

# **Tripoli's Integrated Development Strategy**

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by

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## Abstract

This study aims at formulating an integrated neighborhood plan for Dam w Farez, a recently subdivided area of the city of Tripoli, Lebanon. It seeks to address citywide issues—poverty, inadequate infrastructure, unemployment, traffic, and religious segregation—through zoning ordinances and policies. The research explores the previous studies that were conducted in the city, and describes the data collection process. Qualitative interviews were conducted in order to get a complete understanding of the city’s issues and the forces guiding development in the neighborhood. Green zoning ordinances, as well as land use recommendations and suggestions of public private partnerships were found to be ideal proposals for the municipality.

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# Introduction

Tripoli is the second largest city in Lebanon. With a population of approximately 500,000 (Tripoli Gov., 2019), it is known as the “Capital of the North”. Situated on the Mediterranean Sea, Tripoli is home to a seaport, airport and all the amenities that can establish it as a functioning center. However, Tripoli remains one of the regions that has not fully recovered following the Lebanese Civil War between 1975 and 1990. Poverty, lack of government attentiveness and socio-political issues have created recurring conflicts in the city’s old neighborhoods, significantly damaging its economy. Lack of integration, suburbanization, and failure to promote attractive touristic assets of the city were major planning-related issues. These issues led to Tripoli’s current economic recession, poverty and instability.

As the major seaport to Damascus, until Lebanon gained independence, the city was a vital trade artery to the Mediterranean for centuries (Lahoud, 2013). However, many of the significant amenities of the city were damaged and never fully repaired after the war, for example, the port. After the war, the primary focus of the Lebanese government was to rebuild the capital, Beirut. Beirut International Airport was rehabilitated and expanded; Beirut port was renovated with new equipment. However, no such funding was given from the government to the Tripoli port or to the nearby airport, Rene Mouawad Airport. Currently, the only operating airport in the country is the Beirut Rafic Hariri International Airport. Though the Tripoli port is operational, it only services around 450 ships a year, compared to the 3000 ships a year at the Beirut port (Logistics Capacity Assessment, 2017). This lack of governmental funding, in the post war era, was also a main catalyst that caused the economic recession in the city. Another main amenity that has not been restored is

the Rashid Karame International Fair of Lebanon. As Oscar Niemeyer (1962), the renowned lead architect of the project described it, “In this urban complex, the International Fair of Lebanon is the main element and constitutes for Tripoli a center of attractions - of cultural, artistic and recreational interest - of major importance with its theaters, museums, sports venues and amusements.” Construction of the fair was initiated in the late 1960s and all the concrete structures were completed before the war. However, finishing was never done for the complex and it was never utilized.

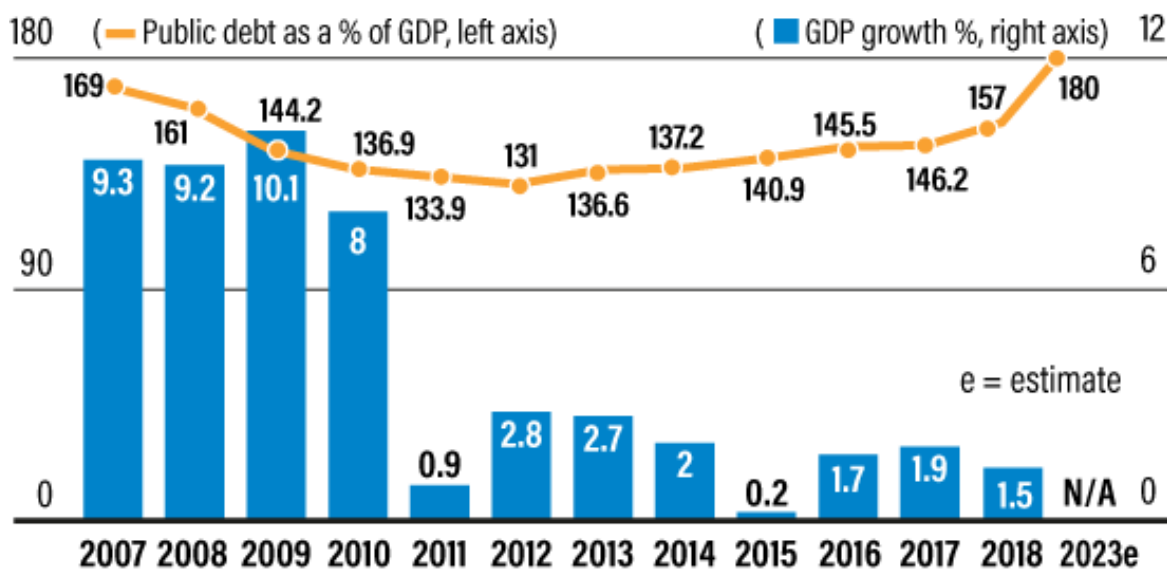
The city of Tripoli dates back to the twelfth century BC, with a history of settlement that includes the Assyrian, Phoenician, Persian, Roman, Byzantine, Caliphate, Crusader, Mamluk, Ottoman and French Empires (Gulick, 1967). Characterized by the religious diversity of its residents, Tripoli represents a typical Lebanese city. However, the Lebanese Civil War along with the Israeli invasion and Palestinian refugees’ conflicts shattered the city apart. Some residents abandoned their houses seeking safer homes in the villages while others took sides in the war and fought. The 15-year civil war created visible neighborhood segregation—the physical separation of two or more groups into different neighborhoods (Massey et al., 1988)— that still persists till this day. In the case of Tripoli, the segregation is primarily religious. Muslims from different sects were separated in different neighborhoods, while most Christians fled the city towards Christian villages. Although the war ended more than two decades ago, conflicts continue to occur in the segregated neighborhoods—creating an unstable and insecure living environment. Migration of talent and stymied growth were major outcomes of the political and social insecurity that still exist in the city. Job opportunities decreased, causing the poverty rate to rise to 36 percent in the region, significantly higher than the national average of 27 percent (World Bank, 2017).

The following review will discuss the errors made in the pre-war and post-war masterplans of the city. It shall also describe the complex framework of planning in Lebanon, along with the complicated bureaucracy needed in order to build up the necessary background for developing a new inclusive and integrated strategy. This study aims to create a specific plan for Dam w Farez.

The remaining content of this paper has been divided into the following chapters—Background, Literature Review, Research Design, Analysis, Recommendations and Conclusion. The background chapter will give the reader the geopolitical and economic context of the country. The Literature Review will present and analyze published literature found to be relevant to the research topic, as well as previous studies done for the city, thus acting as a basis for a fuller understanding of the context. Research Design will guide the reader through the research questions and corroborate the chosen methods of data collection and analysis. Subsequently, the Analysis chapter will present the relevant evidence and results acquired through primary research. The Recommendations chapter will provide the municipality of Tripoli with a toolkit of policies and zoning ordinances to be implemented. Finally, the Conclusion will bring together the work achieved throughout this process.

# Background

Lebanon is currently in a huge economic crisis. The country's debt to GDP ratio has peaked to 146.8 percent, making Lebanon the third most indebted country after Japan and Greece (Desjardins, 2019). Figure 1 illustrates Lebanon's debt to GDP ratio.



Source: Ministry of Finance, National Accounts, Institute of International Finance

Figure 1: Lebanon's evolution of debt to GDP ratio (Saadi, 2018)

As of April 24, 2019, the prime minister has declared a state of austerity. The reason why the country is in so much debt is because it has never fully recovered from the 15-year civil war (1975-1990). The war was initiated with the Palestinian refugee crisis and then catalyzed by an Israeli invasion which led to the country's division into several religious-political parties. The war ended with the Ta'eh agreement, in 1990, which set up a Confessionalism system. It is a system of government that entails distributing political and institutional power proportionally among



confessional communities. The Lebanese president is decided to always be Christian Maronite, the Prime Minister Thunni Muslim, and the Speaker of the Parliament Chiite Muslim. Figure 2 illustrates how the current Lebanese parliament is divided between different religious sects.

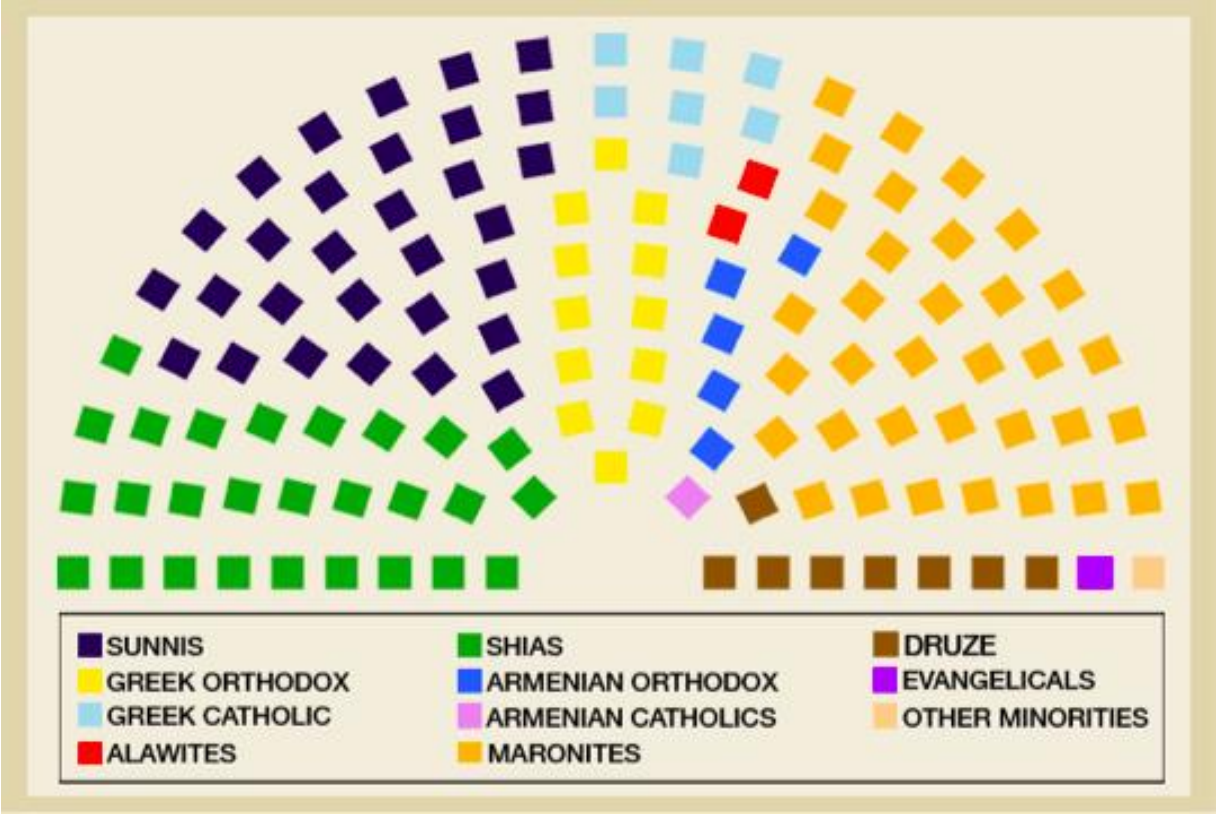


Figure 2: Lebanese parliament division between different religious sects (Petallides, 2011)

The long civil war has left the country with a lot of destruction, making it lack basic infrastructure supply until today. Although a railway existed before the war, the country has not yet been able to reconstruct it, and it has not established a public transportation system. That has led to crazy congestions on the Lebanese roads with a high car ownership rate. Moreover, the country’s existing power plants can only supply a certain number of megawatts which cannot cover all of Lebanon once. The way that the Ministry of Energy is dealing with it is that they alternate the provision of electricity between different areas.

Moreover, following the start of the war in Syria in 2011, more than a million and a half refugees have crossed the Lebanese border. Figure 3 illustrates the current proportion of Syrian refugees compared to the Lebanese population.

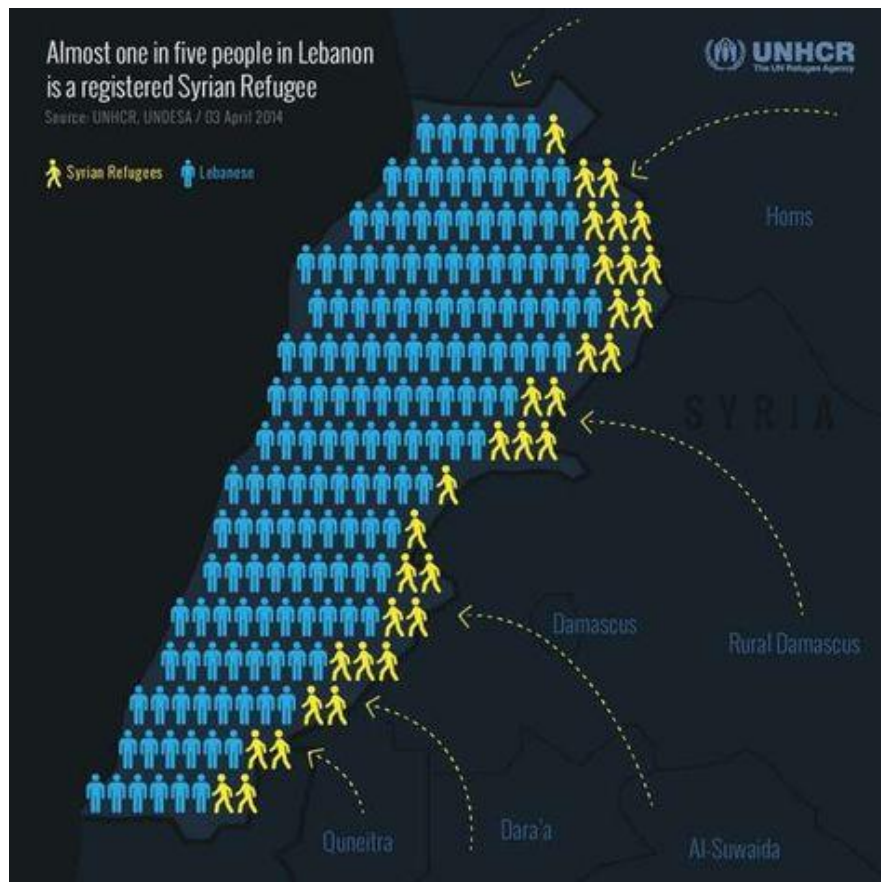


Figure 3: Proportion of Syrian refugees to the Lebanese population (UNHCR, 2014)

The Syrian refugee crisis has over-exhausting the poor infrastructure of the country, mainly the schools, roads, but also water and electricity. Syrians have also competed for jobs, especially low-wage jobs, knowing that they are willing to work for much less than the minimum wage. The literature review will present the previous studies done in the city of Tripoli to provide a fuller context of the topic and area of study.

# Literature Review

A town or city's most powerful legal tool in regulating land use is zoning (Mandelker, 2003). Zoning ordinances consist of two parts. The first component comprises regulation describing different land uses, the minimum size of lots, how much of the lot can be covered by buildings, and so on; the second involves a map showing how these uses are distributed throughout the city (Rybczynski, 2008). These elements are exactly what Tripoli's 2002 masterplan consists of (Harmandayan, 2002). The masterplan contains a large section defining building requirements, setbacks, heights, shape, and uses. It also thoroughly defines the study area by describing the geographic conditions, climate conditions, geology, soils, population demographics, existing businesses, economic activities, heritage, landmarks, and the current infrastructure—sewer, water and transportation networks. A masterplan is a document that aims at guiding future development by making the connection between the buildings, social settings, and their surrounding environments. Based on site analysis, public input, and social and economic conditions, a masterplan offers a set of recommendations and proposals regarding housing, land use, transportation, community facilities, population, and economy (World Bank, 2019). It is known that how a city's land is used defines its character. More so, it also determines its potential for development, the role it can play within a regional economy, and how it impacts the natural environment (Seattle Planning Commission, 1993). Harmandayan's (2002) masterplan is perceived to lack a description of the *vision* for the city. Furthermore, it fails to include sections that address affordable housing, economic development, or sustainability—major issues in the city and country as a whole. Harmandayan's (2002) masterplan resembles a traditional masterplan. However, the traditional mapped land use design has been enriched with innovations from policy

plans, land classification plans, and development management plans (Kaiser et al., 1995). Policy and development management plans are a critical part of new masterplans; not only because they are tools and strategies that aim to achieve the masterplan recommendations, but also because many of the recommendations are not implemented due to an absence of these policies. In Tripoli, for example, many land lots are designated as neighborhood parks in the masterplan. But due to the lack of suitable policy describing how the parks are to be operated and financed, some lots remain empty parcels of land till this day.

This study aims to create a specific plan for the Dam w Farez neighborhood in Tripoli. As Wheeler (2013) describes it, specific plans—also known as area plans, neighborhood plans, sector plans, or precise plans—develop a planning vision for a particular area within a city; such as a downtown, transit station area, older industrial district, or neighborhood. The specific plan will provide economic development strategies, recommended zoning changes, and urban design guidelines—all within a sustainability planning framework (Wheeler, 2013). Future urbanization is to be looked at as a process that can enhance the benefits of the city while reducing the threats to more sustainable development (World Economic and Social Survey, 2013). Sustainable cities require investment in renewable energy sources, efficiency in the use of water and electricity, design and implementation of compact cities, retrofitting of buildings and increase of green areas. Fast, reliable and affordable modes of public transportation as well as improved waste and recycling systems are also vital (World Economic and Social Survey, 2013). Beginning in Europe before emerging in the United States and developing countries, green zoning ordinances have encouraged green development, especially after the emergence of climate change. For example, in the United States, the city of Seattle has included in its municipal zoning code a Green Factor. The

Seattle Green Factor is a code that gives new buildings a score based on how green and environmentally friendly the building is. It aims to increase the amount and improve the quality of landscaping in new developments by requiring new buildings to reach a certain score. Landscape credits that increase the score include various features like green roofs, rain gardens, and vegetated walls (SMC, 2018). Lebanon is a country where electricity is not provided continuously. This masterplan that aims to create new neighborhoods does not encourage any use of renewable energy generation in these new developments. Green development such as green roofs, rainwater harvesting, and more remain totally absent in the city—even in new developments.

In the past, Tripoli was a thriving industrial and commercial city, where an abundance of steel, wood and gas trading took place. The city progressively de-industrialized during the Lebanese Civil War, as major infrastructure services ceased to operate (Fares, 2018). For a significant period of time, the northern region of Lebanon was marginalized from economic activity and investment (TSEZ, 2018). The Tripoli Special Economic Zone (TSEZ)—a project that began in 2007—aims to foster economic development in Tripoli and guarantee sustainable growth for the region. In 2015, the government finally appointed the board of directors for the TSEZ, and work was able to commence. The first evident transformation on site is the revitalization of the port, which is currently underway. This project presents a rebirth for the region; it is an opportunity to have Tripoli play a significant economic role as a platform for logistics, warehousing, and redistribution activities. Regulations for the project are still being discussed and have yet to be finalized. This study aims to factor the impacts of the TSEZ on the city as a whole—more specifically on the Dam w Farez neighborhood—in order to suggest adequate complementing policy. TSEZ is currently the only promising plan addressing economic development. However,

several efforts have been made in order to address conflict-related issues. The Lebanese government, non-profit organizations, and several United Nations agencies are all working to avoid future conflicts. Today, post-conflict/post-war reconstruction is obsolete due to the changing nature of conflict. Wars do not end with a clean resolution. Rather, contemporary wars are resolved through entropy, wherein the pace of conflict is reduced to a simmer (Sipus, 2014). This is illustrated in Tripoli, where twenty-five years after the end of the Lebanese Civil War, conflicts continue to reoccur in the inner city's old neighborhoods between the Alawites Muslims in Jebel Mohsen and the Thunit Muslims in Bab Al-Tabbaneh. Mainly due to regional conflicts, the two ethnically segregated neighborhoods sometimes exchange fire, grenades, and casualties (Abou Mrad et al., 2015). A one of its kind study was recently done by Abou Mrad et al., in 2015; it is the first study to address conflict-related issues. Following a participatory rationale, the five planners involved in the study relied on the opinion of the residents of these two neighborhoods. Their future plan is to reduce segregation by promoting an inclusive strategy. The study also aims to tackle poverty and transform these old neighborhoods into areas that aesthetically attractive and touristic; all achieved through what they call *action plans*. In another report published in 2016, Miccoci et al. further discuss the inclusive urban strategy and action plan for Jebel Mohsen and Bab Al-Tabbaneh. The study also elaborates on the city's current state of poverty by discussing the existing political divisions, spread of unemployment, abandonment of homes, neighborhood segregation, and poor reputation that has diminished Tripoli's attractiveness and competitiveness (Micocci et al., 2016). Inclusionary housing is one solution to neighborhood segregation that not only improves the quality of life of those who have little power and few resources (Calavita et al., 2010), but also achieves social inclusion and cohesion. This can help avoid future conflicts in a

segregated city. Inclusionary housing means using the market to correct market failures by means of public regulation (Calavita et al., 2010).

There is a considerable gap in the plans that have already been developed for Tripoli and for Dam w Farez specifically. Many of the elements of these plans are not executed because of the lack of an implementation strategy. Moreover, the last neighborhood plan was done in 2002, and the data available in these plans have significantly changed since Dam w Farez today has been an evolving neighborhood. Based on the exploration of the literature, this study aims to provide the city of Tripoli with a set of zoning and policy recommendations that aim at improving the living conditions in the neighborhood and the city as a whole.

Table 1 summarizes the studies that have been looked at, their authors, the year they have been conducted, their positive outcomes and the elements they are lacking.

The research will explore how a new zoning can address issues of infrastructure, unemployment and accommodate for growth sustainably. In Research Design, the reader will learn about the approaches to data collection and analysis undertaken to fulfill the aim of this research.

Table 1: Summary of plans examined in this paper

Study	Year	Author	Implementation Level	Positive outcomes	Lacking
Egfi's Masterplan	1971	Hernest Egfi	90%	Subdivided the area of Bsatin following a grid system, and accommodated for 40 years of growth	Future vision for the city
Tripoli's Masterplan	2002	Diran Harmandayan	70%	Subdivided a new neighborhood and accommodated for growth	Demand management and implementation plan
					Public transportation plan
					Clear vision for the community
					Community outreach process
Al-Fayhaa 2020 Sustainable Urban Strategy	2011	Cities Alliance	20%	Community outreach process Clear goals and objectives	Clear vision for the community Demand management and implementation plan
Bab Al T'ebabneh - Jebel Mohsen: Inclusive Urban Strategy & Action Plan	2015	Abou Mrad et al.	10%	Community outreach process	
				Addresses conflict related issues by proposing an inclusive strategy that encourages integration	
				Proposes small scale, low cost interventions	
Envisioning a Post-Conflict Tripoli: The Inclusive Urban Strategy and Action Plan for Bab Al-T'abbaneh and Jebel Mohsen	2016	Miccoci et al.	10%	Action plan that includes a development management and implementation strategy	
TSSEZ	2018	Chamber of Commerce, Industry and Agriculture	30%	Created a Special Economic Zone around the port of Tripoli which has pushed the work towards the port's expansion	Citywide economic development plan



# Research Design

This paper will revolve around updating the goals and objectives of the Tripoli 2002 masterplan so that they account for affordable housing, promote economic development, and encourage sustainability and environmental protection. Geographically, the study area is “Dam and Farez”, a new neighborhood where a recent subdivision and a new zoning regulated the previously deserted area of the city. Located at the southern entrance of the city, the newly subdivided area expands east until the Mediterranean Sea, north until the Rachid Karame International Fair, and west until Bechara El Khoury Boulevard. The area encompasses a total of 3 million meters<sup>2</sup>, almost covering half of the city area as illustrated in Figure 4. The area falls under the jurisdictions of the cities of Tripoli and Al-Mina, governed by the city municipalities, and the union of Al-Fayhaa municipalities.

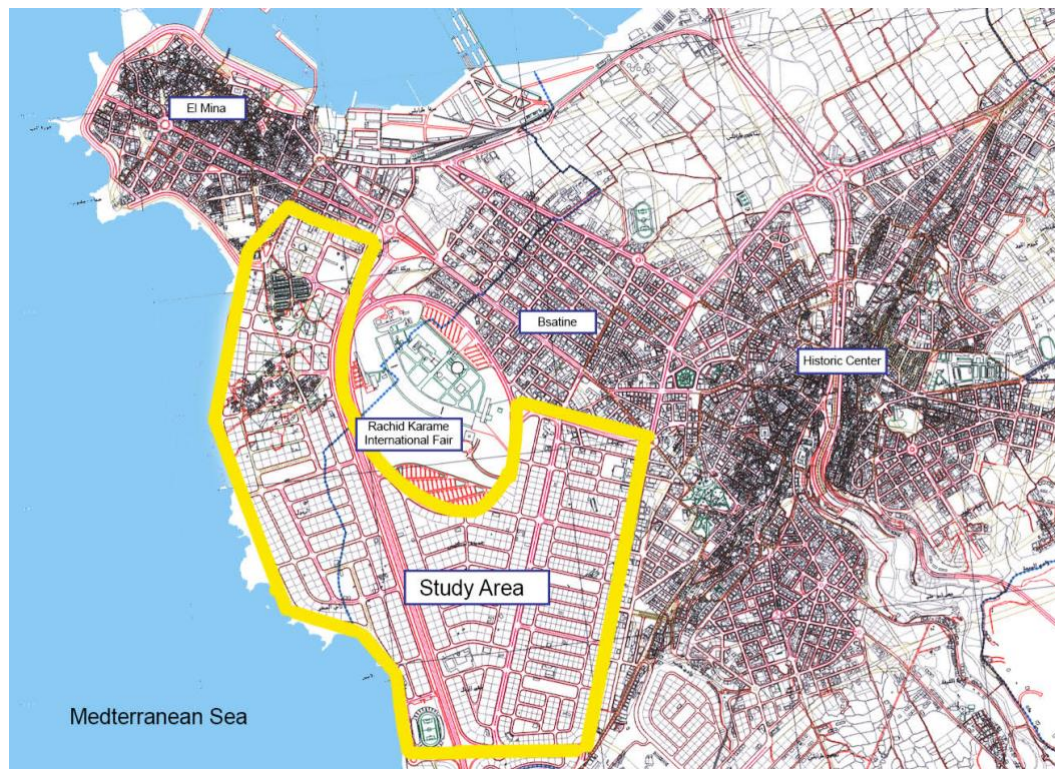


Figure 4: Study Area

Zoning and land use changes in Lebanon are often a complicated process (Bou Akar, 2018). A municipality suggests a new zoning and land use for its jurisdiction. The proposal goes for approval to the Urban Superior Council (USC), which is a governmental agency under the Ministry of Public Works. Afterwards, the proposal goes to the Minister of Public Works who, after the approval of the Committee of Ministers, has to issue a presidential decree for the zoning change. The decree has to get the supermajority vote —two thirds— of the Committee of Ministers and then has to be signed and approved by the President.

This paper looks at major previous studies that were done in the city, most notably Harmandayan's masterplan, the Tripoli Special Economic Zone plan, Al-Fayhaa 2020, and tries to define a comprehensive integrative vision for the city as a whole. Following the Ameliorist school of planning, through small interventions and policy, neighborhoods can be improved. This paper provides policy recommendations that can be applied in the new neighborhood of Dam w Farez. Policies will address issues of affordable housing, economic development, and sustainability.

Interviews with local officials —starting from the municipality members and mayor—have been conducted in order to better understand the bureaucracy behind zoning changes. Moreover, these qualitative interviews also aim to get access to the municipality's current and previous studies of the area, the demographic data they have and other information they are willing to share. Unlike New York City where data is continuously updated and publically accessible, the Lebanese government is very weak in gathering data. Data availability really varies between one municipality and another, depending on whether the mayor and his team find it valuable to collect

and update their database. In Tripoli, Harmandayan's study contains demographic data from 2002, and it is most probably the latest data gathered. As David Harvey (1985) mentions, capital accumulation and the production of urbanization go hand in hand. Therefore, a couple of interviews have been conducted with local prominent developers in order to better understand the real estate market and the forces governing it. Based on the literature review and the previous studies that were done, this paper addresses the following questions:

- 1. How can new zoning address issues of lack of infrastructure, such as electricity shortages that are common in the country—and more specifically in the city?*
- 2. How can new zoning incentivize and encourage development, especially job-producing development in a city that has a 40 percent unemployment rate?*
- 3. How can new zoning reduce neighborhood segregation and foster integration between different income classes and different religious groups?*

# Analysis

## Issue and Vision Statement

This paper aims to evaluate the existing zoning and land use of Dam w Farez established by Harmandayan in 2002 and subsequently update it to better fit the community's vision and goals recently formulated in studies such as *Al Fayhaa 2020*. Ideally the process of formulating the vision statement should be participatory, where members of the community determine the strengths and weaknesses of said community and establish initiatives. Community-based planning allows for dialogue resulting in a consensus in the form of a vision for the future and solutions to community problems (Kent, 1981).

It is in the interest of the city of Tripoli to establish a clear vision statement that identifies, in words, an overarching image of what the community aims to be and how it wishes to look. Vision statements include what the community desires to become in the future, its physical appearance and form (Berke, 2006). Several studies have been conducted regarding the future of Tripoli, but the majority have failed to establish a clear vision statement. The closest contender is *Al Fayhaa 2020*, which attempted to formulate a vision statement but the effort still falls short. The statement was not presented in a clear, concise summary of three or so sentences, as most vision statements are. But what *Al Fayhaa 2020* does possess are set goals that they plan to achieve. Thus, the goals do exist, while the vision statement remains unclear. It is crucial to recognize Tripoli's vision to better understand how the neighborhood of Dam w Farez will fit into, and help achieve, this vision.

The decree of 1971 put the Swiss planner Ernest Egli's masterplan—the first masterplan of Tripoli—into place. Egli suggested a grid in the region of Bsatn, inspired by modernism and Le Corbusier. However, as *Al Fayhaa 2020* critiques, the plan was implemented with the absence of any serious long-term vision. Moreover, the masterplan had negative effects on the city due to the lack of a general policy for urban development. The plan also failed to contribute to building open spaces within the urban fabric (Al Fayhaa, 2011). One cannot help but notice that Harmandayan's 2002 plan for Dam w Farez lacks the same elements as Egli's. It fails to present any clear vision for the neighborhood. Although it designates large blocks as open spaces, today—more than a decade later—some of these open spaces remain empty lots. Policy regulations, funding mechanisms, and activation programs are necessary in order to make these open spaces viable. Moreover, to permeate open spaces such as these with people, the neighborhood must be dense.

*Al Fayhaa 2020*, conducted in 2011, is one of the most recent and significant studies that aims to formulate a community vision through a participatory process. Based on *Al Fayhaa 2020*—where community participation is given significant value—it is evident that the community agrees upon the following issues:

1. Unemployment
2. Lack of Appropriate Infrastructure
3. Traffic Congestion
4. Housing Affordability
5. Lack of Adequate Open Space
6. Waste Management

In order to combat the outlined issues agreed upon by the community, based on the points proposed by *Al Fayhaa* 2020, the report prioritizes the following goals:

1. Reinforcing Local Economy & Commercial Activity
2. Housing
3. Sustainable Growth

# Description of Existing Neighborhood Conditions and Existing Zoning

## 1. Three Different Zoning Areas:

Figure 5 displays how Dam w Farez neighborhood is divided into three different land use classes.

- P8 is the eastern most section of the neighborhood. It is zoned for Residential Commercial with an FAR of 3. Buildings as high as 34m are allowed (12 stories). Setbacks of 3m are required.
- P9 is the middle section of the neighborhood. It is zoned for Residential Commercial with an FAR of 0.9. Buildings as high as 18m are allowed (6 stories). Setbacks of 5m are required
- P10 is the waterfront section of the neighborhood. It is zoned for Residential Commercial with an FAR of 1.2. Buildings as high as 18m are allowed (6 stories). Setbacks of 6m are required.

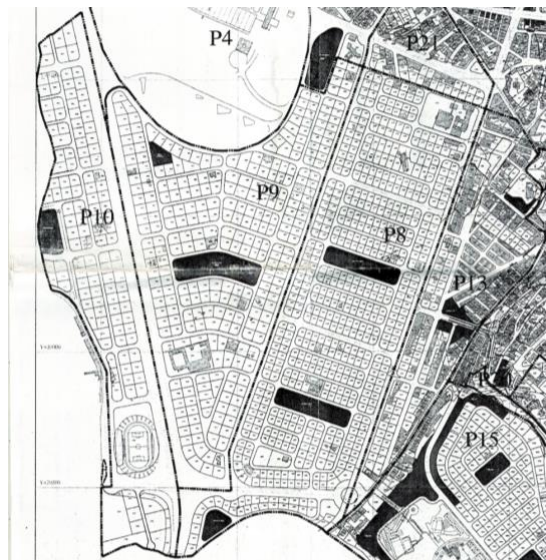


Figure 5: Zoning Districts in Dam w Farez



The land coverage in this neighborhood ranges from 30 percent to 50 percent. Therefore, this creates large open spaces on the ground floor; spaces that could be better utilized as ground floor retail.

Figure 6 shows the current usage of the ground floor open space—typically used as parking, non-landscaped, impervious driveways.



*Figure 6: Current Setback Usage*

## 2. Lots Built vs. Empty Lots:

The waterfront section of the neighborhood remains mostly empty, except for a handful of restaurants, an extremely large, private mansion, and the Arab University. This is illustrated in Figure 7. The Arab University has a student population of 6,000 with a campus that occupies one full block. The campus is isolated from the rest of the city as there is an absence of any developments on the surrounding blocks. A standard university campus in a city is usually surrounded by student housing, prosperous retail that meets typical student needs, and vibrant,



active restaurants or coffee shops. It is surprising that the market has yet to supply these types of development.



Figure 7: Arab University Surrounding Area. (Source: Google Maps)



3. Existing built blocks:

Although the neighborhood is 25 percent built, several blocks have more than 50 percent of their lots built up, especially in the P8 zoning district. As figure 8 shows, the P8 zoning district is almost 50 percent built up, whereas the P9 neighborhood is 30 percent built up, and the P10 waterfront neighborhood is less than 10 percent built up.

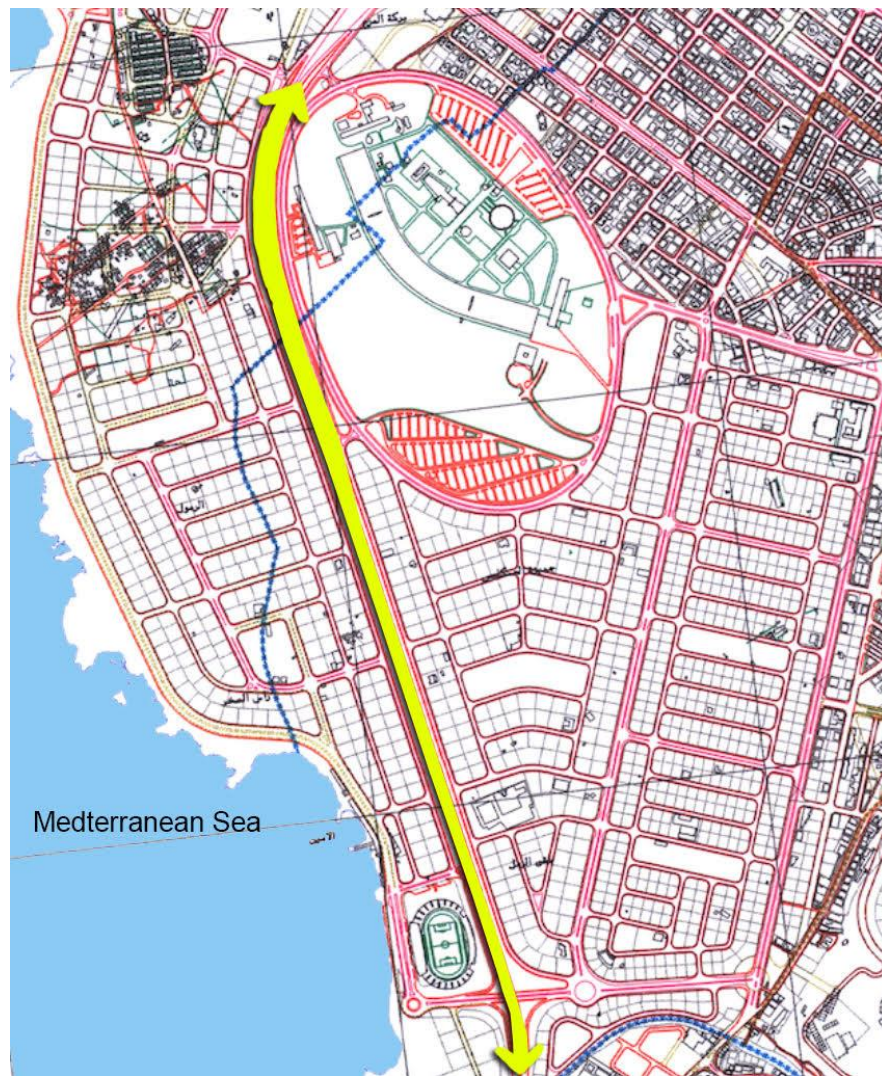


*Figure 8: Aerial Google Maps Image (Source: Google Maps)*



4. Neighborhood Division by Highway:

As-Saqi Al-Gharbi is a highway connecting Tripoli to Beirut, built prior to the civil war. It is adjacent to the Rachid Karamé Fair, as shown in Figure 9. In late 2018, As-Saqi Al-Shimali was completed via a bridge over the city, connecting Tripoli to Akkar. Today, this highway represents a major obstacle within the urban fabric as it cuts the connection between the two banks and isolates the new coastal districts from the internal districts (Al Fayhaa, 2011). What is particularly interesting is that at the time the highway was being constructed, in the eighties, no one opposed its presence.



*Figure 9: Tripoli Beirut Highway (in yellow)*

People in Lebanon have been led to believe that highways are positive, bringing economic activity and consumers. The Coastal Highway is the country's most prominent highway, connecting the North to the South and passing through the nation's capital. When it was constructed, a highway buffer was implemented as a way to prevent people from building near the highway or accessing it in any way other than a highway ramp. However, there was an absence of government regulation during the civil war, and people quickly scrambled to take advantage of this lack of law enforcement. They began to build on lots within the buffer—or sell their land rights for absurd amounts—and connect directly to the highway without using ramps. This became the norm. After the war, the government was faced with two options: they could either demolish all illegal encroachments within the buffer zone, or choose to pardon all those involved in illicit construction. They chose to pardon, and now building within the highway buffer zone is such a common practice it is seen as legal. Today the Coastal Highway remains the main commercial corridor of Lebanon, especially in Jounieh and Beirut, as shown in Figure 7. This has caused immense traffic as cars constantly enter the highway and stopping at various commercial establishments alongside it. This is why the population tends to believe highways are beneficial. The only highway in the country is littered with buildings, restaurants, nightclubs, malls, and copious amounts of other businesses. It is all they know.



Figure 10: Beirut-Jounieh Highway (Saade, 2017)

If there is a key idea to take away from Jane Jacob's (1961) *Death and Life of Great American Cities*, it would be that highways destroy cities. They cut through the urban tissue, separating neighborhoods, bringing traffic and all the pollution—both noise and air—that comes with it. But what is done is done. Now Tripoli can only move forward by seeking measures that can eventually reconnect both sides of the neighborhood.

## Sub-Goals to Achieve the City Wide Goals

### 1. **Reinforcing Local Economy and Commercial Activity:**

It is known that Tripoli's economy relies heavily on small businesses and local jobs. Small businesses thrive whenever they are present in strong retail corridors. The aim for Dam w Farez is to create these strong retail corridors and ensure they are affordable for existing local businesses.

#### a. Density:

Strong retail corridors function better wherever density exists. The denser the neighborhood, the more successful the businesses.

#### b. Walkability:

Retail corridors are more successful when there is higher pedestrian activity.

#### c. Accessibility:

The retail corridors should be affordable in order to be accessible to all population types and range of disposable income. An existing example is Beirut Souks, a major commercial district in Downtown Beirut. Beirut Souks is walkable, pedestrian-friendly, provides parking, and is safe in the middle of the capital's business district. However, the area is not accessible to the city's general population. Due to the incredibly high rent, only high-end luxury and international brands have been able to afford the cost of opening stores in Beirut Souks. Therefore, the average Lebanese consumer finds himself unable to afford anything in the district, down to



a simple cup of coffee. In the case of Tripoli, the city is known as “the mother of the poor,” (UNDP, 2015) as the local shops have been able to keep their prices consistently affordable.

d. Connectivity:

Dam w Farez should be connected to the rest of the city via different modes of transport. The existing road network and availability of on and off street parking makes the neighborhood very well connected to the rest of Tripoli by car. Moreover, the presence of taxicabs and local ride-sharing services offer alternatives to private automobiles. However, bike lanes and bike racks are nonexistent. Walking as a method of transportation is not promoted. In general, no formal public transportation system exists. Though there are buses, there are no bus routes or bus stops. It is in the city’s interest to promote alternative ways to connect Dam w Farez to the rest of Tripoli and minimize car usage. The abundant number of cars within Tripoli has created congestion and pollution in what is already the poorest city in the country. Poor residents of the city who cannot afford to buy cars often find themselves immobile with limited access to their direct surroundings. It is basically impossible for the city to grow economically without a public transportation system, keeping it stuck in an endless cycle of poverty. Therefore, connectivity is crucial with a focus on offering a variety of transportation modes.

e. Safety:

Tripoli's image has been severely damaged over the course of the last year due to the conflicts that occurred within the city's inner neighborhoods. However, although the conflicts have been relatively resolved and peace restored, it is essential to rebuild the city's image and ensure the safety of its residents.

2. **Housing:**

Expand the stock of housing availability and housing options:

The larger the supply of housing, the more affordable apartments are. New housing options should be encouraged to allow housing for different demographics emerging across the city; such as housings for students or single working millennials who prefer affordable small apartments.

3. **Sustainable Growth:**

a. Adequate Infrastructure:

Based on Harmandayan's land subdivision, Dam w Farez's infrastructure system was adequately designed and implemented to accommodate the neighborhoods' anticipated demand. The existing sewage and water systems as well as the roads are expected to handle future demands. However, people commuting through the neighborhood notice the traffic congestion present on the main retail corridor; a result of the heavy on-street perpendicular parking and the dependence on private vehicles. Concerns arise regarding the current congestion as the neighborhood remains underbuilt. This urges the need for a more comprehensive transportation



plan that will ideally offer a variety of mode options easily accessed by the city's residents.

b. Renewable Energy:

As previously mentioned, the country has been struggling with electricity shortages since the end of the civil war in 1990. The current power plants do not have the capacity to supply the whole country with electricity around the clock. Till this day no resolution has been reached. Tripoli receives 16 hours of electricity supply per day, with the remaining 8 hours supplied by private diesel generators. These generators emit noxious greenhouse gases, causing pollution across the country. This has created an urgent need to incentivize renewable energy production in any new development.

c. Stormwater Management:

Because of the density of built-up areas, water that falls in an urban environment cannot infiltrate the ground. Instead, it runs off on hardscaped surfaces such as streets, driveways, roofs, sidewalks, and parking lots. It is then collected by a sewer system. This water is referred to as stormwater or stormwater runoff. Figure 11 illustrates the difference between runoff in natural environments vs. runoffs in urban environments. It is evident that in natural environments a mere 10 percent of rain water becomes runoff whereas in urban environments, 55 percent of rain water goes as runoff. Stormwater impacts the quality of surface water, as it carries various pollutants and sediments from the surfaces it runs off. Moreover, if abundant, stormwater can cause major issues; flooding, overflow of sewer systems, basement

flooding, and sewer backups. Unmanaged stormwater from impervious surfaces may also result in stream bank and stream channel erosion, degrading water quality by introducing these pollutants into streams. Currently, with the abundance of vacant lots in Dam w Farez, stormwater has yet to become an issue. However, it is not uncommon for cities across Lebanon to have irregular maintenance of their sewage systems. Each year, several floods occur due to clogged sewer systems, causing immense congestion, car accidents, and costly damage—as shown in Figure 12. Stormwater management strategies should be implemented in Dam w Farez early on as a prevention method.

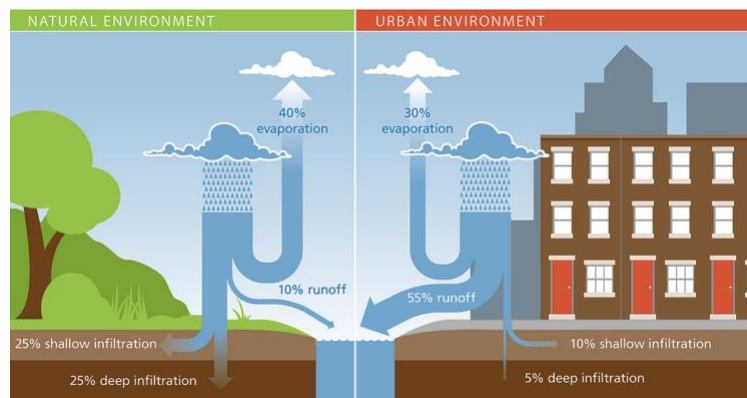


Figure 11: Stormwater Runoff (Source: City of Philadelphia, 2019)



Figure 12: Picture of the Tripoli-Beirut Highway during a flood in January 2019 (The Daily Star, 2019)

# Recommendations

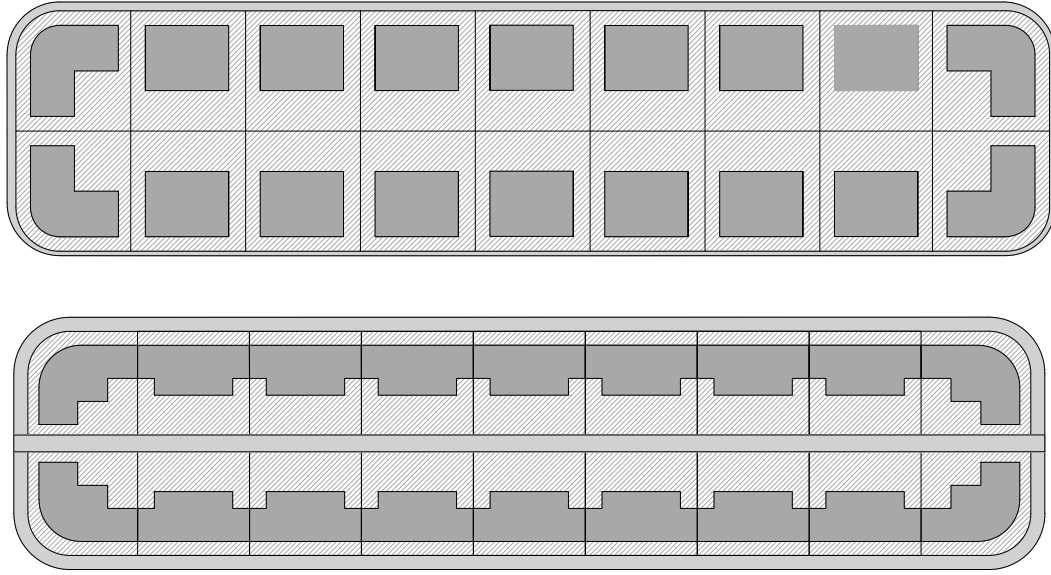
The recommendations presented are design-based as well as policy and zoning recommendations that can be implemented by the municipality. The first three recommendations are short term recommendations that can easily be implemented by the city without any capital funding. The remaining five recommendations are more long term. They either require funding or need a stricter system to implement them.

1. Create a strong street wall:

Presently, Dam w Farez is approximately 25 percent developed. Density is crucial in cities in order to have vibrant streets and encourage vibrant commercial activity. As Jacobs (1961) discusses, the more observers you have on the streets, the safer it becomes for pedestrians to walk—a direct result of a dense population. Currently, Tripoli's average population density is estimated to be 12,000 people per km<sup>2</sup>; compared to, for example, 26,000 in Manhattan. 12,000 is an ideal density, able to support commercial activities and high capacity transit. However, upon closer observation of the building typology in Dam w Farez, the building code requires a three to six-meter setback from the property line, thus creating a six to twelve-meter void between buildings. This has left a sizeable gap in the street wall that would typically be used as a garage driveway. To better foster strong pedestrian activity in the city, having a large sidewalk will not suffice. In *Designing healthy communities: A walkability analysis of LEED-ND* (Zuniga-Teran et al., 2016), the authors describe design elements that increase street surveillance and street safety. An important element is that garage doors facing the street should be avoided at all costs. However, due

to the present building code in Dam w Farez, the setback between buildings is almost always the garage entrance. It is in the interest of planners to acknowledge the importance of other urban design elements essential for pleasant pedestrian activity; street trees, benches, and strong street walls. In order to make biking and walking more desirable activities, gaps in the street wall—such as empty lots or low-rise buildings in high-rise streets—should be avoided as well (Zuniga-Teran et al., 2016).

The municipality should consider a zoning amendment that will require developers to build a street wall along their property lines with no side setbacks. These street walls would differ in height between the 3 zoning areas—P8, P9 and P10. The proposed minimum street wall heights are as follows: 11 meters for P8, where the building height is 34 meters, and 5.5 meters for P9 and P10, where the building heights are 18 meters. Because this amendment will remove the side setbacks, cars will need an alternative way to enter the building garages. The top plan in Figure 13 shows the existing building footprints on a typical block in Dam w Farez. The side setbacks are used to access the underground parking garage and the parking lot in the back of each building. The lower plan in Figure 13 illustrates the proposed concept of rear alleys from which cars can access different building garages.



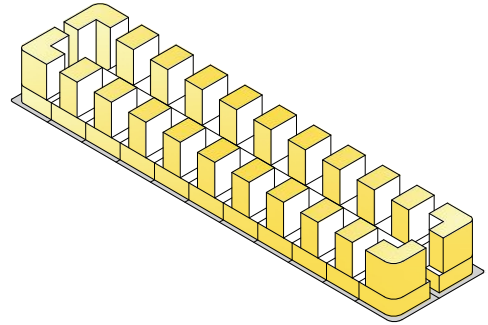
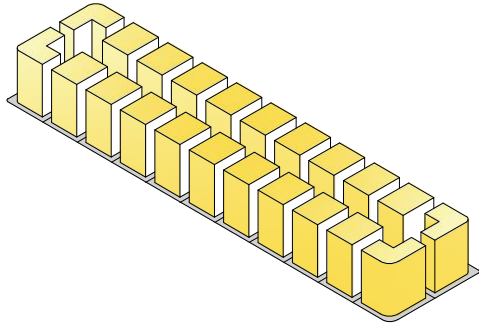
*Figure 13: Existing Block vs. Proposed Block with Back Alley*

Figure 14 shows how the blocks look like if they were built according to the existing zoning and setbacks, and how they will look like if the city adopts this recommendation.

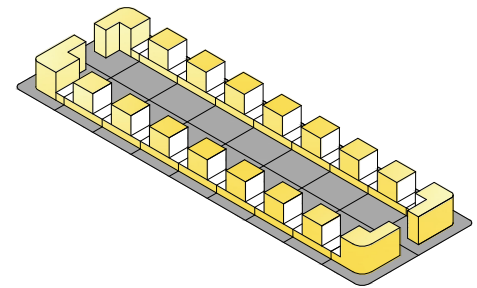
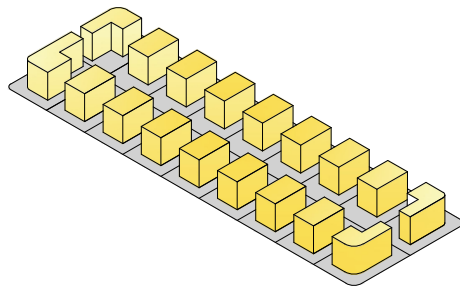
Before

After

P8



P9



P10

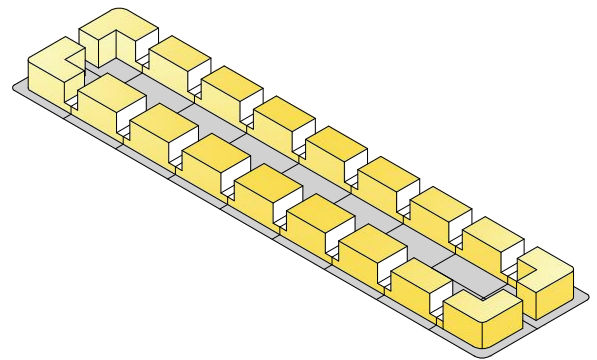
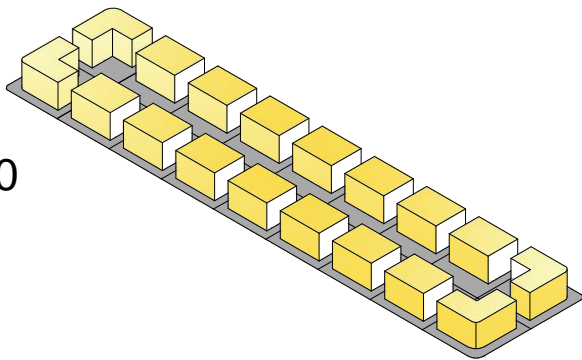


Figure 14: Building Volumes in Existing Zoning vs. Proposed Zoning

2. Create new retail corridors:

*Designing healthy communities: A walkability analysis of LEED-ND* (Zuniga-Teran et al., 2016) mentions changes that were made to the LEED-ND (Leadership in Energy and Environmental Design) after considering the results of quantitative and qualitative analyses for walkability. Of the changes made, one was implemented to achieve a walkable neighborhood. At least 30 percent of the building footprints are to be mixed use, where the ground floor is used for retail, including corners. The city of Tripoli should consider expanding its existing retail corridors and allow a commercial overlay on additional corridors as illustrated in Figure 15. The proposed commercial overlay is around the existing parks, in order to promote commercial activities like restaurants and cafes necessary for the activation of the open spaces. The proposed commercial overlay is also along the proposed bridge connection over the highway, which will be discussed later.



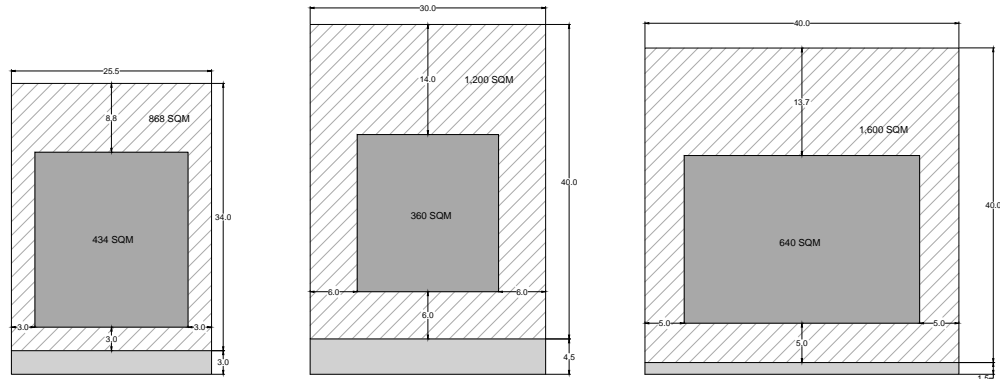
Figure 15: Proposed Commercial Overlay Areas

3. Encourage development that produces new housing typologies:

In order to achieve housing affordability, it is crucial to increase the supply of housing in the city, but also to offer several housing typologies that cater for different populations. In order to achieve that goal, two policy recommendations are offered to the city:

a. Implement a small lot ordinance:

Sizes of the lots in Dam w Farez vary within the neighborhood in which they are present, as illustrated in Figure 16 below.



*Figure 16: Lot sizes in P8, P9, and P10 Zoning Districts, Respectively from Left to Right*

In the city of Tripoli as a whole, there exists a wide range of apartment prices and sizes. In the neighborhood, due to the large lot sizes and strict building code, Dam w Farez apartments tend to be around the same size. Developers tend to avoid having more than two or three apartments per floor. A small lot ordinance aims to provide additional building typologies that are unable to exist within the current zoning and lot sizes. Such policies—already implemented in cities like Los Angeles—aim to subdivide underutilized land. As most of the lots are incredibly large in size, the city of Tripoli



should consider allowing developers or landowners to split their lots in half—giving them an option to sell the other half and use the money from the sale as a means of investment in developing the remaining half. This is considered a method that encourages development while also fostering new building typologies. Note that this policy is only feasible if it is complemented by the strong street wall zoning amendment and setback cancellation. The setback cancellation provides each lot with an additional 6, 10, or 12 meters depending on each zoning district; thus making small lot ordinances possible. Figure 17 illustrates how a small lot subdivision is possible.

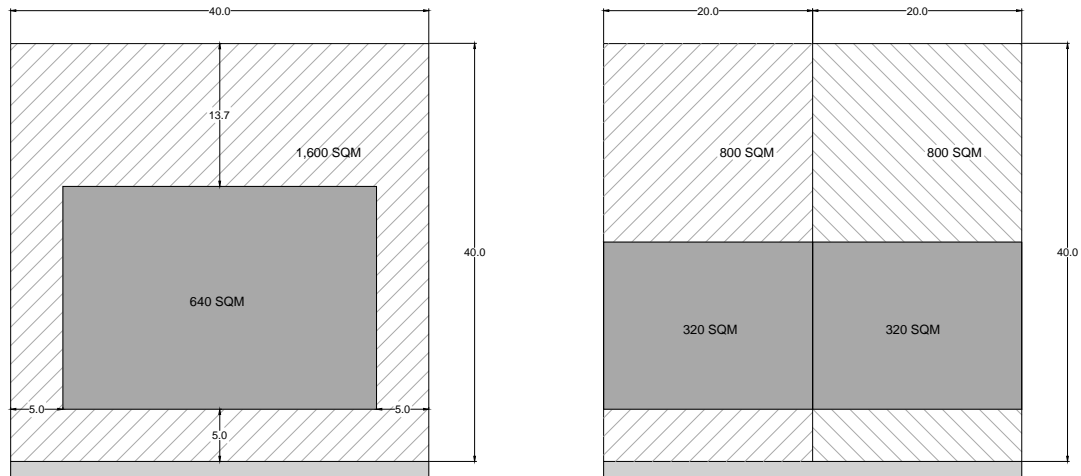


Figure 17: Proposed Lot Subdivision

b. Implement a Transfer of Development Rights Policy:

Transfer of development rights (TDR) is the act of transferring a portion or all developing rights from one lot to another. These properties who receive additional development rights are allowed more intensive development that what is typically permitted by zoning. Dam w Farez’s infrastructure was designed to accommodate the anticipated neighborhood demand upon its full development. In order to reach

maximum density for the neighborhood, a transfer of development rights system will allow the transfer of floor area from underbuilt lots to adjacent lots within the same block. A decent number of lots in Dam w Farez have already been built as private residences, basketball courts, soccer fields, gas stations, supermarkets, restaurants and more—leaving much of their development potential unutilized. A TDR policy can help grasp this lost floor area that the neighborhood’s infrastructure is already designed to accommodate. It is recommended that the city of Tripoli implement a TDR policy in the whole study area. TDR should be allowed anywhere in the neighborhood as long as development rights are within the same block, and as long as a parcel of land doesn’t exceed double its FAR.

Following are the long term recommendations for the city of Tripoli, which require some capital funding, and need a stricter system in order to be implemented:

4. Incentivize desired development:

a. Implement Green Zoning Ordinances:

Tripoli can benefit from the following strategies that the cities of Philadelphia and Seattle have already implemented and tested:

i. Stormwater Utility Fee:

Philadelphia’s Water Department has been a pioneer in managing storm water runoff and provides an excellent example that Tripoli may follow. This involves creating a stormwater utility fee that is proportional to the impervious area on

any given lot. The larger the impervious area on a lot, the higher the fee that the developer must pay. This type of fee aims at raising awareness of local environmental impacts and will incentivize the use of green infrastructure—such as porous pavement and green roofs—as people who implement such practices will lower their stormwater utility fee. The city of Philadelphia has provided its residents with an online interactive map that helps estimate their stormwater impact fee (City of Philadelphia, 2019). Such a fee can be easily implemented in the city of Tripoli as a municipal fee without any zoning amendments or decrees. The concept can generate additional revenue for the city to better maintain its infrastructure. The city currently implements a flat rate fee known as the ‘Sidewalks and Sewer Fee.’ It is recommended that Tripoli alters the calculation of this fee from being a flat rate, per meter<sup>2</sup> fee, into a formula that considers the impervious areas.

ii. Encourage Green Infrastructure:

As briefly discussed, Seattle Green Factor is a score-based code that improves the quality of landscaping in a new development. Green roofs, rain gardens, vegetated walls, trees, native plants, food gardens and more are all elements that increase a green factor score in new developments. Seattle’s landscaping, screening standards and green factor aim to improve the quality of landscaping in any upcoming developments. Appendix 1 presents Seattle Green Factor and its scoring matrix.

In Dam w Farez, green infrastructure can be incentivized using a similar method, allowing developers who incorporate these elements additional FAR. The willingness to provide such infrastructure has already been expressed by a major developer in the city of Tripoli; so long as he is entitled to this additional FAR. Such policies have been implemented and tested in several cities across the United States—Philadelphia, Seattle, and Denver, to name a few—and have proven to be effective. However, it is important to note that challenges often arise when implementing such a policy. The method in which a city controls these policies involves allowing the developer to build with the additional FAR and subsequently withholding an occupancy permit contingent on the developer installing green infrastructure. Then, and only then, will an occupancy permit be granted. Such an implementation mechanism is feasible in Tripoli, as apartments cannot be sold in the absence of an occupancy permit. Said permit is authorized by the municipality, which must conduct an inspection of the property to ensure it is built according to the standards of the permit and is ready for occupancy.

b. Implement a tax abatement policy:

Tax abatement is a widely used process by local governments in the US to augment the attractiveness of particular locations for investments, or to encourage job producing developments (Dalehite et al, 2005). In Tripoli, the concept of tax abatement does not really exist. The city collects municipal taxes from developers while granting them the building permit. Such taxes add up to around \$200,000 for

an average sized building in the city with around 20 units. Such tax is a considered a heavy burden for developers. The city should consider implementing a tax abatement strategy to encourage development in certain areas, but also to encourage types of commercial activity that it finds stimulating. For example, the city might want to encourage certain unit sizes, or student housing around the university campus, or cafes and restaurants around parks. Giving the developer a reduction in the municipal tax is an incentive that will help the city steer development.

In recent years, development in Dam w Farez has been slow, particularly in the sea-facing neighborhood. Currently, this neighborhood remains less than 10 percent developed. Development throughout the city has also faced competition with sprawl development occurring in Tripoli's suburbs. Developers have found it to be cheaper and more profitable to build in these areas. Therefore—due to the lack of adequate regulation—the real estate market has become the main driver behind growth.

People choose to live in cities because they provide amenities, most importantly connectivity and accessibility. Since living within the city does not offer the benefits that should be offered, developers took advantage of the situation and started promoting suburbanization for their own profit. Those developers are selling quiet, safe and relatively cheap apartments that people prefer. Suburbanization has decreased the city's attraction and further increased segregation. It is also the cause of having any unbuilt parts within the city. In order to better understand the current real estate situation in the city, a telephone interview was conducted with one of

the biggest developers in the region, Mr. Abdul Settar Al Tom. In the past twenty years, Mr. Tom has built over 20 residential buildings within the city. However, his current projects are all located in the city suburbs. “People are moving out of Tripoli” he said, “they prefer to live ten minutes away, with a nice sea view, and gated community, protected from the city conflicts”. Just like many other developers, Mr. Tom is selling the suburban lifestyle: nice views, gated communities, cheaper apartment prices—and people are buying it. In Tripoli, suburbanization increased exponentially in the last ten years, he said. In his opinion, apartments in the city are too expensive for new buyers. With recurring conflicts in the city, people prefer to invest in other places. The new generation isn’t able to afford large expensive apartments within the city. In addition to their high price, people prefer living in the close by suburbs because they feel more safe. In the long run, as learned from American cities, suburbanization causes several problems. Suburbanization often leads to widened wealth gaps between the rich and the poor, different forms of segregation, a sprawling built environment, expanding the city in a way that increases traffic congestion, thus pollution. The city has already a higher zoning in its downtown as compared to its suburbs, however, the city does not have control over all its suburbs. Most of the suburbs fall within different jurisdictions and thus they have zoned their areas independently. Some municipalities have up-zoned areas in order to attract development and increase their tax base. In order to mitigate sprawl and encourage development throughout the city, a policy should be implemented to incentivize land owners to develop. Lebanon’s existing property tax is only on properties that have been built. In Dam

w Farez, there exists a municipal tax on all developments, calculated as a percentage of the value of the development itself. For residential units, this value is 6 percent; commercial units, the value is a slightly higher 8.5 percent. The municipal tax constitutes the main revenue for the city of Tripoli, also encompassing the aforementioned sidewalks and sewer fee.

The municipality also generates a portion of its income from building permits. This fee is calculated per meter<sup>2</sup> of the development. In order to encourage further development in Dam w Farez, the city of Tripoli should consider lowering or cancelling this permit fee. Developers will be incentivized to build in the neighborhood as opposed to engaging in sprawl development. Other policies can also be implemented to urge landowners to develop their lots. Presently, landowners do not pay taxes on vacant land. Thus, those with land do not feel obligated to build, leading to a consequential ripple effect; development decreases, available housing decreases, and prices of existing apartments increases.

The sidewalks and sewer fee that the municipality is currently collecting is very low, and also fails to encourage landowners to develop. The municipality should consider increasing that fee, which is entirely within its power. Today, those who own vacant lots in Dam w Farez pay zero taxes, although the city has provided the lots with adequate infrastructure (sewage, water, and electricity), paved the roads, and built the sidewalks. In the zoning amendment, the municipality should propose a land taxation that entails the following: those who own vacant lots in areas that

have been subdivided at the expense of the city should be required to pay a tax. However, this is not within the municipality's authority to implement; it requires approval through the parliament. This may be difficult, as property taxes on unbuilt properties has been previously proposed in parliament and remains a very controversial topic.

c. Encourage religious integration:

The city of Tripoli has always been a melting pot of religions, though it is not believed to be. The 15-year civil war created visible neighborhood segregation between religions, labeling Tripoli as a predominantly Muslim city in the process. As seen in neighborhoods and cities around the world, segregation leads to the deterioration of cities. Segregation creates spaces lacking in community vitality, economic opportunity, and accessibility to tangible and intangible entities.

The masterplan for the regions of Tripoli, El-Mina, El-Bedawi and Ras-Maska was the first to be produced following the Lebanese Civil War. However, this masterplan has been studied following a top down planning rationale, failing to address the segregation created by the war. This planning approach was a critical error with lasting effects on the region.

Despite what some planners believe, post-war planning is very different when compared to post-disaster planning (Sipus, 2014). Conflicts are embedded in the urban environment and local population, who remain permanently affected even



after peace has been established (Micocci, 2016). In post-war planning, planners are to focus mainly on preventing future conflicts. Post-war planning's primary concern is to overcome segregation and cleansing through integration (Purdekova, 2017). However, this has not been the case with Tripoli. The lack of integration in planning, as well as the lack of anticipation of the potential problems, has caused many recurring conflicts within the city's old neighborhoods, long after the war's conclusion. Less than a decade after the plan was adopted, conflicts and wars arose between these neighborhoods. This severely damaged the city's reputation and sense of safety, making it a less attractive city for people to reside in. Clashes between the primarily Sunni population of Bab Al-Tabbaneh and the Alawite group settled in Jebel Mohsen were mainly fueled by the tense relationship between Lebanon and Syria, as well as the ongoing war with ISIS in Syria (Micocci, 2016). These conflicts may have been avoided had these neighborhoods not been segregated.

Ethnic and religious segregation, however, is not limited to Tripoli—it is a countrywide phenomenon. As Bou Akar (2018) discusses in *For the War Yet to Come*, religious-political organizations play a vital role in shaping urban planning and zoning schemes, land and housing markets, and the provision of infrastructure. These organizations have instigated the segregation of neighborhoods, creating frontiers between various religious neighborhoods. This is not unfamiliar; it is similar to the infamous green line that divided Beirut into Christian in the east and Muslims in the west during the civil war. Integrating people from different religions

and sects is key to ensuring stability and safety in the city. Similar to the concept of voluntary inclusionary housing in New York—a policy aimed at supplying affordable housing—and inclusionary housing policy should be enacted in Tripoli to encourage religious integration. In NYC, a developer is granted additional FAR in return for the provision of affordable housing units within his development. An incentive to developers in Dam w Farez can be provided so long as the developer's apartments are sold or rented to families of different religions. Despite being what some may perceive a completely foreign concept and invasion of privacy, religion of the Lebanese population is common knowledge and featured on the citizen's identification. This policy is viewed as a long-term recommendation because its implementation must be strictly monitored and enforced.

5. Improve inner-neighborhood connectivity:

a. Set citywide sidewalk design standards:

In comparison to Beirut, Tripoli has much wider and more organized streets delineated with trees and green spaces. However, despite Tripoli possessing this wide road network, the city lacks a transportation plan that enables pedestrians to move from Point A to Point B without any obstacles along the way (Al Fayhaa, 2011). This problem is not only due to the unawareness of the culture of public space, but also due to the discontinuity along the sidewalks. It is not uncommon for a sidewalk to be interrupted by obstacles from commercial stores or kiosks, as

shown in Figure 22. Hence, a woman pushing her baby in a stroller would not be able to walk on the city streets; neither would those with disabilities.



*Figure 18: Interrupted Sidewalks in Dam w Farez*

The illegal occupancy of the public space or public property is a citywide phenomenon that has existed for a long time. It has become nearly impossible to mitigate. “Political leaders in Al Fayhaa are giving support to people who illegally use public facilities or damage them. This support is hindering the work of the municipalities and delaying the implementation of projects,” (Al Fayhaa, 2011). Design measures coupled with the appropriate policies and police supervision are the only means that can mitigate the sprawl of such illegal activities in Dam w Farez. Sidewalk design guidelines are also to be outlined by the municipality. Examples from NYC can serve as helpful guides for where to begin. Sidewalks are to be continuous and homogenous. Because of the change in pavements in Tripoli, pedestrians sometimes feel as though they are walking on private property. Jacobs

(1961) mentions the importance of a clear separation between the private and public realm to foster vibrant pedestrian activity. Sidewalks are also to be standardized and clearly outlined. Moreover, a detailed design should be established in order to alleviate rain water. Steps in sidewalks should be avoided and be smoothly graded. Due to the invasion of the pedestrian realm by cars in other neighborhoods across the city, the phenomenon that has already begun in front of cafés, as well as valet parking—as shown in Figure 15—the new sidewalk design must incorporate physical barriers that prevent the invasion of the pedestrian realm by vehicles. Bollards have already been tested in other areas of the city and have proven to be very effective, as shown in Figure 23 on the bottom left.



*Figure 19: Interrupted sidewalks in Dam w Farez and successful bollard installation in other parts of the city*

Moreover, sidewalk crossings should be delineated and traffic calming measures should be incorporated to increase the safety of pedestrians on these crossings. Figure 24 illustrates a current intersection in the neighborhood. Pedestrian crossings, signs, or traffic lights are all absent.



*Figure 20: Typical Intersection in Dam w Farez*

Ideally, the installation of traffic lights across the area will greatly help in increasing traffic efficiency and safety. However, due to the absence of funding, other traffic calming measures can be implemented. These may be basic elements such as speed bumps or stops signs at every intersection. Moreover, clear pedestrian crossings should be marked, and restrictions to on-street parking should be set.



b. Create mid-block pedestrian pathways:

Due to the layout set by Harmandayan, city blocks in Dam w Farez are oriented either north-south or east-west. Blocks differ in size and the block lengths are approximately 70 meters by 300 meters, a 4-minute walk. Upon examining the masterplan, it became evident that pedestrian connectivity is not prioritized. Many areas in the neighborhood are not interconnected. Therefore, as a recommendation, a mid-block pedestrian walkway within the existing setbacks should be implemented in the locations proposed in Figure 18, as a method for increasing pedestrian connectivity.

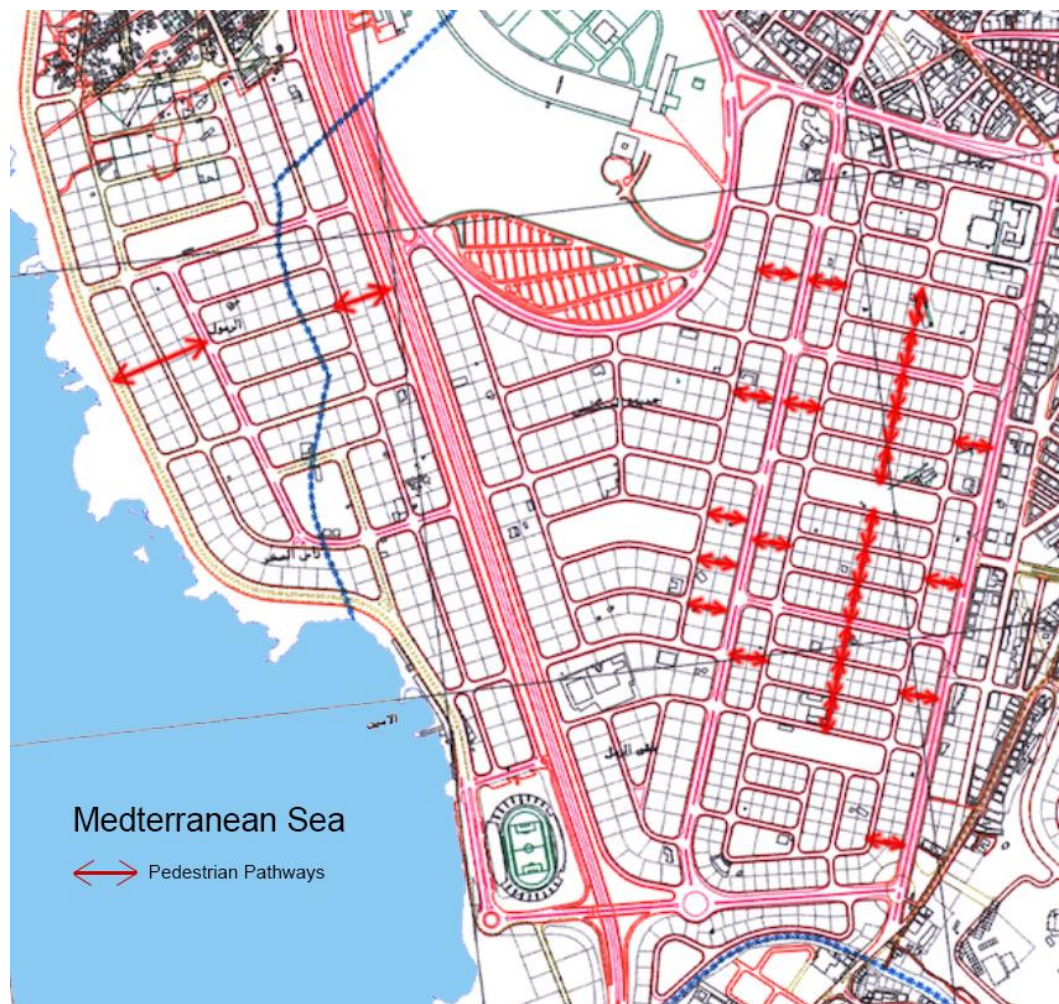


Figure 21: Proposed Pedestrian Pathways

c. Create connections above the highway:

Khereddine Ghalayini, one of the most well-known and competent structural civil engineers in Lebanon, as well as a professor at the Lebanese University, outlined a proposal to link neighborhoods on opposite sides of the highway. Professor Ghalayini proposed several infrastructure projects for the city with the aim of mitigating traffic. One of his projects is a bridge above the As-Saqi Al-Gharbi highway, presented in figure 19 below.

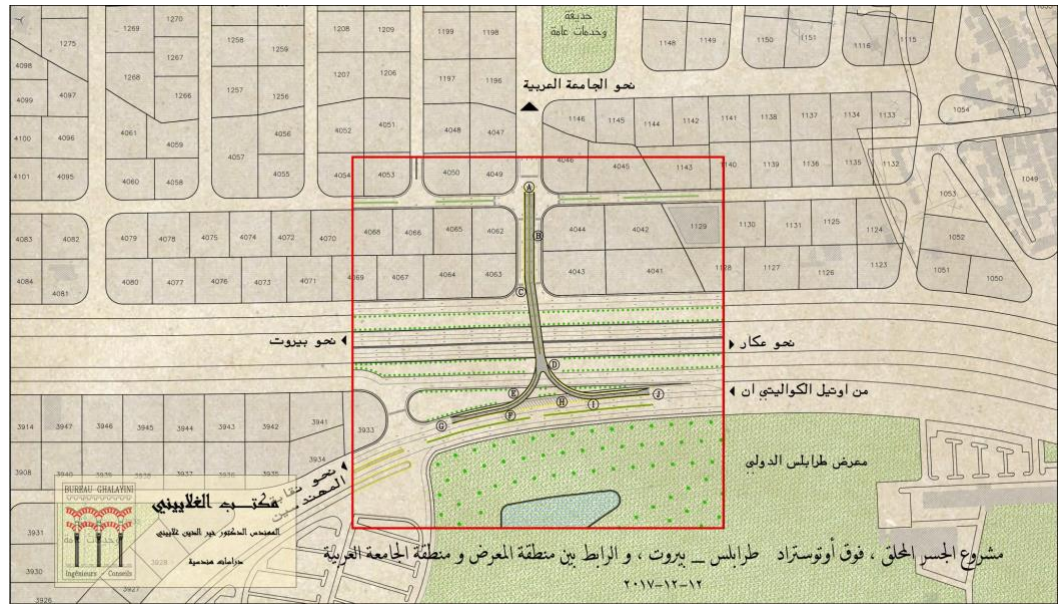


Figure 22: Ghalayini's Bridge Proposal

Ghalayini's proposal is quite interesting, recommending that the city connects the divided neighborhood by bridging over the highway. However, a link towards the center of the neighborhood is more efficient, considering pedestrian and bike crossings as a priority. Figure 20 illustrates the proposed bridge connection along



with Ghalayini’s proposed connection. Such connection will allow residents of the city to access the waterfront by a short walk or bike ride.

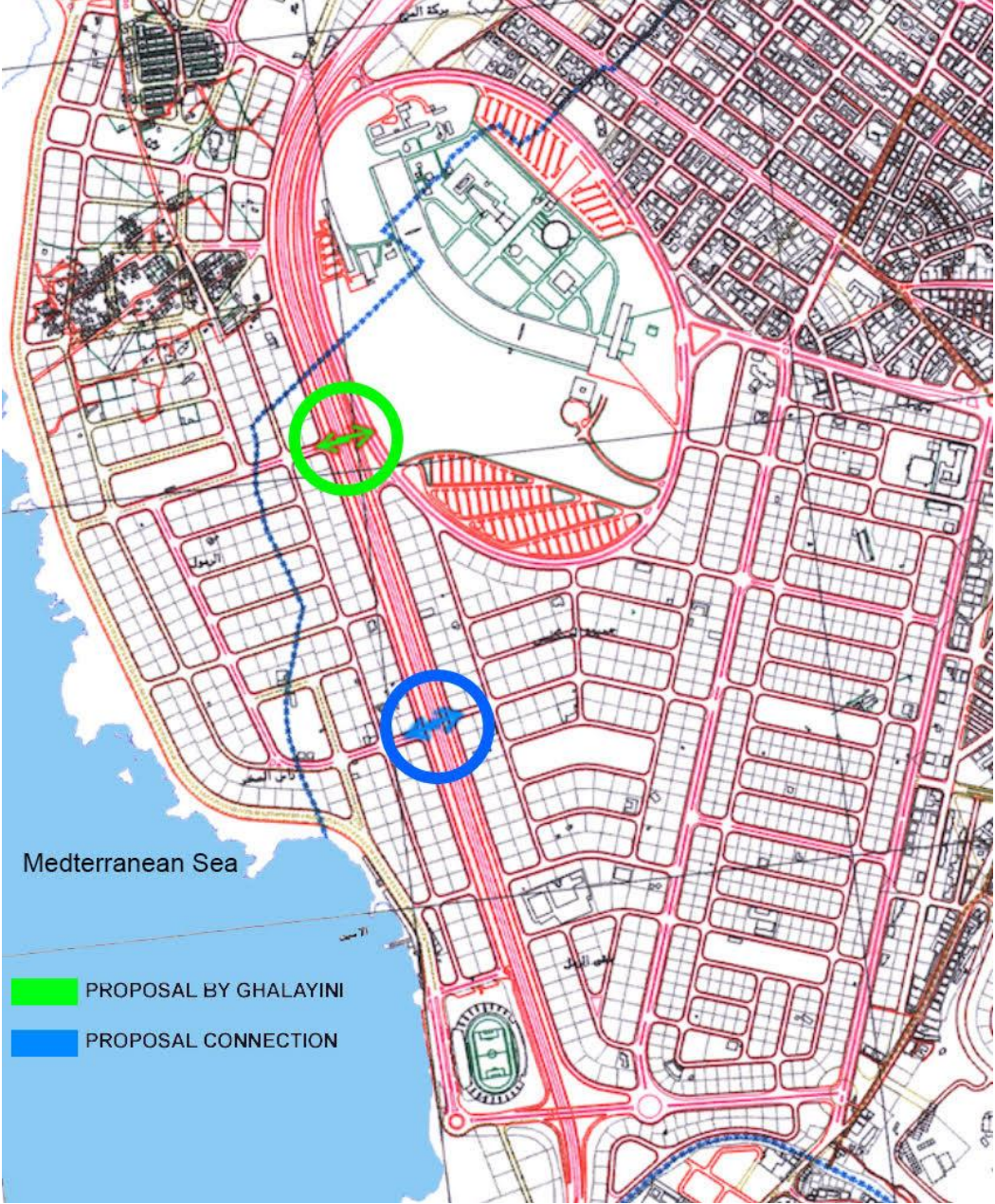


Figure 23: Proposal for a connection over the highway



d. Retrofit streets to complete streets:

Streets account for a significant portion of city-owned land, 30% in the case of Tripoli. The way streets are designed reflect how the people in an area wish to live, defining the character of the neighborhood. Streets can help people make healthy, environmental decisions by supporting walking, cycling and transit (City of Boston, 2013). Complete streets in Dam w Farez would act as a leading example not only in the city of Tripoli, but across the whole country. These complete streets would improve the quality of life of residents while creating sustainable transportation methods. The complete streets approach places pedestrians, cyclists, and transit users on equal footing with motor vehicle users, embracing innovative designs and technologies to address climate change and promote active healthy communities (City of Boston, 2013). Figure 18 illustrates the existing streetscape in Dam w Farez. It is evident that cars and on-street parking dominate a significant portion of the streets, whereas the pedestrian realm is minimal—encroached by parking, driveways, signs, street lights, and many additional obstacles. Bus stops, pedestrian crossings and bike lanes are nonexistent in the streetscape. The city of Tripoli must consider retrofitting the streetscape, transforming it following the complete the concept of complete streets. Figure 21 illustrates how within the same dimensions; an improved design of the streetscape could foster several transportation modes.

Figure 24: Existing Streetscape (top) vs. Proposed Streetscape (bottom)



6. Activate parks:

A potential public-private partnership (PPP) can help the city activate its existing parks, generating revenue to maintain and operate them. It is in Tripoli's interest to encourage small and diverse shops along the greenspace boundary, particularly food trucks. Jacobs (1961) emphasizes the importance of the presence of vendors for making greenspaces safer. Licenses for truck vendors on sidewalks surrounding the parks—or within the parks themselves—can be sold following a bidding process, already a common practice in the country and city. Moreover, the additional retail corridors previously proposed will also border the greenspaces to further enhance the park surroundings.

7. Street Trees:

Street trees are essential elements for creating a positive aesthetic for the streetscape. They provide pedestrians with a feeling of safety and protection from nearby traffic and thus foster walkability. Currently, there exist no rules regarding street trees in Tripoli. The municipality takes it upon itself to plant trees wherever they deem fit. However, due to scarce resources, several streets are void of any kind of plantation. In New York, the way that the city approaches street trees requires each developer to provide trees facing his property line at a certain interval. The NYC street trees requirement is as follows: “All new buildings and all enlargements exceeding 20 percent of the floor area must provide one new street tree for every 25 feet of building road frontage. These requirements must be satisfied for the builder to obtain a Certificate of Occupancy from the Department of Buildings (DOB),” (NYC, 2016). A similar policy could be implemented in Dam w Farez

as a requirement that must be fulfilled to obtain a building permit. This will also remove the burden from the city of having to handle tree funding and maintenance.

8. Conduct Yearly Inspections:

In order to ensure that the developers are adhering to the terms of the aforementioned policies, whether it be correctly maintaining green infrastructure or street trees, Tripoli should implement a yearly inspection of buildings. It is crucial that the developers are keeping the promises they made in exchange for incentives such as additional FAR. These inspections should not only guarantee that the developers are correctly maintaining their facilities, but also that the buildings are respecting the zoning. It is not uncommon for developers to build extensions to buildings or retrofit spaces and use them for unauthorized purposes. Therefore, these inspections are necessary, and should be coupled with a strongly enforced fining system.

Appendix 2 presents a matrix with all the above recommendations combined by priority, type, and possible challenges.

# Implementation

Some of the recommendations are policies that have been proven to be successful in western countries and cities, where law is enforced and respected. It is essential to discuss the implementation of such policies in a third world country like Lebanon, where corruption is ubiquitous.

Although many buildings are in code violation in the country, new construction in cities is highly controlled, especially in Beirut downtown and in the study area in Tripoli. Some of the recommendations proposed have already been tested in Beirut, like the TDR policy and have proven to be successful. It is likely that such policy will also succeed in Tripoli. Green zoning ordinances have not been tested in the country yet, however, solar panels, green roofs and other green infrastructure are available in the market in Lebanon. These infrastructures are being implemented in luxury buildings and are used by private developers as a way to market their developments as eco-friendly. PPPs are already present in Lebanon but they are controversial. Many PPPs have been associated with corruptions, where the government has given a contract for an inflated price to a specific well-connected private entity.

Therefore, implementation of most of the recommendations is feasible, but strong efforts from the government are required to monitor and ensure the implementation in lawful way.

# Conclusion

The city of Tripoli has the potential to become an exemplary city in the country. The several plans that have been done for the city have laid the foundation and infrastructure that can allow the city to grow in a sustainable manner. However, due to the lack of implementation of many elements of the previous masterplans, the outdated zoning regulations, and lack of adequate policies, the city has been struggling with several issues. This paper proposes a set of recommendations and their implementation methods considering the lack of funding in the municipality. Whether a municipal law, a zoning amendment, a potential PPP, or a design standard, the recommendations are all implementable by the municipality without a budget. The recommendations aim at guiding development in the neighborhood of Dam w Farez in a sustainable manner and are encouraged to be implemented as soon as possible, knowing that the neighborhood is still not developed and that there is still opportunity for improvement.



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# Appendix 1: Green Factor Score Sheet

Green Factor Score Sheet		SEATTLE <i>green factor</i>	
Project title:		enter sq ft of parcel	
Parcel size (enter this value first) *		5,000	SCORE -
Landscape Elements**	Totals from GF worksheet	Factor	Total
<b>A Landscaped areas (select one of the following for each area)</b>			
1 Landscaped areas with a soil depth of less than 24"	enter sq ft 0	0.1	-
2 Landscaped areas with a soil depth of 24" or greater	enter sq ft 0	0.6	-
3 Bioretention facilities	enter sq ft 0	1.0	-
<b>B Plantings (credit for plants in landscaped areas from Section A)</b>			
1 Mulch, ground covers, or other plants less than 2' tall at maturity	enter sq ft 0	0.1	-
2 Shrubs or perennials 2'+ at maturity - calculated at 12 sq ft per plant (typically planted no closer than 18" on center)	enter number of plants 0 0	0.3	-
3 Tree canopy for "small trees" or equivalent (canopy spread 8' to 15') - calculated at 75 sq ft per tree	enter number of plants 0 0	0.3	-
4 Tree canopy for "small/medium trees" or equivalent (canopy spread 16' to 20') - calculated at 150 sq ft per tree	enter number of plants 0 0	0.3	-
5 Tree canopy for "medium/large trees" or equivalent (canopy spread of 21' to 25') - calculated at 250 sq ft per tree	enter number of plants 0 0	0.4	-
6 Tree canopy for "large trees" or equivalent (canopy spread of 26' to 30') - calculated at 350 sq ft per tree	enter number of plants 0 0	0.4	-
7 Tree canopy for preservation of large existing trees with trunks 6"+ in diameter - calculated at 20 sq ft per inch diameter	enter inches DBH 0 0	0.8	-
<b>C Green roofs</b>			
1 Over at least 2" and less than 4" of growth medium	enter sq ft 0	0.4	-
2 Over at least 4" of growth medium	enter sq ft 0	0.7	-
<b>D Vegetated walls</b>			
	enter sq ft 0	0.7	-
<b>E Approved water features</b>			
	enter sq ft 0	0.7	-
<b>F Permeable paving</b>			
1 Permeable paving over at least 6" and less than 24" of soil or gravel	enter sq ft 0	0.2	-
2 Permeable paving over at least 24" of soil or gravel	enter sq ft 0	0.5	-
<b>G Structural soil systems</b>			
	enter sq ft 0	0.2	-
sub-total of sq ft =		0	
<b>H Bonuses</b>			
1 Drought-tolerant or native plant species	enter sq ft 0	0.1	-
2 Landscaped areas where at least 50% of annual irrigation needs are met through the use of harvested rainwater	enter sq ft 0	0.2	-
3 Landscaping visible to passersby from adjacent public right of way or public open spaces	enter sq ft 0	0.1	-
4 Landscaping in food cultivation	enter sq ft 0	0.1	-
		Green Factor numerator =	-

\* Do not count public rights-of-way in parcel size calculation.  
 \*\* You may count landscape improvements in rights-of-way contiguous with the parcel. All landscaping on private and public property must comply with the Landscape Standards Director's Rule (DR 6-2009)

# Appendix 2: Recommendations Matrix

	Recommendation	Type	Implementation Challenge
<b>Short Term</b>	1. Create a strong street wall	Zoning	Long bureaucratic process
	<ul style="list-style-type: none"> <li>a. Cancel side setbacks</li> <li>b. Require a street wall</li> <li>c. Create a back alley that serves as a parking entrance and a garbage collection roadway</li> </ul>	Zoning	
<b>Short Term</b>	2. Create new retail corridors	Zoning	Long bureaucratic process
	Add a commercial overlay on main streets and around parks	Zoning	
<b>Short Term</b>	3. Encourage development that produces new housing typologies	Policy	Long bureaucratic process
	<ul style="list-style-type: none"> <li>a. Implement a small lot ordinance</li> <li>b. Implement a TDR policy</li> </ul>	Policy	
<b>Short Term</b>	4. Incentivize desired development	Zoning	Long bureaucratic process
	<ul style="list-style-type: none"> <li>a. Implement green zoning ordinances</li> <li>b. Implement a tax abatement policy</li> <li>c. Encourage religious integration</li> </ul>	Zoning	
<b>Long Term</b>	5. Improve inner neighborhood connectivity	Design Intervention	Funding
	<ul style="list-style-type: none"> <li>a. Create mid-block pedestrian pathways</li> <li>b. Create connections above the highway</li> <li>c. Retrofit streets to complete streets</li> <li>d. Set citywide sidewalk design standards</li> </ul>	Design Intervention	
<b>Long Term</b>	6. Activate parks by implementing public private partnerships	Strategy	Political
<b>Long Term</b>	7. Increase the number of street trees by switching the responsibility from the city to private developers	Policy	Ensure compliance
<b>Long Term</b>	8. Conduct yearly inspections	Strategy	Funding