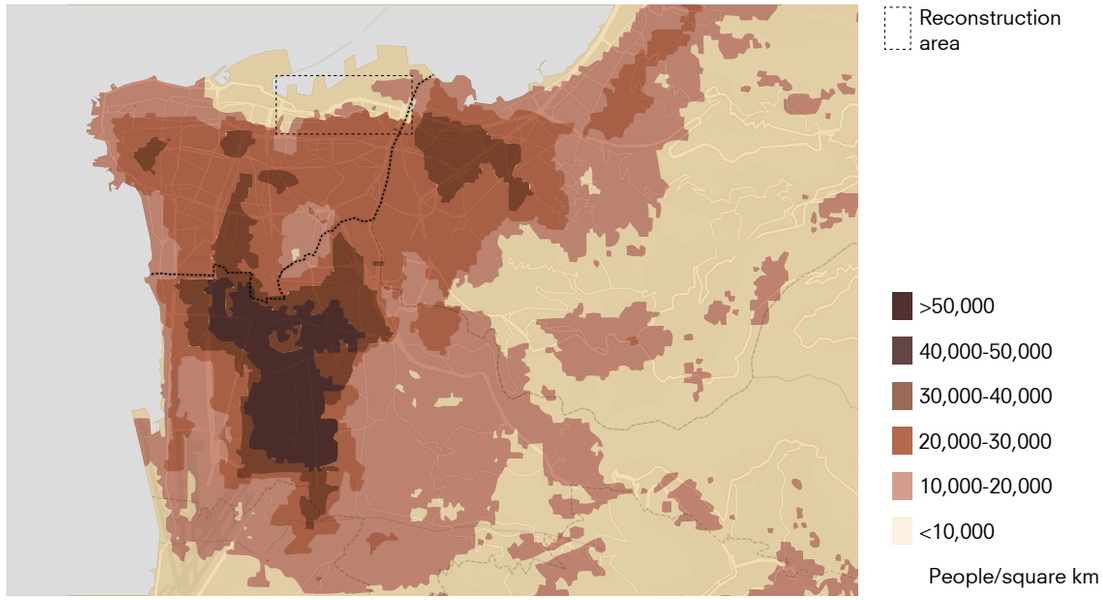


Figure 3.4: Population density (Huang, 2021)

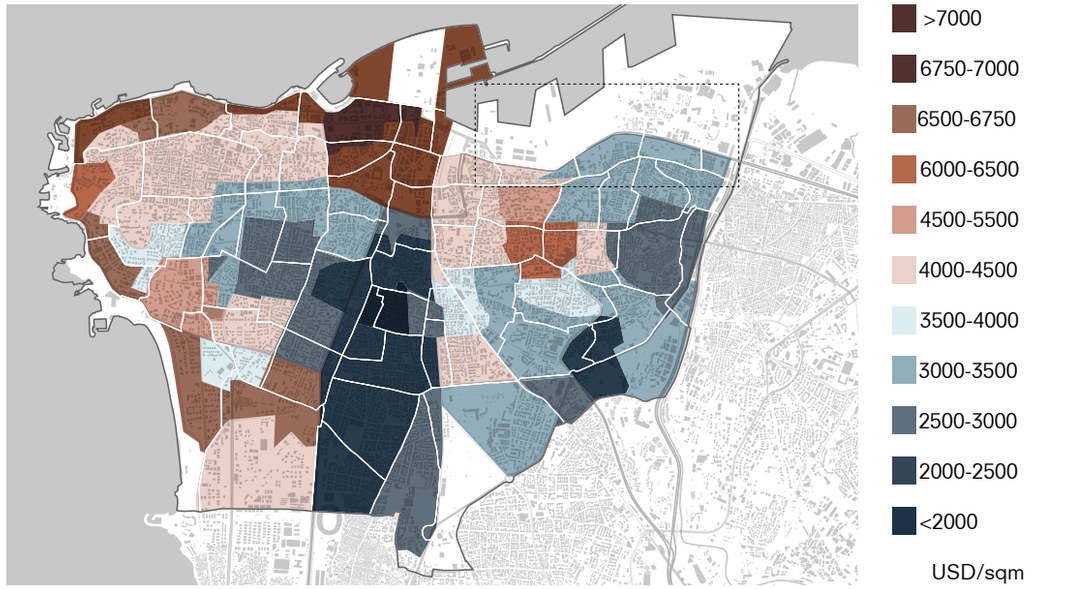


Figure 3.6: Real estate value (Huang, 2021)

Figure 3.7: Abandoned housing in Mar Mikhael (NAHNOO, 2020)

Figure 3.8: Gentrification cycle in Beirut (Gerbal & Hrycaj, N, 2016)

- New Housing Projects

As the "gentrification circle" which is mentioned in 1.3, the damaged area include historical neighbourhoods in different gentrification stage. In the past 10 years, new housing developments were designed almost exclusively for wealthy populations, particularly the Lebanese diaspora as mentioned. The developments of new residential projects are boosting gentrification, destroying the urban fabric as well as socio-economic diversity. The original socio-culture diverse and inclusive neighbourhoods are at the risk of being transferred into exclusive residential areas with high-end leisure industries, which is adverse to the area's long-term social and economic development. (Gerbal & Hrycaj, N, 2016) (figure 3.8,3.9)

c. Summary of Problem Statement

The problem of housing sectors and living environment in Beirut can be summarized as follow:

- Supple-demand disconnection: large apartments targeting well-off Lebanese diaspora are largely constructed in the past 20 years, while small apartment which is affordable for starters were long-standingly neglected.

- Basic infrastructure insufficiency: Essential municipal services for living such as water and electricity supply is insufficient and unstable.

- Public community space deficiency: Open spaces in community scale are mostly privately occupied.

- Current housing is boosting gentrification: New housing projects in historical areas are boosting gentrification, destroying the urban fabric and socio-economic diversity.

- Abandoned housing heritage: Existing historical housing are not in good condition and are gradually been abandoned

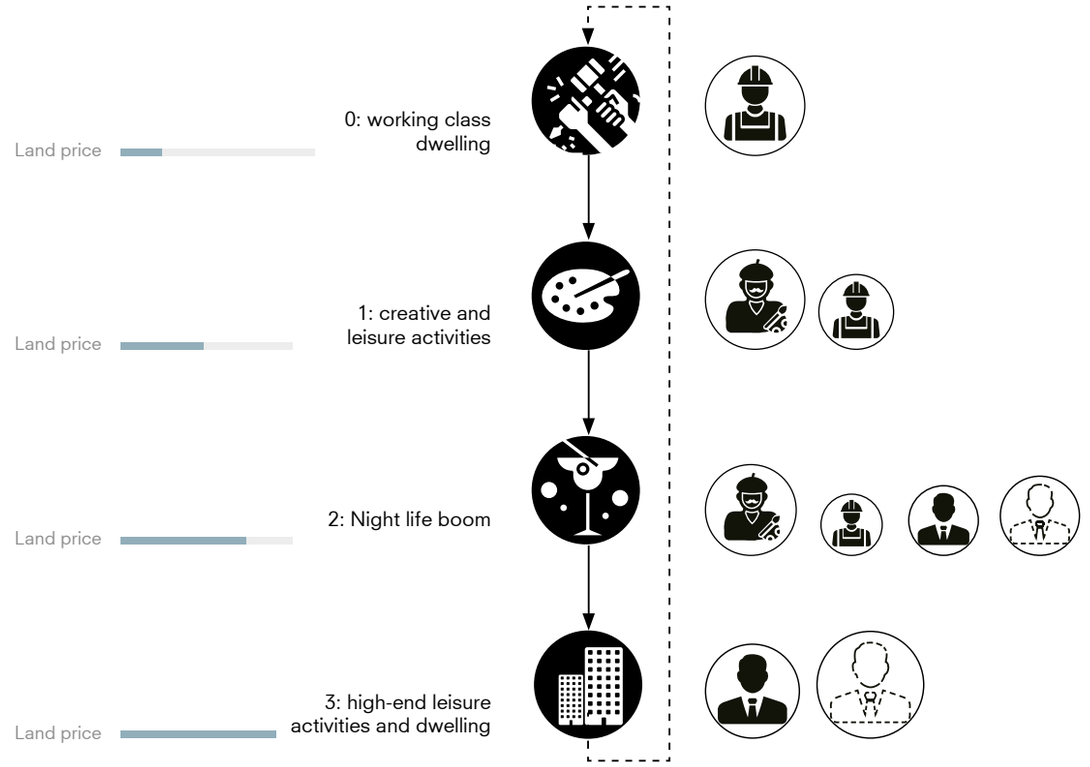
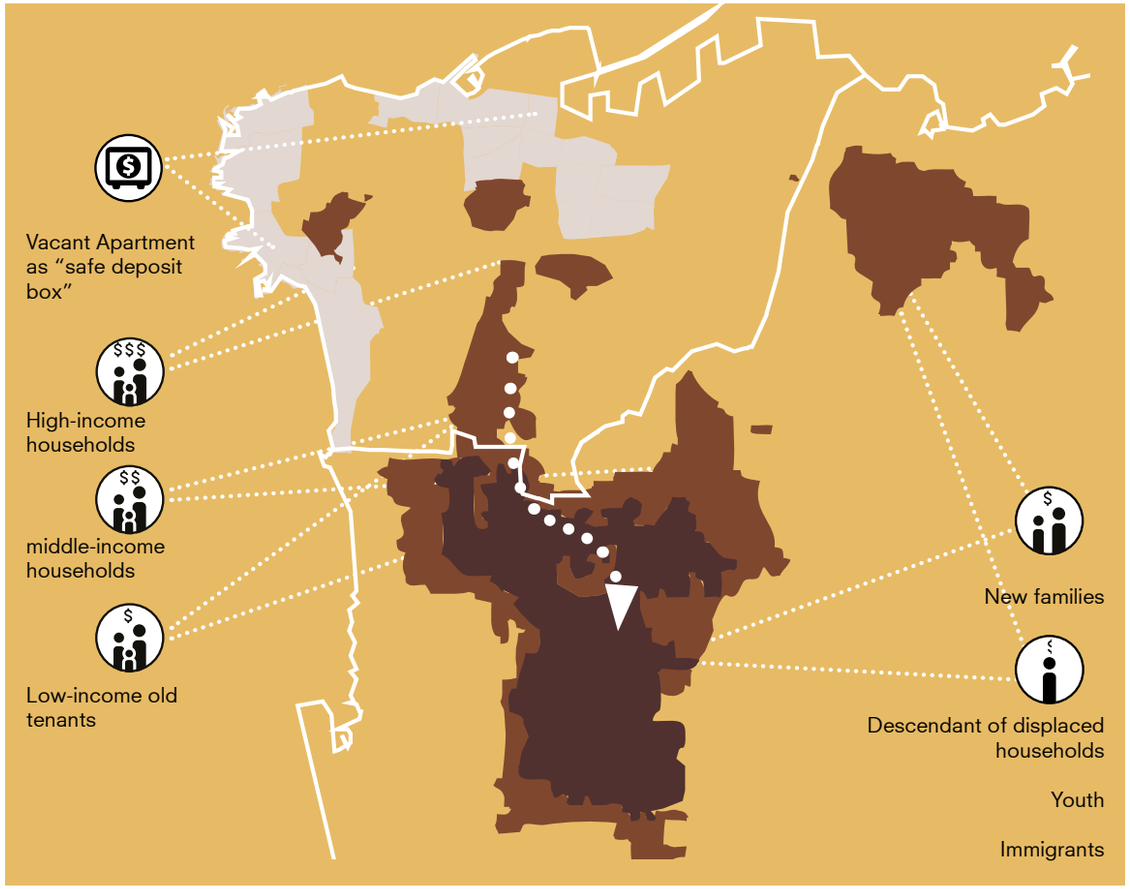


Figure 3.9: Diagram of land price, actors, activities in different stages of gentrification in Beirut (Huang, 2021)



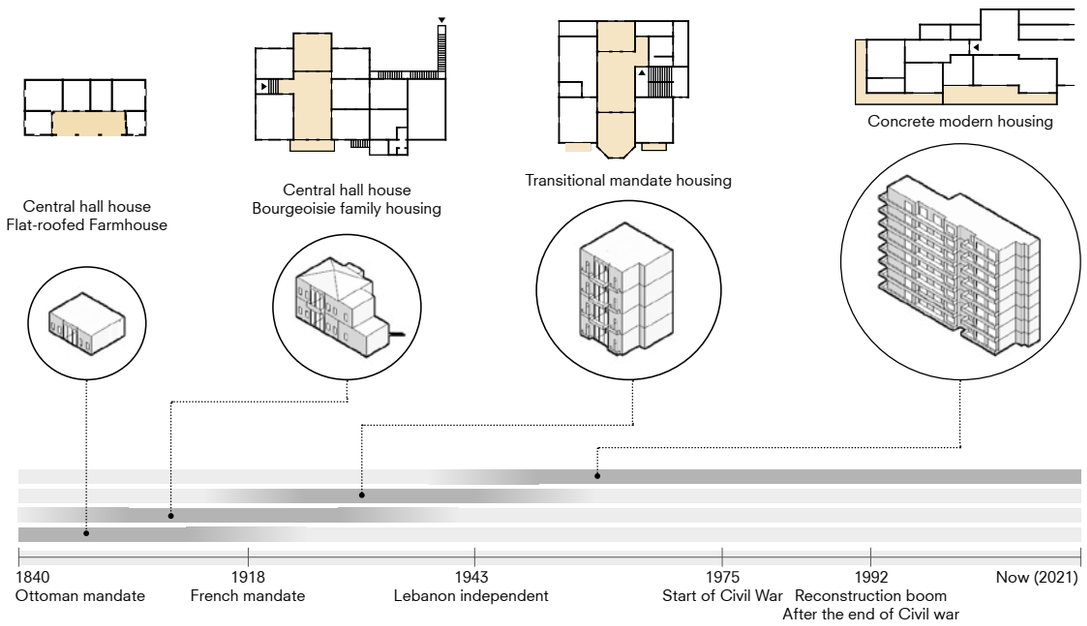


Figure 3.10: Research outcome of document review and typology study (Huang, 2021)

3.1.3 Research question

Based on the problem statement, I proposed the following research question:

How can housing be built back in Beirut and what role can it play in the reconstruction and urban revitalization process?

This research question will be broken down into the following sub-questions:

- How will understanding the urban fabric and urban diversity inform the design strategy of housing projects in the historical area?

- What kind of new model of housing can be applied in Beirut’s context to support its future economic and environmental development, and be acceptable by local residents?

- How can the insufficiency of basic municipal service and open space be supplement in a new housing project, to improve the life quality of local residents?

3.2 RESEARCH FRAMEWORK

The whole research is carried out by 4 stages towards the design brief: understanding research, descriptive research, explanatory research, and potential research. The research process involves both group work and individual work. The study content, key notion and concept, chosen methods, and reasoning behind the methods of each stage will be elaborated as follows.

3.2.1 Understanding Research
Group work

Key notion and concepts: ethnography, qualitative research, data collection and interpretation

To understand the research context, we collect information in all dimensions, including culture, policy, economy, demography, history, and different urban layers, and collectively interpret the data into a catalogue of maps by scale, ranging from the Mediterranean sea scale to the Beirut port. The studied data includes historical documents, photography, official reports, existing database, and Google map. By organizing and interpreting these data, the study becomes readable and sharable. The holistic study gave us an overall picture of the research context.

3.2.2 Descriptive Research
Individual work

Key notion and concepts: historical-interpretive research, typology and morphology study, material culture, correlational research

The research in this stage focus on the housing topic, aiming towards problem statement. Descriptive research is conducted to identify the current problem and urgent need of the housing sector. The study is divided into two scales which focusing on different aspects: the scale of Beirut and the scale of the reconstruction area.

In the scale of Beirut, study is carried out by asking the following question and fine correlation of the existing data to answer the question:

- WHAT: What houses do people live in? What houses do the market provide? What house do people need?

- WHERE: Where do different people live?

- HOW: How do different people live?

The used method includes historical document review, housing market statistic review, living condition statistic review, housing typology study, material culture study, morphology study, and demographic analysis of neighbourhoods. By analysing the data and finding relation between them, the current supply-demand disconnection and living condition of different social groups was revealed. (figure 3.10)

The reconstruction area is one of the historical areas in Beirut. Therefore, in the scale of reconstruction area, the research focus on both the current situation of historical housing and the urban impact of new housing projects. Literature review of gentrification offers foundation and direction of the research, and morphology study, statistic review is used to further understand the two focusing aspects of the context.

3.2.3 Explanatory Research

Group work

Key notion and concepts: mapping diversity, quantitative research

At this stage, in-depth study of the fact from descriptive research was conducted by mapping urban diversity, aiming at explaining the following question:

- How does housing contribute to urban diversity in Beirut and how did this evolve through history?

- How does gentrification influence urban diversity?

Urban activities are catalogued, mapped, and counted to quantize urban diversity in different areas. The result informs the possible solution to prevent new housing project from boosting gentrification, and provide arguments for the site and program.

The result and conclusion of this stage will be elaborated in chapter 3.3.

3.2.4. Potential Research

Group work + Individual work

Key notion and concepts: literature review, case study, urban policies and planning

Research at this stage includes both group work and individual work, aiming at proposing a design brief.

In group work, possible drivers, urban planning, and reconstruction guideline are studied to draw conclusion on group strategy and future scenarios.

Individual research in this stage focus on policies and legal document review of affordable housing in Beirut, development report and strategies review of the reconstruction neighbourhood, literature review of liveability framework, future trends of housing, and case study of heritage reuse and community-scale infrastructure. Appliable housing model, sustainable measurement, and program that support economic development are concluded from the study.

The role of new housing projects is positioned based on both group strategy and individual study.

3.3 REFLECTION ON URBAN DIVERSITY MAPPING

3.3.1 Classification of Sublayer in Housing Layer

Living activities in housing layer are classified into 4 sublayer: student living, family living, tourist living, and abandoned/ empty housing. In the diversity map, apartment buildings with high vacancy rates (means more than 50% of the units can be recognized as vacant units from the appearance) are also marked. Tourist living consists of both hotel and residential building with Airbnb unit, these two types are marked in two colour but counted as one activity in the map. Sublayers can be summarized as follow:

Counted sublayers:
Family living: Family living
Family living _high vacancy
Tourist living: Tourist living_Airbnb
Tourist living_hotel
Student living

Uncounted sublayers:
Abandoned & empty housing

3.3.2 Result of Housing Layer and Refection:

Figure 3.11: Zoom in of diversity map of housing layer (Huang, 2021)

a. From the diversity map (figure 3.11, 3.12):

Except for 2 student dormitories in AUB campus, there are only 2 student housing buildings within the research area, which verify the shortage of small residential units for students. Tourist living activities are concentrated in the east axis, inform the need to consider tourist accommodation in this area.

The high proportion of vacant residential buildings can also be clearly seen on the west and south axis. Abandoned housing is also marked based on survey results from a report of buildings in Mar Mikhael. (NAHNOO, 2020) These two results further illustrate the supply-demand disconnection and the abandonment of housing heritage in the problem statement.

b. From the heat map (figure 3.12, 3.13):

The result of housing layer corresponds with the collective heatmap. Urban diversity reduces along the east axis, south axis, and west axis. This reveals the reduction of urban diversity in gentrified areas, which is more significant in housing and cultural layer.

3.3.3 Contribute of the housing layer and its evolvement through history

a. Contribution:

The diversity of living activities is positive correlation with the diversity of urban activities. Diverse living activities means diverse groups are involving the urban activities, and vice versa, diverse urban activities, especially cultural activities in this study, brings diverse living group.

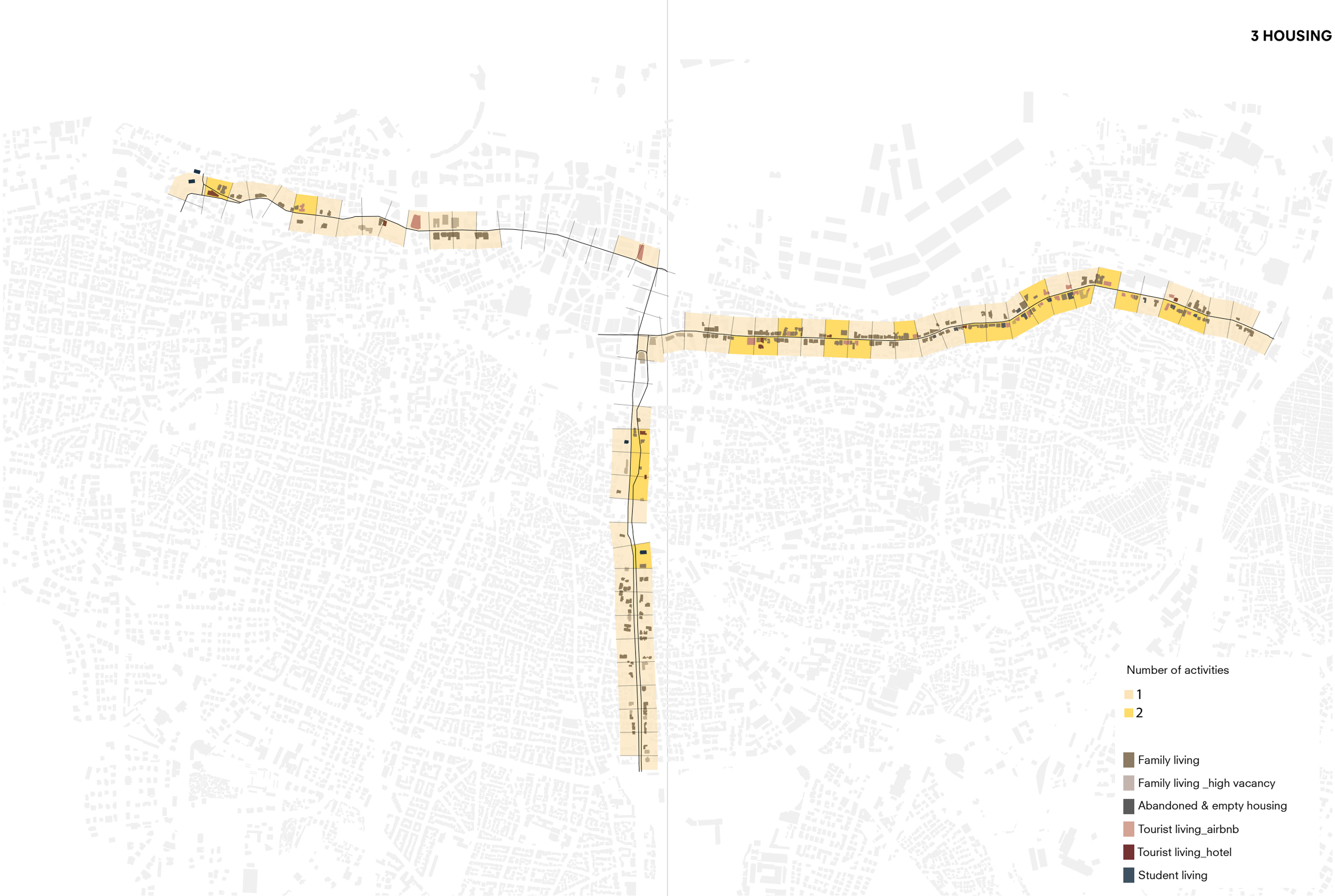


Figure 3.13: Heat mapp and Diversity map of housing layer (Huang, 2021)

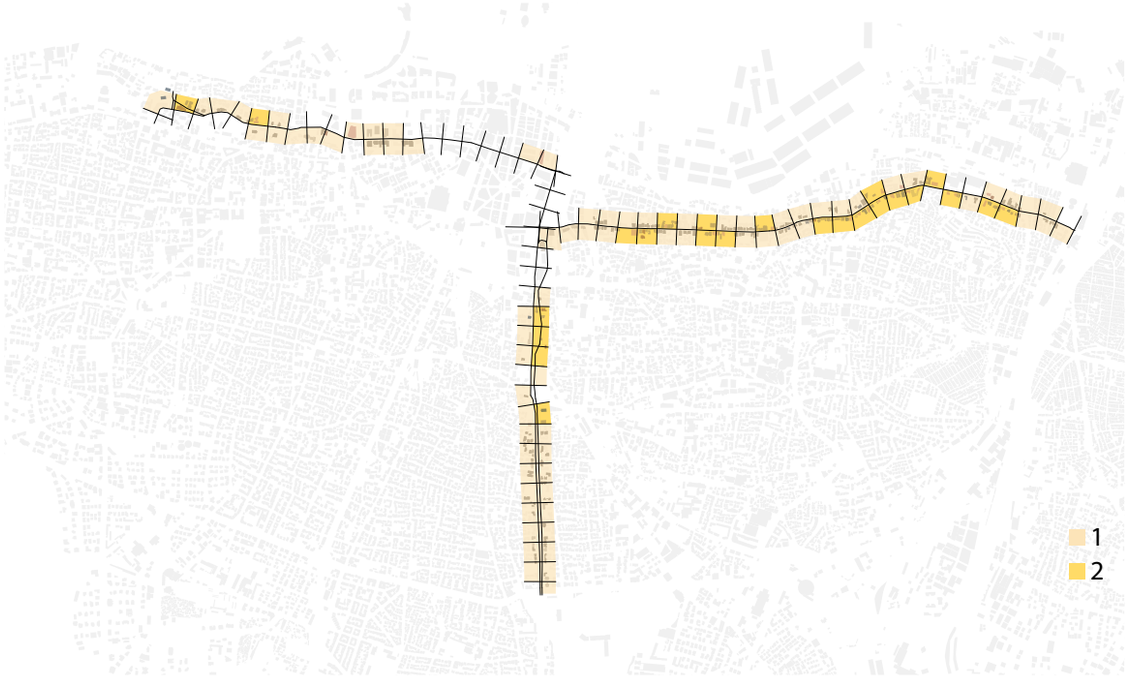


Figure 3.13: Heatmap of housing layer (Huang, 2021)

b. History Evolvement:

The west axis represents the high-end neighbourhoods and the south axis represents neighbourhoods that were almost fully reconstructed after the civil war. A large proportion of the housing project in these two axes were constructed in the real estate fervour. Real estate development is fully market-driven, and thus led to the construction boom of monofunctional residential towers with large apartment units, which is the most profitable choice for the developers. On the contrary, the east axis, as a historical area, has more diverse housing typologies, which is able to accommodate multiple living activities. The significantly higher cultural diversity of the historical area attracts tourists, and therefore added the diversity of living activities.

3.4 PRELIMINARY CONCLUSION

3.4.1 Choice of Site

Based on the understanding of context and the future scenario, The new housing projects will be located on the east block of neighbourhood Karantina (figure 3.14). Arguments are as follows:

- Considering the population density of the whole city, Karantina and the new development area of the port has the largest potential to accommodate the population that is coming back into the city.

- As a low-income, residential and semi-industrial neighbourhood near the port, Karantina is seen as a forgotten part of the city for a long time. Housing projects can be a protagonist to activate the area and the first steps of transforming it into a mix-used residential and creative community.

- In the future scenario, public functions such as performing center, learning center, and transportation hub, as well as offices for IT sector will be concentrate on the redevelopment area on the port. Housing in the periphery of this area is needed to support its development.

Figure 3.14: Choice of Site (Huang, 2021)

3.4.2 Program and Design Strategy

Based on the problem statement and the research, the design strategies are proposed as followed:

- The projects should provide more small apartments for students and starters. Accommodation for tourists and families should also be considered. Housing units should be flexible for future change.

- Community-scale infrastructure for energy generate and water purifying should be combined into the public space, to support its energy self-sufficiency and promote the sustainable idea to the residents.

- Public space for residents and citizens should be considered. Shared living space and facilities such as kitchen and laundry room should be introduced to offer a better life quality with limited space.

- Instead monofunctional residential community, the community should be multi-functional. Considering the large demand for housing within the city, mix-used housing complexes will be a better development model to support cultural diversity and future economic development, comparing with monofunction residential complexes. Taking into account of both the future tendency and the current economic potential of the reconstruction area, space for community-based creative economic activities will be integrated into the program.

- Housing should also be used as a program to revitalize abandoned and damaged heritage, bring back the qualities and activate the forgotten neighbourhoods.

Understanding research

Descriptive reseasrch

Explanatory research

Potential research

Design Ambition

RESEARCH QUESTION

How can housing be built back in Beirut and what role can it play in reconstruction and urban revitalization process?

Group

Beirut context study

Catalogue of map by scale

XXL: Mediterranean Sea

XL: Lebanon

L: Greater Beirut

M: Municipal Beirut

S: Port and surroundings

XS: Port and explosion

Individual

Housing in Beirut

Catalogue of map by topic
History document review
Housing typology study
Statistic data review

WHAT: What houese do people live in?

WHERE: Where do different people live?

HOW: How do different people live?

PROBLEM STATEMENT

Supple-demand disconnect

Basic infrastructure insufficiency

Public community space deficiency

Current housing boosting gentrification

Abandoned housing heritage

Individual

Housing in damaged neighbourhoods

Mapping urban diversity
Morphology study
Literature review

Current situation of Historical housing

Urban impact of new housing projects

Urban Activities

Urban fabric

Gentrification

Group

Urban diversity study

Collective heatmap of urban activity
Catalogue of map by layer

Commerce

Culture

Education

Infrastructure

Housing

Working

How does housing contribute to urban diversity in Beirut?

Family living

Tourist living

Student living

How does gentrification influence urban diversity?

Group

Group strategy

Catalogue of strategy map

Individual

Livability

Literature review
Case study

High Quality of Life

Competitive Economy

Sustainable environment

Livability framework

Individual

Reconstruction and urban revitalization

Planning document review
legal document review
Literature review

Public transportation

Productive economy

local population

Urban heritage

Public space

DESIGN BRIEF

Towards a more livable and sustainable Beirut

Program

Site

Ambitions

Improve life quality of local residents

Co-living community

Support local economy

Community-based creative economy

Towards environmental sustainability

Self-sufficient community

Preserve urban heritage

Heritage-led urban redevelopment

Figure 3.15: Research diagram overview (Huang, 2021)

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