A Critical Spatial Analysis of Residential Planning in Makkah, Saudi Arabia

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A Critical Spatial Analysis of Residential Planning in Makkah, Saudi Arabia

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by
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ABSTRACT

The housing situation in Makkah presents significant challenges for its residents and non-residents who visit the city. These problems include crowded housing, narrow streets, insufficient parking, and strained public services. However, the government has taken some steps in improving conditions in the city by launching several projects to divide the land more evenly so that the population density will be reduced. The government also plans to provide more sources of waters, sewers, and electricity. The ultimate goal is to make Makkah and the holy city a place where it is comfortable to live without the impending fear of shortages of any type. The government is working hard to improve conditions so the city can accommodate its residents and those who come to visit. This thesis offers a critical spatial analysis of residential development in Makkah and the city government’s efforts to alleviate these problems.
Acknowledgments

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Chapter I

Introduction

A Critical Spatial Analysis of Residential Planning in Makkah, Saudi Arabia

Makkah is one of the holiest cities in the world and a destination for millions of Muslims each year. Located in western Saudi Arabia, 75 kilometers from the Red Sea and 277 meters above sea level (Figure 1.1), the present population of Makkah is only 1.7 million, but over 2.5 million people visited the Holy City last year, especially during the holiday of Hajj and Umrah. The city’s population, including residents and non-residents, is housed in a variety of settings, including single family houses, villas, apartment buildings, and temporary and rental housing. Many of these residences were set up as a means to house people during their stay in the holy city. Unfortunately, Makkah has had trouble planning its recent growth and poor and illegal squatter housing has become common.

Figure 1.1 Map of Makkah
Today, Makkah is a very crowded and populated area, and many people live in poor conditions. Today, the population consists of 1,700,000 people, while thirty years ago it was only 900,000 inhabitants. In addition to a growing resident population, the number of pilgrims is growing as well. In 2004, there were approximately two million pilgrims, and twenty years ago there were only one million pilgrims residing there (Baiazid, 2004). Makkah has 76 distinct neighborhoods according to Mr. Alhalgi, an engineer from the Holy Makkah Municipality (telephone interview, 2008), and almost all of them contain foreigners who came to visit for Hajj and never returned home. The number of permanent residents and pilgrims is predicted to increase. By 2029, there may be 2.9 million people living in Makkah. In addition to this, there may be 3.9 million pilgrims during Hajj, 4.2 million people visiting during Umrah, and another 1.5 million pilgrims during the month of Ramadan. It seems that these pilgrim seasons will be the primary reasons for the increase in population (Dosch, 2006).

Table 1.2 Saudi and Non-Saudi Population Increase

<table>
<thead>
<tr>
<th>Year</th>
<th>Saudi</th>
<th>% of increase</th>
<th>Non-Saudi</th>
<th>% of increase</th>
<th>Total</th>
<th>% of increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>550,196</td>
<td></td>
<td>415,501</td>
<td></td>
<td>965,697</td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>800,000</td>
<td>31.2</td>
<td>475,000</td>
<td>12.52</td>
<td>1,275,000</td>
<td>24.25</td>
</tr>
<tr>
<td>2009</td>
<td>1,225,000</td>
<td>34.69</td>
<td>570,000</td>
<td>16.66</td>
<td>1,795,000</td>
<td>28.96</td>
</tr>
<tr>
<td>2019</td>
<td>1,675,000</td>
<td>26.86</td>
<td>670,000</td>
<td>14.92</td>
<td>2,345,000</td>
<td>23.45</td>
</tr>
<tr>
<td>2030</td>
<td>2,250,000</td>
<td>25.55</td>
<td>762,500</td>
<td>12.13</td>
<td>3,012,500</td>
<td>22.15</td>
</tr>
<tr>
<td>2040</td>
<td>2,925,000</td>
<td>23.07</td>
<td>855,000</td>
<td>10.81</td>
<td>3,780,000</td>
<td>20.30</td>
</tr>
<tr>
<td>2050</td>
<td>3,675,000</td>
<td>20.40</td>
<td>954,495</td>
<td>10.42</td>
<td>4,629,495</td>
<td>18.34</td>
</tr>
</tbody>
</table>

Sources: Alatas, 2004
In addition to rapid population growth, the topography of the land also aggravates the housing problem. Makkah is surrounded by mountains and hills, so the people on a pilgrimage for the holiday of Hajj or Umrah have no other place to gather but in the valley. The mountains make it difficult for houses or any other accommodations to be built. Secondly, the people prefer to stay near the Holy Mosque during their visit to Makkah. This limits where the people can stay, and it has made the valley a congested and crowded place (Alafghani, 1987, p60).

Many structures have been built to accommodate the visitors. Unfortunately, the rapid growth and limited land mean that many houses have been built one on top of another or they overlap each other in many neighborhoods. The reason for this was to build as many houses as possible in a small area. However, this has made it extremely congested, because the houses prevent traffic from moving in a smooth way. Also, the houses are often poorly constructed. They are made from stone and put together in a poor manner because these are older neighborhoods. There is little money to build a longer lasting structure. Furthermore, many of these homes were built very quickly and carelessly, while some were even built overnight. As a result, many homes lack water, electricity, parking, trash collection, and a sewer system. This makes parts of Makkah quite undesirable places to live.

This thesis focuses on the housing problems found in Makkah. Overall, the conditions in some parts of Makkah are not adequate for decent living. This research will identify those districts and neighborhoods inside Makkah that have poorly constructed buildings. An additional objective will be to determine the reasons why or how the unplanned neighborhoods and their houses were formed and why they have
poor amenities, specifically in the time period from Ramadan to Hajj. This thesis will also examine how long these buildings will last and if they are durable enough to shelter a family. While studying these areas, I will determine what kinds of people reside in these locations. After studying the problems of a few of the neighborhoods in depth, this research hopes to identify some kind of plausible solution that would alleviate these problems. The issues facing the surrounding areas and ways to solve these problems are discussed with an engineer from the Holy Makkah Municipality. Makkah is a beautiful area, and it is unfortunate and unnecessary to have poor housing conditions which lessen the value of the city.

It is also interesting to compare the city of Makkah and its housing difficulties with other cities around the world such as Istanbul, Turkey and Cairo, Egypt. These cities illustrate a lack of structure and planning for the placement of temporary housing and squatters. They have been unsuccessful in solving their problems which led to greater confusion. My research examines the problems in these cities and what they did or are doing to solve their housing issues and urban planning. There must be various reasons why these housing problems arose and these cities have failed to address the problem. Examining these cities may be helpful in defining the problems in Makkah and finding ways to solve these planning problems. They can serve as examples if their solutions are proven to be successful.

Makkah is a city full of culture, religion, and customs. The city attracts people from near and far due to its splendid resources and religious implications. Unfortunately, along with the increase in visitors come many housing problems. This has been a continuous problem in the past, present, and foreseeable future. Makkah should be
changed in certain areas to accommodate a better living environment and help pilgrims have a comfortable visit. There should be excellent utility services, water, sewers, roads as well as parking lots and sidewalks in all neighborhoods including the older areas and the newer ones. To achieve these goals, the Saudi government will and has taken many steps to improve housing and residential planning. I will analyze the impact of the Saudi government’s plans and compare them with other cities around the world. I hope to determine if Saudi Arabia is on track with the rest of the world in the housing area or is it on its own separate path. Other countries may serve as good examples for Saudi Arabia to improve or eliminate their housing problems. In conclusion, I would like to determine how Makkah can become a better planned community with better services incorporated in residential areas and provide the same quality of housing and dependable utilities for the permanent residents and the pilgrims.
Chapter II

Literature Review

Many developing countries face a range of environmental, ecological, and housing problems associated with rapid urbanization and population growth. Many of the people in these areas live in substandard housing and many residents do not have access to proper utilities like clean water or sanitation services. In many parts of the world, urbanization is being sped up by a global economy. Urban growth is being influenced by continued economic integration and the struggle for countries to compete with other countries. Countries have increased in population due to having more surviving births, and secondly because many people are moving to the cities in order to make a living and find a better future. As a result of this, much of the population falls behind financially, unable to keep up with the rising costs of living. There is high unemployment due to struggling economies. Many residents risk losing their homes. With little resources, financial or otherwise, skills or access to them, many people resort to the extreme option of building a basic shelter on an empty piece of land, thereby becoming a squatter. A squatter is a person who sets up his/her residence on someone else’s land or property without permission. Squatter settlements are increasing in many developing countries. It is estimated that there will be over 2 billion squatters worldwide by the year 2030 (Swift, 2006). Some reasons people become squatters usually involve a lack of savings and financial assets, lack of empathy from the government, and lack of planning and zoning legislation (Neuwirth, 2005, p146).
Rapid urban growth has caused major problems in Makkah. The city’s housing problem stems from the unplanned placement of new housing, especially squatter housing settlements. Builders seem to be putting up homes in a disorganized manner. Many homes have poor services and some even lack water, electricity, sewer, and garbage removal. These problems still exist today and have many negative effects. The housing situation and these other difficulties make it problematic for new projects or to solve the housing problems by providing good utilities and sanitary conditions. This is not only a problem in Makkah but also found in many parts of the world. Cairo, Egypt and Istanbul, Turkey have similar problems related new residential construction.

In Turkey, population growth and migration from rural areas has increased significantly. Consequently, the urbanization process has been rapid and the demand for housing has increased. As a result, social housing has become an important issue in Turkey. The population of Turkey increased by 8% from the year 2000 to 2006. Therefore, the demand for housing has increased and still remains a problem today (Johnson, 2007, p36).

Turkey has also had a long standing traditional history of their homes. The houses have gone through several stages of development over the past five centuries. For this reason, one can find several types of housing in different regions of the country. These types of traditional housing resulted from a number of factors such as tradition, economic situations, physical influences, and practical application. The types of houses that can be found in and around Anatolia are nomadic tents and houses, village houses, urban houses, and other types. The other types range from large multi-purpose
mansions, summer villas, and palaces. These homes are all rather spacious and their variations can be grouped into seven main regions in Turkey (Ozdemir, 2007, p1450).

By the early twentieth century, serious housing problems began to develop in Turkey. Turkey has had a housing shortage since the 1950s as a result of industrialization which led to rapid urbanization as well as rural migration to the larger cities. Since housing was lacking, new arrivals in the cities would set up temporary housing far outside the city and build their houses with any material they could find. These houses were called *gecekondu*, which means built in a night. Since these squatters were living in illegal settlements, the authorities would tear them down once they found out about them. This attempt to deal with illegal residences was unsuccessful and people would live illegally on obscure pasture outside the big city for long periods of time. Eventually, the government promised to give these dwellers *tapu*, or title deeds. Under Turkish law, temporary, squatter communities with at least 2,000 residents could apply to the government for approval to be a quasi-independent municipality. The government then planned to build five-story housing to replace the little huts; however, the residents were outraged because they wanted to live in the field and be among lots of land. They did not want to live in cement housing. The housing would have cost them a small fortune because cement was expensive, so the people preferred to stay in their mud huts. These areas of temporary housing still exist today and now nearly 20% of Turkey’s urban population lives in squatter type homes. Overwhelmed by the size of the problem, the government gradually gave up the fight against the squatters. Eventually new laws were passed that gave amnesty to all of the temporary communities and allowed them to redevelop with higher density housing.
Today, these illegal communities are indistinguishable from the legal neighborhoods (Neuwirth, 2005, p144).

Unfortunately, this would not be a good solution in Makkah’s case because it would give the pilgrims permission to stay and not go home. Then the new projects Makkah has planned would be hindered by the number of squatters and problems may worsen. There are no pilgrims that come and go to Turkey as there are in Makkah. That is the major difference between the two. Makkah must accommodate the non-residents so people from the Muslim world can pay their respect to the Holy Mosque. Granting amnesty to squatters would increase the population in a detrimental way.

As mentioned earlier, Turkey is known for building temporary housing to accommodate people after a great disaster. In 1999, there was a large and devastating earthquake in Turkey. Temporary housing was supplied by the government and international agencies. However, they have been criticized for being unnecessary, too expensive, too late, too long-lasting, and taking resources away from building permanent structures. According to Quarantelli (1995), there are four different stages of housing used after disasters: 1) emergency shelter - used for the duration of the emergency such as public shelter or a friend’s home; 2) temporary shelter - used for only a few weeks such as a tent with access to food and water; 3) temporary housing - which allows one to return to normal daily routines such as a rented apartment or a prefabricated home; and 4) permanent housing - return to previous home after it is rebuilt or into a new home. Ideally, the temporary housing should be provided immediately and offer a level of comfort and suitable price so that rebuilding can take place. Then the temporary housing should be eradicated once it is no longer needed.
However, the temporary housing there became sights of environmental affliction and social dysfunction (Johnson, 2007, p37). Families may be temporarily housed for longer than expected times in existing but empty houses or they may just try to shelter themselves by building a temporary shack out of scraps of wood or metal. This is detrimental to the environment due to the sanitary conditions that arise from these temporary homes. Moreover, families who are not used to living in such housing may find themselves living in poorer conditions than they were before the disaster.

The Turkish government launched various projects between 1980 and 1998 to deal with the housing problems. One project's objective was to provide housing as soon as possible using good quality units in a town center. Since the settlement was within walking distance to the town, there were no schools, medical centers, or mosque provided. There were some services such as a small market, a cafeteria, laundry facilities, an embroidery workshop, and a playground. In August of 2004, this settlement was visited to document the outcomes. It appears that the settlement continued to be occupied; however, the majority of residents were local gypsies that had taken over the homes. There were also some families who were afraid to return to the homes after the disaster or they don’t have a home to go to. It was decided that the muhtar, the community leader, would dismantle the settlement even though it would be a long and arduous task evicting all the tenants (Johnson, 2007, p38). Unfortunately, these housing problems still exist in Turkey today. The government needs to seriously consider different options to resolve these problems. Despite Turkey’s economical and political instability, there needs to be structural reforms aimed at improving the housing
problems existing in Turkey today. It will be a long and arduous process that may take many generations to solve.

The reason why Turkey may have failed in its efforts to improve the housing situation resides in the fact that it may not be a top priority for the government. They had allowed squatters to exist around the city, and too many temporary housing units became permanent. People seemed to lose hope in getting a newly built home, so they just settled to live in the temporary housing units. The government seems slow to act on their housing crisis due to its instability of government power.

Cairo, Egypt is another example of failed urban planning and development. A primary reason for this is Cairo’s growing population due to rapid manufacturing growth, job opportunities, and economic change. However, this creates a recipe for poor housing. Due to the great disparity of economic activity and household incomes, there has been a significant growth in poverty. Large slum areas developed in and around the outskirts of Cairo. These homes have no running water, toilets, or electricity. The conditions are incredibly poor (Araby, 2002, p396).

Originally, Cairo’s urban structure and its public facilities were laid out for approximately two million inhabitants. According to the Center for Research on Society and Crime, eleven million Egyptians live in houses in 961 planned urban areas. Eight of these districts were completely removed, and 880 districts upgraded their homes. This required approximate 5 billion Egyptian pounds to remove the houses and rebuild them. The Center said that 80% of the houses and 35% of the population in Cairo are located in planned urban areas. This equals four million citizens living there. As the population
grew rapidly, life became more challenging. The government tried to decentralize and disperse some of the industry, housing, and social facilities to the edge of Cairo which strained infrastructure development such as road work, water supply, and sewage disposal. However, it is doubtful whether that plan would have been successful in achieving their goals.

Some additional problems that arose due to the concentration of people were immense traffic problems, poor air quality, water quality, and waste management. This led people to want to move away from the city’s center. As a result, many families picked up and moved to the outer edge of Cairo which caused a major growth of slums and housing in these areas (Araby, 2002, p394).

Here is where the government stepped in and proposed two projects to alleviate the problems. These housing programs were implemented in two steps. The first phase took place in 1975, and the second one started in 1976 and continues until today. According to the Egypt Human Development Report (2005), the government decided to make a city far from the central city of Cairo. However, the city had many problems due to poor transportation, a weak economy, and poor social amenities. Those are the main reasons why the plan failed. Furthermore, random housing was built without any planning in and around the city and countryside. Cairo had many squatter houses, but they were completely razed to the ground. The people living in those homes were taken to new homes (big apartment buildings) outside the city. In the areas where the houses were removed, businessmen came and built big apartment towers to rent to people so they could make huge profits. This is how the Egyptians tried to solve their problems with the temporary housing community (Bahidar, 2006). Even though the plan failed due
to poor transportation, a weak economy, and poor social amenities, I believe it was the beginning of what could have been a great idea. It could have been quite successful in my opinion because it expanded the city and found new places for people to live. It also lessened the density of certain areas of Cairo where those people were living. It makes for more space and land to utilize and give more room for the people to live. Furthermore, it was very profitable for the businessmen to build outside the city. It creates more jobs which can be beneficial for the people in the long run. I like the idea to get people to move away from the city to new homes and apartments; however, it needs to be done with much more attention and care.

Housing was under the control of the government. They were the ones blamed for choosing a poor area to live. Yet, new cities continued to develop outside the urban area (Egypt Development Report, 2005). One such city was called New Cairo City. It was one of the planned urbanization projects which were concentrated on the eastern side of the Greater Cairo Region (GCR). It is the biggest suburb in Cairo in recent times. Today, New Cairo City houses approximately 1 to 2 million inhabitants. This city has been provided with an adequate level of most services. New Cairo City has encompassed three new settlements and each settlement has three districts. Each settlement has an area of 1,453 acres to meet about 250,000 inhabitants with a density of 180 people per acre. Each settlement is surrounded with a green belt for entertainment activities and each one has a center with many activities such as residence, workplaces, and shopping. New Cairo City consists of a Northern sector and a Southern sector. Each sector is divided into three districts. The housing in New Cairo has three main types: 1) low, medium, and high level buildings were originally proposed
in the plans of the new settlements to occupy 17% of the total housing area; 2) tall building plots from 500 to 800 square meters which consisted of villas or small buildings would occupy 53.5% of total housing area; 3) large scale development of villas and small buildings in compounds to the east of the city funded by investment companies would have 28.9% of the total housing area. In an assessment of New Cairo City in 1996, it was found that there were two negative features of the city. The target population was too high which resulted in excessive demands on transportation and infrastructure. Also, there was an unexpected low growth rate because it was so far from the center of town, which prevented the new city from achieving targeted economic objectives. Since the growth was so low, the city was not able to gain financially (Farid & Shafie, 1998, p4).

During the nineteenth century, big urbanization projects were attempted. Many areas were developed to the north, south, and east of Cairo. To improve some of the living conditions, the government tried to minimize the urban growth near the GCR by providing proper housing for the low and medium income families, providing houses with infrastructure for squatters or renters, renovating old housing areas, protecting water resources, and controlling air pollution (Farid & Shafie, 1998, p4).

Some of these housing projects quickly developed into unsafe places. Because the houses were low in quality, it gave some people the idea to easily break in and steal. Secondly, many people who were poor lived in these projects. One of the largest squatter areas of Cairo, Zeinhom, which was planned to be rebuilt during the next phase of the Egyptian Red Crescent Zeinhom Development Project, had a fire outbreak on the afternoon of March 20, 2007. Since the houses were mostly wooden huts, fire
spread rapidly and approximately 2,000 people became homeless. This area was part of the slum relocation project from 1999 but progress is slow due to funding. So far, these families have been resettled into 251 apartments in El Nahda city while more families still await shelter. This is proof of the poor housing conditions that still exist in Cairo today (International Federation of Red Cross and Red Crescent Societies, 2007, p2).

In an attempt to solve some of the housing problems besides the projects the government has set up, many temporary houses were built outside the city by the government as well. In one of these areas, a huge disaster occurred in 2007 due to poor urban housing. A fight broke out between the citizens and the police because the citizens were given small apartments containing only three rooms and one bathroom. This was intended to house three large families. In this fight, 280 house fires occurred, and as a result, there are now 1,000 more homeless people (news.bbc.co.uk/hi/Arabic/ 2007).

In the end, the Egyptian and Turkish governments’ plan to build new housing to accommodate the increasing population has not been very successful. One possible reason why these countries failed to solve their housing problems has to do with their financial stability. Both Turkey and Egypt have weaker economies and they lack the financial resources to build and carry out their projects. Secondly, these cities are unable to keep up with the growth in their populations. Because so many people are moving to the cities in search for a good life, there are not enough good housing areas to accommodate them. Therefore, the squatter situation continually worsens. Furthermore, because the global economy is suffering at the moment, there hardly
seems a chance for these cities to be able to afford new housing projects at least for the next couple of years. Only after the world economy strengthens will they have a chance for renewal. It is a grim situation that the world finds itself in now. Hopefully the financial situation is at its lowest point now and then there is nowhere to go except up, and these cities will get the financing to begin their housing projects. The projects these countries have done have mostly failed on the grand scale due to a lack of funding and government power. Once their economies have strengthened, they will put their efforts towards improving their housing situations. With hope, the squatters in Turkey will find a better place to live so their homes can be taken down. Secondly, Egypt’s New Cairo City will hopefully gain the finances to support and accommodate the residents. The government should find proper houses for the squatters and give them an incentive to maintain their properties. There is still a significant problem of homelessness as well as poor physical and environmental conditions. The government must come up with extreme measures to solve this problem before it gets any worse. The question is how can they do this?
Chapter III

Background

Housing Development in Makkah:

Makkah became the birthplace of Islam in 613 AD when the prophet Mohammed revealed the truths of the Holy Quran (Alafghani, 1987, p13). According to Muslim belief, the city was first established when Allah chose this area to be a new residence for Ibrahim’s family. When Ibrahim’s son started kicking the sand around with his foot, a spring of water suddenly came up through the ground. It was there that a well of water, which is called Zamzam, was formed and provided a source of water for everyone. Makkah would develop around the Sanctified House of God, otherwise known as the Ka’aba. The Ka’aba was essentially the first house built in the city. It was built by the Prophet Ibrahim with the help of his son Ismail. Because of this and many other miraculous events that have occurred here, this city is the central focal point where all Muslims must face in their daily prayers. People would also gather to pray and celebrate the holiest days in Makkah. By the time the Prophet died, pilgrims were already making their way to the holy city. As technology and travel improved, pilgrims could more easily visit the city. The development of Makkah was largely shaped by the history, survival, growth, and development of Islam. The two major holy days of Islam, Umra and Hajj, have contributed to not only the size and economy of Makkah but also its land uses, types of buildings, and urbanization (Toulan, 1993, p38).

In the early times of Makkah, the local residents lived far away from the Ka’aba in little woolen tents which were spread all throughout the valley. People had no reasons
to live close to the Ka’aba and instead moved closer to the tributaries of the Valley Ibrahim and the surrounding hills. However, a new leader, Qusayy Ibn Killab, came to Makkah in the fifth century AD and advised the people to move close to the Ka’aba and surround it on all sides. Qusayy Ibn Killab was the first to lay down a plan for the development of the city. These houses were built a short distance from the Ka’aba in order to leave room for pilgrims. Qusayy also insisted that the front doors of the houses open up in the direction of the Holy Mosque and be arranged in groups of two with alleys between each group (Toulan, 1993, p39).

The founding of Islam brought significant changes to Makkah. The Holy Mosque is square in shape, so houses needed to be built in circular forms so they would not offend the religious sacredness of the mosque. They also could not be as tall as or taller than the holy mosque. It was important for people to live near this holy house because people prayed five times a day. It was ideal to pray close to this structure, and if one lived near this building, they were considered more pious and holy. After that, a series of expansions came to define and influence the relationship between the Holy Mosque and the residential area around it. This expansion happened about once every twenty years due to many Muslims moving there. It is around this holy house where the city developed and homes were situated (Toulan, 1993, p44). Closeness to the Holy Mosque has always been a primary factor in the growth and development of Makkah. However, due to the rough topography of the area, physical expansion was quite limited, resulting in very high buildings and population densities as well as the minimum allotments for streets and public places. These are factors that continue to influence the city today (Toulan, 1993, p49).
The city stayed this way until the year 638 AD when Caliph Omar Ibn Al-Khattab came into power and was concerned following a flash flood which damaged the Ka’aba. Caliph Omar realized the need for more space and protection, so he bought and ordered the demolition of the first row of houses facing the mosque. He then ordered a wall to be put up around this newly expanded space. This was the first attempt to make a boundary around the Holy Mosque around the seventh century AD (Toulan, 1993, p42).

Makkah had expanded to twice its size by the end of the first Hijirah century which equals the seventh century AD. People who lived in Makkah would travel from the outskirts and go to the Ka’aba on a daily basis until they finally decided to relocate their homes so they could be closer to the Ka’aba. However, some of the inhabitants did not want to encroach upon the Ka’aba, so they decided to move into nearby areas in the surrounding hills. This was the beginning of the expansion of Makkah’s housing situation (Toulan, 1993, p44).

By the year 1512, Makkah had grown only slightly due to the restrictions to expansion (Toulan, 1993, p44). The houses were confined to the inner limits of the valley. People gradually settled in three concentric bands of villages around the Holy Mosque. The residential area consists of tightly knit sections with traditional buildings near the center and newer buildings on the outskirts (Alafghani, 1998, p86). This source of expansion of the city came from the number of Muslims and pilgrims that arrived in Makkah. The city grew rapidly during that period because of the increasing tendency of Arabs from the surrounding areas and visiting pilgrims to live and settle down close to Holy Mosque. Then by the end of the nineteenth century, Makkah had doubled its area.
again to about 140 hectares. Makkah’s growth and expansion really started to gain momentum after it became part of Saudi Arabia under King Abdul Aziz in 1923. The King made it his priority to establish and grow his country by calling all Muslims to come and settle there. Since many religious events happened in Makkah, the King believed this area should be worshipped and held in high esteem. This attracted Muslims from all over to come and live there. By the mid-1950s, the city expanded to eight times its size, and the number of pilgrims grew to over a million by the late 1960s (Toulan, 1993, p45).

Figure 3.1 Expansion of Makkah

Source: Toulan, 1993, p40
Similar to other Arab cities, Makkah was influenced by Turkish architecture. It could be seen in the design and construction of castles and palaces but not houses or mosques. Makkah’s architecture is unique. The design of the buildings was influenced by the realities of scarce and very expensive land. Originally, the houses surrounding the Ka’aba were not allowed to be taller in height than the Ka’aba. But by the beginning of the Ottoman Empire, competition for space led to the construction of multistory buildings. This trend continued as the population increased. Yet, the design and architecture of those buildings remained unique to Makkah. The use of materials reflected the city’s nature. Stones that were indigenous to that area were used quite often; however, hardwood was imported by migrants from Burma and Indonesia. This gave a special distinctiveness to the originality of the city (Toulan, 1993, p45).

The image below shows the surrounding area of Makkah today in the twenty-first century. In the center of the picture, the Holy Mosque stands out. As one can see, houses and neighborhoods have greatly expanded around this central structure. Today, King Abdullah continues to have many projects for designing and planning cities around the region.
As a result of this expansion, many problems have arisen today. Some of these problems include the development of the surrounding neighborhoods. Although some of the neighborhoods are designed well and have good services for water, sewer, and garbage services, some are lacking in these basic services.

**Types of Houses:**

There are four main types of houses found in Makkah (Figure 3.3). Most residents prefer to live in apartments, because they are less expensive and very convenient for living near the city. Traditional houses are second in preference. There are far fewer traditional homes, because these homes are older and in disrepair. Villas are the least common, because they take up more space and they are located further from the city.
Table 3.3: Housing Units, Households, and Individuals by Type of Housing Unit

<table>
<thead>
<tr>
<th>Units</th>
<th>Traditional House</th>
<th>Villa</th>
<th>A Floor in a Villa or Traditional House</th>
<th>Apartment</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Units</td>
<td>63454</td>
<td>13908</td>
<td>15932</td>
<td>160282</td>
<td>9398</td>
<td>262974</td>
</tr>
<tr>
<td>Households</td>
<td>63493</td>
<td>13911</td>
<td>15933</td>
<td>160331</td>
<td>9399</td>
<td>263067</td>
</tr>
<tr>
<td>Individuals</td>
<td>368768</td>
<td>87046</td>
<td>92347</td>
<td>768024</td>
<td>28903</td>
<td>1345088</td>
</tr>
</tbody>
</table>

Source: Detail Results Population & Housing Census, 2004

The homes that are located near the center consist of mostly apartment buildings and hotels. These are the oldest homes of the city, because they were built to be close to the Ka’aba. Beyond this area, a few traditional homes exist, as well as apartments, for the permanent residents. Just beyond the Holy City limits of Makkah, there are some villas which are better designed because they are newer. So, the closer one is to the Holy Mosque, the older and more traditional the homes are. The farther away one is, the newer the design of the buildings. This pattern reflects that the houses were built randomly in the beginning, but as time went on, more and more planning started to come about.

Materials for Houses:

The homes are primarily built from three types of materials: concrete, block, or stone (Figure 3.4). Most homes are built from concrete, while stone is the least popular. Each material presents a certain type of problem for the homes. Stone is the oldest
material which was usually used for the older buildings from the nineteenth century. No one builds with stone today because concrete is usually cheaper and the government makes it easily accessible. Concrete is also preferred because it saves a lot of energy and keeps in the cold air.

Table 3.4 Housing Units (Occupied With Saudi-only Households), Households, and Individuals by Construction Material

<table>
<thead>
<tr>
<th>Units</th>
<th>Concrete</th>
<th>Block / Brick</th>
<th>Stone</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Units</td>
<td>135891</td>
<td>23689</td>
<td>320</td>
<td>1221</td>
<td>161121</td>
</tr>
<tr>
<td></td>
<td>84.34 %</td>
<td>14.70 %</td>
<td>0.19 %</td>
<td>0.75 %</td>
<td></td>
</tr>
<tr>
<td>Households</td>
<td>135954</td>
<td>23718</td>
<td>320</td>
<td>1222</td>
<td>161214</td>
</tr>
<tr>
<td></td>
<td>84.33 %</td>
<td>14.71 %</td>
<td>0.19 %</td>
<td>0.75 %</td>
<td></td>
</tr>
<tr>
<td>Individuals</td>
<td>682538</td>
<td>136754</td>
<td>1725</td>
<td>5234</td>
<td>826251</td>
</tr>
<tr>
<td></td>
<td>82.60 %</td>
<td>16.55 %</td>
<td>0.20 %</td>
<td>0.63 %</td>
<td></td>
</tr>
</tbody>
</table>

Source: Detail Results Population & Housing Census, 2004

However, some buildings made from stone are situated close to buildings that are made from concrete. The problem is that the stone buildings are slowly deteriorating and are becoming an eyesore for local residents. If one walks just ten minutes down the road, he or she can find a building that is in much better condition and is made from concrete. These stark differences in building conditions show that there was little planning in this area. The reason why these buildings co-exist is due to people being unwilling to sell their stone-made homes. They have asked for too high of a price to sell it, and because it deteriorates so quickly they just abandon the home but continue to
own it because it is near the Holy Mosque. It is prestigious to say that they own a home near the center of the Holy City even though the home is in great despair.

For example, Figure 3.5 shows a building that is falling apart. Construction workers are slowly working to fix it with concrete; however, the aesthetic beauty of the area is lacking.

Figure 3.5 Deterioration of buildings

Source: Author photo

Down the street from this building is a nicely constructed and well-designed building made from concrete as seen in Figure 3.6.
Figure 3.6 Well-designed buildings

Source: Author photo

**Topography:**

The topography of the area surrounding Makkah creates problems for housing. The city is located in the middle of an old and rugged volcanic formation. There are many deep valleys and ravines which make it quite challenging for building neighborhoods. The central parts of the city are very harsh. Some houses are only accessible by staircases. There are only a few areas that are not constrained by the topography (Toulan, 1993, p44). The development of many subdivisions has required the natural terrain to be destroyed in Makkah itself. Hills are often leveled, which disturbs the natural drainage patterns in the process (Alafghani, 1987, p34).
The rough terrain poses certain limits for those who travel on the roads. Alasimi (2008) interviewed two men for a newspaper article on this subject. One was Mr. Shohkri, who said the roads have made it impossible for fire trucks to drive on them to save houses in the old neighborhoods from burning down. The roads are too narrow and rough for most modes of transportation. Furthermore, another man who was interviewed, Mr. AlHarbi, said there are many new homes that are built on top of a tall hill which creates many dangers for children, who risk falling down the cliffs and hurting themselves. Even the materials used for these newer homes are quite weak in nature. Because builders want to expand quickly, the houses are poorly built and the materials are of low quality. Interestingly enough, most of the inhabitants in these homes are not
Saudi. The topography presents many challenges for housing development. As a result, the government is working hard to find solutions for these problems.

Figure 3.8 Crowded buildings

Source: Author photo

The above image shows the crowded houses of Makkah situated haphazardly on a hill. These houses were built without much planning in mind. There are only a few squatters who are non-Saudi that live in these buildings because the government keeps a close eye on the homes since they are near the holy mosque. The residents who live in these homes are a mix of residents who are Saudi and non-Saudi. The area is so dense that it is quite difficult for one to travel from one side of the town to the other. The roads are narrow and barely passable by car. The following image shows the distance between the buildings and the narrow passageways. This is a typical street that would be used by residents on foot, because it is impossible for a car to fit on this road. Only a
few of the residential roads near the holy mosque look like this because no planning went into the streets and they are old. Some of the streets are wide enough to have four lanes. Outside the neighborhood of the holy mosque and on the bigger boulevards, the streets are wider and much better designed. Today, the government is doing its best to improve the road conditions and they are planning to build a train as an additional form of transportation. This image only represents a few roads in and between the homes near the holy mosque.

Figure 3.9 Narrow streets

Source: Author photo

Water:

Throughout the majority of the year, water is plentiful to use. However, during the time of Hajj and Umra when visitors and pilgrims come to visit Makkah, a water shortage appears. So many people come and occupy the buildings around the Ka’aba
and use much of the water for cleaning, eating, and their daily lives. During the two seasons of Hajj and Umra in 2003, Makkah used about 248,000 cubic meters of water per day. During the whole year, except for the two seasons, Makkah used only 216,000 cubic meters of water per day in the same year. The average amount of water used in the whole year of 2003 was 232,000 cubic meters per day (High Authority for the Development of Makkah – Utilities, 2004). The water in Makkah is obtained from three main sources. Most of the public piped water is brought to Makkah from the Red Sea which has 24 filtering stations to make the water potable. Another source of water comes from wells, while some people rely on catchment tanks.

Table 3.10 Housing Units (Occupied With Saudi Households), Households and Individuals’ Types of Water Supply

<table>
<thead>
<tr>
<th>Units</th>
<th>Public Piped Water</th>
<th>Catchment Tank</th>
<th>Well</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Units</td>
<td>117693</td>
<td>42027</td>
<td>1230</td>
<td>171</td>
<td>161121</td>
</tr>
<tr>
<td></td>
<td>73.04%</td>
<td>26.08%</td>
<td>0.76%</td>
<td>0.10%</td>
<td></td>
</tr>
<tr>
<td>Households</td>
<td>117750</td>
<td>42056</td>
<td>1237</td>
<td>171</td>
<td>161214</td>
</tr>
<tr>
<td></td>
<td>73.03%</td>
<td>26.08%</td>
<td>0.76%</td>
<td>0.10%</td>
<td></td>
</tr>
<tr>
<td>Individuals</td>
<td>583996</td>
<td>234645</td>
<td>6793</td>
<td>817</td>
<td>826251</td>
</tr>
<tr>
<td></td>
<td>70.68%</td>
<td>28.39%</td>
<td>0.82%</td>
<td>0.09%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Detail Results Population & Housing Census, 2004

The vast majority of people use public piped water, while only a few rely on wells. The maximum amount of water used per day was 30,000 cubic meters from the wells. The average amount of water used from all the wells in Makkah per day is
approximately 20,000 cubic meters (High Authority for the Development of Makkah – Utilities, 2004). The third type of source of water is the catchment tank. These are for the surrounding neighborhoods that do not have public piped systems. The public piped systems are everywhere within the Holy City limits, so the catchment tanks are usually outside the holy limits of Makkah. These homes have a basement which holds the water for their supply. The people who live outside of Makkah have to have their water delivered. So they must buy a tank and have it delivered around once a week. Residents who use wells are those who live far from the city or on a farm. As mentioned before, Hajj regularly brings about a shortage of water. During the other parts of the year, normally forty-four thousand cubic meters of water is needed for daily living. However, 286 thousand cubic meters are made available to accommodate all of the visitors and pilgrims during Hajj (AlThagafi, 2008).

Figure 3.11 Illegal tanks of water

Source: Author photo
In some of the private homes, residents will go as far as to provide their own tanks of water. This, however, is illegal. The government determines how much water you should have, and it becomes illegal when you have more than what is allowed. Normally, each home has its own water tank under the ground that is supplied by the public water system. A resident of Makkah keeps his own catchment tanks in his home to use during the month of Hajj. This ensures that he and his family will not have any trouble with their water supply. According to another interview, another resident is not fortunate enough to have his own water tanks. During Hajj, he needs to go to the local water supplier and request a truck to come to his home and deliver water. This is an expensive and difficult procedure because the water tank trucks are so large and the streets where he lives are extremely narrow. Therefore, he has to pay around $100 US dollars for one tank of water which will only last him two or three weeks.

**Electricity:**

According to Figure 3.12, three main sources of electricity run throughout the city: public, private, or generator. Most people use the public network for electricity. Only a few in comparison use a private network or generator. Furthermore, there are a number of buildings far away from the city that have no electricity at all. Unfortunately, many problems arise during the month of Ramadan concerning electricity. Because there are so many pilgrims during Umra, there is a high demand for electricity. Makkah is very hot during the summer and Ramadan occurred during the summer in 2008. This past Ramadan season, the government decided to cut off the electricity in the AlGasala neighborhood because there was a power surge of electricity. The government feared that the electrical wires would become damaged, so they turned off the electricity for a
few hours during the day. As a result people were becoming ill because they were fasting and it was extremely hot. Some residents had to break their fast so they could eat their food before it rotted in the heat. As a result, the people threatened to stop paying their electric bills if that ever happened again (AlMasoudi, 2008).

Table 3.12 Housing Units (Occupied With Saudi Households), Households and Individuals by Source of Electricity

<table>
<thead>
<tr>
<th>Units</th>
<th>Public Network</th>
<th>Private Network</th>
<th>Private Generator</th>
<th>Other</th>
<th>Non-Existent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Units</td>
<td>155534</td>
<td>3329</td>
<td>953</td>
<td>44</td>
<td>1261</td>
<td>161121</td>
</tr>
<tr>
<td></td>
<td>96.53%</td>
<td>2.06%</td>
<td>0.59%</td>
<td>0.02%</td>
<td>0.78%</td>
<td></td>
</tr>
<tr>
<td>Households</td>
<td>155619</td>
<td>3329</td>
<td>954</td>
<td>51</td>
<td>1261</td>
<td>161214</td>
</tr>
<tr>
<td></td>
<td>96.52%</td>
<td>2.06%</td>
<td>0.59%</td>
<td>0.03%</td>
<td>0.78%</td>
<td></td>
</tr>
<tr>
<td>Individuals</td>
<td>796903</td>
<td>17339</td>
<td>5063</td>
<td>230</td>
<td>6716</td>
<td>826251</td>
</tr>
<tr>
<td></td>
<td>96.44%</td>
<td>2.09%</td>
<td>0.61%</td>
<td>0.02%</td>
<td>0.81%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Detail Results Population & Housing Census, 2004

Sewage:

The public sewage network runs throughout the majority of the city, whereas others simply use a ditch or some other private network to handle their sewage. A Saudi resident who lives about a thirty minute drive outside Makkah’s limit, has no public sewer at his home. He only has a ditch, which he has to clean twice a year. He and his neighbors have repeatedly asked the government to connect them to the public sewage network. Unfortunately, the government is slow and reluctant to fulfill the request. The government tells these people to wait because they are planning a project to do it in the near future. Currently, the people just have to ask for the sewer trucks to come and
evacuate their sewage. Sewers are mainly available in the main parts of the city, but
residents living in the surrounding areas rely mostly on ditches.

Table 3.13 Housing Units (Occupied With Saudi Households), Households and
Individuals by Type of Sewage Disposal

<table>
<thead>
<tr>
<th>Units</th>
<th>Public Sewage Network</th>
<th>Ditch</th>
<th>Private Network</th>
<th>other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing Units</td>
<td>103035</td>
<td>56995</td>
<td>358</td>
<td>733</td>
<td>161121</td>
</tr>
<tr>
<td></td>
<td>63.94%</td>
<td>35.37%</td>
<td>0.22%</td>
<td>0.45%</td>
<td></td>
</tr>
<tr>
<td>Households</td>
<td>103092</td>
<td>57031</td>
<td>358</td>
<td>733</td>
<td>161214</td>
</tr>
<tr>
<td></td>
<td>63.94%</td>
<td>35.37%</td>
<td>0.22%</td>
<td>0.45%</td>
<td></td>
</tr>
<tr>
<td>Individuals</td>
<td>496096</td>
<td>324641</td>
<td>1878</td>
<td>3636</td>
<td>826251</td>
</tr>
<tr>
<td></td>
<td>60.04%</td>
<td>39.29%</td>
<td>0.22%</td>
<td>0.44%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Detail Results Population & Housing Census, 2004

Vehicle Parking:

This chart indicates that many Saudi families own at least one car. As a result, the streets are filled with private traffic and public transportation.

Table 3.14 Saudi Households Owning Cars by Number of Cars Owned

<table>
<thead>
<tr>
<th>City</th>
<th>Number of Cars Owned by Household</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Makkah</td>
<td></td>
<td>91840</td>
<td>25208</td>
<td>7811</td>
<td>2449</td>
<td>605</td>
<td>170</td>
<td>85</td>
<td>17</td>
<td>8</td>
<td>20</td>
<td>128213</td>
</tr>
<tr>
<td></td>
<td></td>
<td>71.63%</td>
<td>19.66%</td>
<td>6.09%</td>
<td>1.91%</td>
<td>0.47%</td>
<td>0.13%</td>
<td>0.06%</td>
<td>0.013%</td>
<td>0.00624%</td>
<td>0.015%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Detail Results Population & Housing Census, 2004
People prefer to use their own cars because it is hot and they can use their own air conditioners to stay cool. As a result, this creates a problem in the area of parking. With so many cars on the road and so many buildings overlapping each other, it is a difficult task to find a parking space. According to a Saudi resident, it is normally hard for him to find a place for his car when he goes home. Also, when he leaves for work, he will often find a car blocking his way so he cannot leave his space (Figure 3.15).

Figure 3.15 Parking

Source: Author photo

People seem to park wherever they can find an open spot on the road. It is especially challenging to park during the holidays. Some residents can only find a place to park thirty minutes away from their home by foot. As the pilgrims and visitors flood the city, available parking spaces become nonexistent. The roads are nearly impassable due to people parking on both sides of the street as seen in Figure 3.16.
The space for parking is quite limited as one nears the center of the holy city. Parking becomes more and more available in the areas further from the center. The reason for this is the streets were not designed to accommodate many cars near the Holy Mosque. It is an old design and at the time when it was built, there were not many cars on the roads. The government has plans to open more space in each neighborhood so there can be a more even distribution of parking spaces.
Chapter IV

Analysis of Plans to Improve Conditions

There have been numerous attempts to alleviate the problems described above and better plan the city’s future growth. In 2001, the Holy Makkah Municipality stopped designing a version of a new city plan. Then the government department called the High Authority for the Development of Makkah took over the plan because this group was specifically designed to develop Makkah. It is still a part of the city government. They have upgraded the plans that were already designed for the city. They project that the new design plans will be finished by 2030. The plans are still underway today so that the housing problems can be rectified. Dr. Barhamain, the head of the High Authority of the Development of Makkah, confirmed in an interview that the city plans would definitely be completed by the year 2030 (drsamidrsami.name/jurnals.html, 2009).

The city of Makkah is divided in four districts shown in Figure 4.1. The first district has eleven neighborhoods including the Holy Mosque area. It is 648.6 hectares in area with a population of 621,377 people. The second district has eight neighborhoods and is 4,950 hectares in area with approximately 17,686 people. The third district has ten neighborhoods covering 15,281.1 hectares, and the population is 20,814. The fourth district has twenty-three neighborhoods with 692,531 hectares. The population is 21,387 people. From my perspective, the proportion of people to land is good because it provides a balance of the land use. The people have enough to live comfortably with that amount of land. This also allows for people to have better communication. Because the land is used well, that means the neighbors are more comfortable with each other.
This lets them be able to meet and have contact with others more readily with better accessibility. Furthermore, since the services will be improved, there will be more dependable utilities to make life more comfortable. The future idea of Makkah is to make it better and more efficient so that the quality of life is not compromised by the housing (Barhameen – summary, 2004).

The methodology presented in this paper will primarily use the first district of Makkah as an example of the future planning. The future plan by the High Authority involves most of the districts that surround the Holy Mosque. The High Authority initially focused on the district that most closely surrounds the Holy Mosque. This area is essentially the center of Makkah. However, there are problems with the people moving to another district. The people need to understand that in order to live on more land, they must be a little further from the holy mosque. Some people may not like this idea because living near the holy mosque is desirable. So there must be a mutual understanding that to live more comfortably requires them to re-locate away from the center of the holy city. Moreover, to make living further away from the holy mosque even more appealing, the residents need to realize that they will have better services if they move. Their services will be dependable and more consistent than in the past. Therefore, they must sacrifice the location in exchange for an improved life in terms of the utilities. Fortunately, the government has been quite successful in convincing some of the people to move farther away from the center. The government strongly encourages and almost forces the people to move by giving money to them to help them find a good home.
Source: Author

The colors in Figure 4.2 represent work that has been done, work that is currently underway, and future plans. The white color shows what had been done in 2004. The city government has rebuilt some of the houses near the holy mosque. Today in 2009, the pale green color shows the areas that are being renovated. The government is still working on this and it plans to have the other areas done within a certain time period. The lighter green color (2014), Kelly green (2029) and forest green color (2049) areas
show the different years when the projects are expected to be completed (Barhameen – summary, 2004).

According to my own experience, the first district has more organization in terms of streets and neighborhoods. There is a lot of work to be done in the first district which has put the government behind in their timeline. Today, they are late in delivering the projects, but there is hope in the future that things will get done. In the second and third districts, there are not as many things to fix and repair. The people now in the first district are happy and the future plan is good. The second district has not even been started as of today. They are so late because they cannot get much work done during Hajj and Umra because there are so many people in the first district. They need to use their time more efficiently before and after these holidays. The effects of their efforts will be great in making people’s lives more comfortable as well as allowing the businesses provide better services for residents and pilgrims alike. The division of the districts relates well to the topography of the land allowing better access to homes and services. The streets should be more passable than before and there should also be less traffic and more parking spaces for the houses.
Figure 4.2 Future Plans of Makkah

District 1

The High Authority department decided to divide each neighborhood into housing developments in the first district that surrounds the Holy Mosque. The area of the first district consists of several hills, mountains, and valleys. Each housing development will be separated and located on its own hill or area. Therefore homes will be demolished and fewer ones will be erected so that the neighborhood is not as dense as before. With this plan, each development should be able to receive better utilities, water, sewer, and
other services. Figure 4.3 illustrates the housing developments in the first district. At the center of this first district is the holy mosque of Makkah and the old city. This is only an example to show what has been done in terms of housing and the division of neighborhoods. This is the first district only and within the first district are ten neighborhoods, excluding the holy mosque area, which have been further, divided into smaller areas due to the hilly and mountainous land.

The division of these neighborhoods is a good idea because the quality of life for the people has improved. They get better services in terms of water, sewers, and electricity. It allows for better access to utilities, emergency crews, and parking. The people have room to live without feeling the effects of being overcrowded. This is also good for the holy mosque so it can accommodate more people and be a thriving financial opportunity. When the pilgrims come, the businesses can make more money. The houses are still in relatively good condition as I saw firsthand there. Through this division, the houses can better accommodate all the pilgrims and residents who live there because before, it was too difficult to use the land very well since it was so crowded. Today, we can use the land in a better and more organized way and the housing can hold even more people than before. However, this is still in progress and under construction today.
The housing in the first district is very dense. Figure 4.4 shows how many people live per hectare as well as which areas are more crowded than others. On closer examination, one sees that there are a large number of people living very close to the Holy Mosque. Then the number decreases somewhat, but then it suddenly goes up dramatically to the west. One reason for this is the topography. In the areas where it is easier to live, there are more people. The places where there are few people shown are either the big hotels, a parking lot for the buses and cars, or uninhabitable land. There are only ten neighborhoods in the first district. This map refers again to the first district.
and it shows the population of each neighborhood. The Holy Mosque is located near the center.

Figure 4.4 Population

![Population Map]

Source: Author

Again as I see it, this map shows a good balance of the population per each hectare. There are more people near the old city, but they are better spread out. By that population, we can know how much utilities they need. By controlling where they live, the government can assure where the power is allocated and provide good services. As stated previously, the new divisions should work well with the topography of the land.
There is more access to roads and people’s homes. Also, new houses can be built without overcrowding the area and taking up space that was meant for roadways. Houses will be able to be larger in size to accommodate larger families as well as relatives. This lends itself to having a better lifestyle. People will have more space in which to grow and raise families.

In order to expand the area around the Holy Mosque, the government needed to offer the families an incentive, so they would be willing to relinquish their homes and move away from the neighborhood in the first district. The government offered each house or land owner a sum of 53,000 to 120,000 US dollars per square meter depending on how close the property was to the Holy Mosque. With this money, a property owner can accumulate over a million dollars, and then they can buy a good home wherever they chose whether it is inside Makkah or outside the city (Jumaan, 2008).

The ideal place for an owner to relocate is a place that is still very much near the Holy Mosque. The government did not tell them where to move; they just wanted the residents to relocate to any place of their choice outside the first district. It was the owners’ choice where to live next. Therefore, it was best to move to the second or third district. The population is not as dense as in the first district, so it is very easy to find another home in those areas.

Since the government offers a substantial amount of money to relocate, the property owners could do as they pleased with the money. One resident bought a villa in the fourth district, which is considered one of the most expensive neighborhoods in
Makkah. He bought a large villa with two floors. When he lived in the first district, his home was no more than 100 square meters big. Now, he lives in a comfortable and very large villa with plenty of money left over from the relocation fee.

**Utilities: Water, Sewer, and Electricity**

**Water:**

The amount of available water in Makkah is not enough to accommodate all of its residents and pilgrims during the holiday seasons. This presents a major problem since homes often experience water shortages and the residents are forced to get water from other places such as the station from the Red Sea, wells, and a dam. The High Authority section of the government plans to fix this water shortage by starting three separate water projects to create three new sources of water. The first project includes using water from the valley of Aleath and wells around Makkah. The total amount of water that will be produced from these sources will produce a total of 80,000 cubic meters of water. There will be twenty wells in the valley of Aleath that will produce 50,000 cubic meters per day. Although the valley is 150 kilometers away from Makkah, it has a relatively large amount of water. Authorities plan to build a dam there which can hold 88 million cubic meters of water. Then 30,000 cubic meters of water will come from the wells of Makkah producing the total of 80,000 cubic meters of water daily.

Recently, the government has been working on the second part of a new water station at the Sheaiba station. This station can provide 390,000 cubic meters of water per day. Most of this water is meant for the cities of Jeddah and Taif, but it can be used for Makkah in the case of any emergency such as a drought or a shortage of water in
the future. The third part of building program will be completed in the future which will
still be a part of the Sheaiba station (High Authority for the Development of Makkah –
Utilities, 2004). Building and expanding this station is beneficial for the cities because it
provides a security blanket in case of any water shortages.

Currently, the average amount of water used in 2003 is 232,000 cubic meters per
day. With the new water plan, there will be an expected increase of water production
per day by 66.95 % or 470000 cubic meters. Since the population is expected to
increase by 61.22% from now to 2050, there should be more than enough water to
accommodate all residents and non-residents.

Adding more sources of water is an excellent idea. It will prevent people from
illegally collecting water and it will accommodate more people. The people can be
assured that there will no longer be water shortages with the 66.95 % increase of water
production, especially during the holy seasons. More people can be comfortable
because in such hot weather, water usage is necessary. Furthermore, by providing
more water, the homes will be heated more consistently during the colder seasons and
people can be healthier in the long run. Water is an essential of life. Having access to it
can only promote life. When this project is finished, the holy seasons will not bring about
the chaos that it did in the past. Arriving pilgrims will no longer be feared. Water will be
consistent and sufficient to meet the needs of the growing population as well as the
pilgrims who come to visit. Having a sufficient amount of water will allow residents to
feel more comfortable during the high seasons. Inviting guests for meals will no longer
be hampered by not having enough water to accommodate all guests. This new water
supply will be a welcomed relief to all who enjoy the high season of the holidays.
**Sewers:**

In addition to the water situation, the sewers also need improvement. Most of the sewers in Makkah are satisfactory in the first, second, and third districts. The fourth district still has problems and some of the houses are without a network of sewers. The pipes in the first district are more than twenty-five years old and they are too small to handle the capacity. Some of them are only 100 to 150 millimeters wide and are in terrible condition. Because the pipes are so small, the water cannot reach the houses or move away from the houses. The Higher Authority would like to remove the old network of sewers and install a newly upgraded sewer system (High Authority for the Development of Makkah – Utilities, 2004). The Higher Authority does plan to change the sewers to accommodate the increase of population.

Repairing and replacing the sewers is necessary for sanitation reasons. Also, when more sewer networks are put into place, people will not have to depend on the sanitation truck to come and clean out their sewers. The sewers can be just as clean as the ones that are located near the holy mosque, and everyone can have good service. Furthermore, there will be enough sewers to accommodate all of the pilgrims who visit the city as well as enough for any expected growth of population. Having enough sewers means more sanitary conditions and healthy environments to accommodate all the people including residents and non-residents. Places of service such as restaurants and hotels will no longer need to worry about guests having problems with the sewer system, which will also be a relief to those who permanently live there.

**Electricity:**
Electricity is another source of problems. Makkah is connected with eight lines of high voltage 38 KHz. There are two lines which come from the south of Jeddah, two lines from Jeddah through Sheaiba station, one line from northeast Rabal, one from Rabal city, one line from Sheaba station through the coast of the Red Sea, and one line from the Sheaba station directly. Also, there is one electric station inside Makkah. Fortunately this amount of electricity is enough for all four districts. However, there is a shortage of electricity during the seasons Hajj and Umra and the summer. The Saudi electric company has almost completed the third part of the new station in Sheaiba. The first two parts of this station are already working and produce 4053 MHz of electricity. This station will produce a total of 5244 MHz using the proposed three new engines which will add 1191 MHz. They will plan to start operations using all three engines in 2012 summer (Almahasin, 2008). Furthermore, there are tentative plans in the distant future to build an additional power station in Rabigh, which will generate 1200 MHz of electricity.

Adding more electric power stations is a great idea because it will keep the pilgrims from experiencing any shortage problems. Currently, there is only 4053 MHz of power being generated, and with a 31.31% increase or a total of 7635 MHz of electricity, it will be enough to supply the population including the projected increase of population of 66.95% from 2009 to 2050. With the increased percentage of electric power Makkah, it should be sufficient to supply the city with enough water until 2035. After that year, another upgrade will most likely be needed. These power stations will allocate much of their power to the holy mosque area during Hajj and Umra so that all residents in and around the mosque can remain with power. Makkah and its citizens
would like the pilgrims to have a good experience and continue coming to visit Makkah on their pilgrimage. Having electricity assures that everyone will be comfortable and life can continue. The new stations will give added confidence to the population including pilgrims that the electricity will be a dependable source of energy. Again, services that accommodate pilgrims will no longer worry about power outages which could cause them to lose business. Families can invite relatives and friends over to enjoy the high season and be confident that there will be enough electricity to supply the entire family as well as friends. Furthermore, the new stations should be able to handle the expected growth in population for many years to come.

Through this analysis, it can be observed that the improvements to the infrastructure of Makkah’s housing and utilities will benefit the city in many ways. First, the spaciousness of the new neighborhoods will allow for easier travel for residents as well as pilgrims. During the high season of Hajj and Umra, the people visiting the mosque will be better able to move around and carry on about their festivities without the burden of having no water or electricity. Hotels and businesses will not fear losing customers due to a lack of water, sewers, or electricity. Therefore, business will boom and the profit can be put back into the housing market. Also, the topography of the land will enhance the separation of the neighborhoods so there is a clear distinction between them. Therefore the utility companies will be better able to track down any problems that may occur since they will be able to have a clearer spatial analysis of the area. As mentioned before, the spacing of the houses allows for better interaction and communication between friends and neighbors. Since roads will be upgraded, it will be
easier to visit others. The stress of having to find a parking space should soon be eliminated due to the houses being built in more spacious areas.

With these improvements, Makkah can be better equipped to handle its residents, visitors, and pilgrims, so the area can be a thriving metropolis. The projects will take time to complete; therefore, it is essential to have the support of the citizens. If they are aware of all the benefits the project will bring, complete support should be expected.
Chapter V

Conclusion

As examined, Makkah is a rich city full of life and interesting cultures. It will continue to be a main attraction for those seeking religious fulfillment as well as a place to call home. The religious holy center of the Holy Mosque will continue to accommodate people from far and near. Residents as well as non-residents will require proper and decent housing with clean water and sanitary services. Makkah’s city government should make that goal their main priority. Pilgrims who come to the Holy City are a significant asset to the city in terms of tourism and bringing money to its economy. Unfortunately, the city is failing in providing a positive experience for those who visit and live there. It has failed with its poor housing, crowded streets, and narrow roadways; therefore, the city’s planning efforts remains problematic.

On the positive side, the government is aware that its designs have not been sufficient, so it is taking steps to make plans for future developments by commencing new projects for the first district. One of the strategic plans is to open Makkah up to all according to the Makkah mayor’s council. Before the plan gets put into action, it is necessary to have feedback from experts, leaders, and contractors from around the world to develop this city to all Muslims. Expansion of the area is planned in the first district which is located around the Holy Mosque. Some of the neighborhoods are being demolished so there is more space for people to gather around the holy mosque. So far, ninety percent of the land acquisition and demolition has been completed. Parts of the torn down neighborhood for the expansion project were residential areas that were in
such despair that they needed to go. Many of the buildings that were made of stone and falling apart are either being demolished or will be demolished. Those areas that are within five km of the Holy Mosque need to get the most benefit of the current expansion and this development project will eliminate many of the unorganized areas around the Holy Mosque in order to give it a nice appearance for all the Makkah pilgrims and tourists. Prince Khaled Al-Faisal responded to the problem of all the unorganized neighborhoods that are dispersed all over the Holy City by saying that the government will come forward with an extensive plan to remedy the situation within ten years (Al-Hamzi, 2009). Furthermore, the Prince was also quoted as saying that the plan has given precedence to the development of people through education and training as well as to the improvement of Haj and Umra services, and solving water problems by increasing the supply and the growth of infrastructure facilities (Shaikh, 2009). The plan aims to improve the living situation of those living in underdeveloped districts like the first district. It is a huge and comprehensive project to undertake.

Another plan that is in the works for Makkah is the Smart City plan. There are plans to make Makkah into a smart city by 2010 according to delegates who attended a conference at Umm Al Qura University (Shaikh, 2009). This means that the city would offer new electronic applications that would serve the pilgrims who come to the Holy City every year. Services provided will include those for issuing electronic visas, electronic transport systems, medical services, interactive crowd management, smart security systems, interactive GIS, and smart Haj cards. A database has already been made to facilitate the coming and going of pilgrims. It will also include the pilgrim’s name, age, country, health condition, flight information, and accommodations.
Therefore, expanding the capacity of the city to accommodate the increasing number of visitors is a major challenge. As a result, improving the housing conditions, water supply, and sanitary services is more important than ever.

However, if these plans are not realized or fail to be implemented, Makkah will face a worsened housing crisis. In addition to poor conditions, there are many conflicting rules and inconsistent instructions defining the licensing processes. These rules may make it more difficult to house the pilgrims during Haj and Umra. Some commission officials have been accused of not having the proper knowledge about the topography and geographical environment of the Holy City resulting in the shortage of buildings used for housing pilgrims. Additionally, the increase in the price of land and materials has made it more difficult to get the projects off the ground.

Makkah has a long way to go to become an improved city with better housing and services for its residents and pilgrims. However, despite its problems, it still remains a highly attractive city for people to visit. The housing situation is in such dire need of improvement that the government has no choice but to strengthen its accommodations. Officials must keep efforts to make the city a comfortable and sanitary place to live their top priority.


(2004). *High Authority for the Development of Makkah – Utilities*

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