TOWARDS A HOLISTIC ISLAMIC URBANISM: PLANNING FOR TRIPOLI IN THE NEW LIBYA

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ABSTRACT

This thesis argues for the development of a Holistic Islamic Urbanism (HIU) as key to the future of a rapidly urbanising Middle East. Because Libya is currently undergoing a post-war reconstruction phase, the adoption of Holistic Islamic Urbanism (HIU) would be a remedy to the current imbalances and a strategy of sustainability, for globalisation, like urbanisation, has brought numerous challenges that have eroded Libya's ability to contribute innovations that spring from their unique geographic setting, cultural identity and history. HIU is a concept that is deeply rooted in the principles of Islamic urbanism, where full social justice, economic freedom and human rights can be realised. During the last few decades, most countries in the Middle East and North Africa (MENA), including Libya, have experienced rapid economic and population growth. This growth has led to a substantial increase in urbanisation in the form of new districts, towns and housing – but mainly influenced by Western planning principles. Libya's rapid urbanisation, as in many places, has culminated in many economic, social and demographic problems, which were exacerbated by the Ghaddafi regime. The unsustainable nature of rapid urbanisation and its governance structure under the 40 year dictatorship of Ghaddafi affected various sections of society, which created the social tensions that ultimately led to the 2011 Libyan Revolution. The study adopts a mixed method approach to understanding such processes. The research emphasises the importance of housing, policy, socio-cultural and gender factors, and environmental and sustainability climate conditions, as they are all important in planning and play vital roles in reflecting religion and customs, and the people's desire for complete privacy within the home and serenity in their public life. The research has also shown the increasing prominence of Libyan women in the urban space of Tripoli, in the context of the revolution, and the role of women in Libyan/Islamic society during a time of rapid social change.

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GLOSSARY

BBC	British Broadcasting Corporation
BPCs	Basic People's Committees
CIA	Central Intelligent Agency
CRST (SH)	Civil Register Secretary of Tripoli
DGA	Directorate General of Antiquities
EBB	Elbabour
FGIE2	Focus Group Two Informal in Enjela
FG1K2	Focus Group Two Informal in Khalt El-Ferjan
GDP	Gross Domestic Product
GHC	General Housing Corporation
GMMR	Great Man-Made River
GPC	General People's Committee
GPCUPA (DS)	General People's Committee Urban Planning Agency
HDI	Human Development Index
HIU	Holistic Islamic Urbanism
IMF	International Monetary Fund
LE (MH)	Local Experts
LE (MS)	Local Experts
LPCs	Local People's Congresses
LRIE (SB)	Local Resident Informal in Enjela
LRIE (RM)	Local Resident Informal in Enjela
LRIK (AS)	Local Resident Informal in Khalt El-Ferjan
LRIK (MG)	Local Resident Informal in Khalt El-Ferjan
LRIK (RA)	Local Resident Informal in Khalt El-Ferjan
LRSC	Libyan Remote Sensing Centre
LYD	Libyan Dinar
MENA	Middle East and North Africa
NATO	North Atlantic Treaty Organization
NCID	National Corporation for Information and Documentation
OECD	Organization for Economic Co-operation and Development
PSC	Public Service Company
TM	Thematic Mapper
TNC	Transitional National Council
RP (DS)	Responsible Position
RPST (AF)	Responsible in Planning Secretary Tripoli
RP (SM)	Responsible Position
UAE	United Arab Emirates
UCLG	United Cities and Local Governments
UN	United Nation
UNEP	United Nation Environment Programme
UNH	United National Habitat
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations Children's Education Fund
UNPD	United Nations Population Division
UPA	Urban Planning Agency
US	United States

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1 INTRODUCTION

1.1 INTRODUCTION

This thesis argues that the imbalances in the rapid urbanisation of Libyan society can be remedied by developing and applying 'Holistic Islamic Urbanism' (HIU) for the sustainability of Libya's urban environment. This is opposed to the application of growth theories or planning paradigms that are inappropriate to the socio-cultural, religious and physical conditions of an Islamic country in North Africa. There are attributes that allow holistic planning for a sustainable city. These include a diversity of economic, political, cultural and social relations that are able to assist in bringing the city as a whole back into view – e.g. the provision of jobs and livelihood, social justice and a living environment for all. The absence of these factors has resulted in inequality and disparities emerging between Libyan regions. A city that is designed holistically, based on Islamic principles and socio-cultural conditions is a city that is on the road to sustainable practices, as changes are implemented harmoniously, decision-making and responsibility are shared with the empowered citizenry, and the environment is respected. It is important to note that these issues were not addressed before or after the 17th February 2011 revolution, but they have significant implications for Libya's future as a whole.

It is not out of context from the outset to briefly outline key historical events that have shaped and influenced urban development in Tripoli (Table 1.1). Historic evidence shows that Tripoli city, known as Uiat, has undergone various periods of political change which have had a tremendous influence on urban development. Tripoli was established by the Phoenicians between the twelfth and seventh centuries. The city,

according to Shawesh (2000) was governed by many nations among them are Phoenicians, Romans, Muslims, Spanish, Ottomans, Carthaginians and the Italians. Libya was the meeting place for commercial activities; Tripoli in particular is a point which connects South Africa, Europe and the Middle East because of its coastline. Roman architecture and urban configurations are well established in Tripoli, Sahbratah and Lepits (Sjostrom, 1993). According to MacKendrick (1980), the Roman period made Tripoli a large, stable, highly urbanised area because trade routes were operated for various routes on a regular basis. The remnants of Roman architecture such as theatres, amphitheatres and temples can still be widely found (Shawesh, 2000).

In 22 AH (1642 AD) Amer Ibn Al-Ass came with Islam and occupied Tripoli. It was invaded for the second time by Ugba Ibn Nafi in AD 645-646. Religious based urban development and new ways of life were set during the eight centuries of Islamic occupation. Because of the emphasis placed on dwellings and organisation of the city by Islam, improvements were made in construction of new houses, mosques, public baths, shops and markets. Even though they bear semblance to Roman houses, modifications were made to entrench Islamic values (Aswad, 1967). It is from Islamic civilisation that the city's built environment and identity entered into the twentieth century. In the 18th and 19th century's colonisation, Italy occupied Tripoli in 1911 (Hahn, 1981). The influence of Italian architectural and urban planning forms spread throughout the country. Tripoli has kept a traditional life style where religious, social and climatic factors have had an important role in formalising its architectural production until the coming of Italians. New model houses (e.g. villa and multi-storey), hotels, offices banks, shops and light industry layout were constructed around the Medinah so as to expand the old Roman and Islamic cities boundary. New means of

transportation (such as Esreem areas, Elshut-Street, Dahra, Ben-Ashoure, Omer EL-Mokhtar-Street, and Zawit-Edhmani) were also introduced, resulting in the widening of streets and the expansion of the Medina into today's modern Tripoli (Tripoli Municipality Report, 1972).

Table 1.1: Time line of key historical events in Libya

Date	Event
1911	Italian occupation
1943	Defeat of Italy by Allied forces. Libya divided between USA, Britain and France
1951	Libyan Independence – formation of Libyan Kingdom
1958	Oil discovered
1969	Ghaddafi's era (authoritarian regime)
1977	Green book; Libya as a socialist state but was communist in principle
1984	United Nations Sanctions
1999	Sanctions removed and the country was economically liberalised
2011	Revolution that led to the killing of Ghaddafi and regime change
2012	New Libya on the path to democracy and total economic liberalisation

Libya gained political independence on the 24th of December 1951. Between decolonisation periods to the September 1969 military coup, the formerly called United Kingdom of Libya was under a monarchy. During this period, all governance and planning policies were promulgated with bias to colonialists and historical antecedence rather than on the interest of the local people. With the change of political system in 1969, the kingdom became the Libyan Arab Republic. About five year on, a new political system based on the ideas of Muammar Ghaddafi came into force where contact was instituted between the Lagnah Shabbyah (executive council) and Moutamaratt Shabbyah (public masses). Still, transformations and developments that have occurred were based on the interest of the executive council. According to Amer (2007:156), "the majority of these projects did not undergo a formal planning process,

causing the appearance of random constructions, which have not observed the simplest of utilities and services."

Libya has a considerable endowment of oil and gas deposits, estimated to be the fifth largest in the MENA region and the eighth largest globally (Ahmed, 2007). However, UN sanctions that lasted for over a decade (1990 – 2002) resulted in the suspension of many vital projects, especially those related to services and infrastructure, such as electrical power and railway projects. But, more importantly, exploitation of the country's oil reserves led to significant demographic transformation (see Figure 2.1b). As a result, the population has increased from just above one million people through to over six million in the last five decades (UNDES, 2011), and this has been accompanied by urban and economic growth. While the overall aim of economic and social plans was to attain national and regional development among the regions of Libya, it appears that holistic planning has not been adopted because some areas (such as Sirte) were selected and developed based on their ethnic affiliation and solidarity with the government of Ghaddafi. While these plans have led to the 'development' of those areas given attention, they have failed as a result of the unexpected scale and speed of development of the rest of the country. The fall of Ghaddafi and the current process of political change reveals the problems associated with unsustainable urban sprawl in Libya, and poses challenges for the future.

The Arab Spring has started a process of change across North Africa, the Middle East and the Arabian Peninsula, according to the specific conditions in each country. Libya, Tunisia, Egypt have experienced great political turmoil and regime change since the beginning of 2011. Bahrain and Syria have also seen unprecedented protests, which are

still on-going. Countries like Lebanon, Sudan, Algeria and Iraq have all witnessed protests but were spared the danger of a revolution. This is because each of these countries had or is still suffering from intense civil conflict before the Arab uprising, and none is ruled by the sort of autocratic ruler with dynastic tendencies that governed Egypt, Tunisia, Libya, Yemen and Syria. Some countries like Kuwait, Oman, Saudi Arabia, Qatar and the United Arab Emirates have responded to the demand for regime change, social justice and political freedoms by creating job opportunities and increasing benefits for their citizens.

While oil rich Oman, for example, responded to the threat of protests by increasing employment opportunities for young people and raising labour wages, in addition to boosting the social benefit system, Morocco and Jordan have opted for diplomatic settlement because they lack the wealth to spend their way out of trouble like the oil rich Gulf States. Yet, countries like Libya, Egypt and Tunisia have the oil wealth and the political will to respond to the yearnings of their people, but chose to remain unresponsive (Anderson, 2011). For example, the Tunisian former Abidin Ben Ali was overthrown and another long-serving, Hosni Mubarak was forced to step down. Similar turmoil erupted in Yemen, where Ali Abdullah Saleh's 33 year rule ended with the transfer of power to his deputy. Those leaders were described by most of their peoples as dictators. In Libya, the uprising-turned-conflict led to the killing of Muammar Ghaddafi. These revolutions, according to Anderson (2011), only reflect the divergent economic grievances and social dynamics, which are legacies of different regime styles and encounters with modernisation.

The Libyan uprising evolved from spontaneous unrest into a full-blown conflict between the regime and bands of armed rebels in the eastern provinces intent on toppling it (Anderson, 2011). These developments can be adequately understood in terms of the tribal and regional cleavages that have beset Libya historically prior to Ghaddafi but were exacerbated by his regime. In contrast to the events in Tunisia and Egypt that preceded and triggered the Libyan uprising, the protests in Libya were driven by young, well-educated members of an expanding middle class, although a handful of women, lawyers and university professors did initiate the first small protests in Benghazi (Hashemi, 2011; Lacher, 2011). However, they have the same causes – deteriorating economic conditions, social inequality and political injustice by the ruling class are the main reasons behind the unrest and revolutions in the Middle East and North Africa (MENA) region. Ghaddafi's reign of terror has been an economic disaster for most people, despite the country's oil wealth. Pre-revolution estimates indicate that the majority of the population lived on a combination of badly paid public-sector jobs and subsidies, with young people being particularly affected by widespread unemployment rate of between 14-20.7 per cent in 2009 (Reuters, 2009:5; Chami et al., 2012:2) to about 30 per cent of the six million people after the revolution. The working class consisted almost exclusively of migrant labour from North and Sub-Saharan Africa, as well as Asia. Consequently, a small elite has benefited disproportionately from the economic boom of the past decade (Lacher, 2011). This is not to say that the Ghaddaffi regime did not produce some benefits for some people at particular points in time in Libya. As argued in chapter 4 (viz. p. 116), the early Ghaddafi regime brought significant and often positive changes to education, health care, agriculture, industry and urbanisation. Their effects, however, were unevenly distributed due to the system of patronage, tribalism and cronyism that inflected all decisions.

The revolution that deposed Ghaddafi in 2011 exposed the socio-economic tensions in a rapidly urbanising nation. The government of Ghaddafi was guilty of financial and administrative corruption. For example, Ghaddafi and his family were recently accused by the Transitional National Council (TNC) of embezzling the country's oil revenues and diverting the sovereign wealth fund for private use. Similarly, state resources were owned and controlled by him and his family members (Rheannon, 2011). Ghaddafi had a bad human rights record: women in particular were constrained, both by laws and the perceived ruthlessness of the regime. There are undocumented reports that pretty young women were vulnerable to sexual assault, rape, molestation and kidnap by either the dictator himself or his allies. Generally, however, many Libyans, not just Ghaddafi, are complicit in the oppression of women.

Against the above background, this study, therefore, presents an analysis of the transformation and sustainability of Tripoli and its expansion to peri-urban areas. Enjela and Khalt El-Ferjan are south-western suburbs of the capital Tripoli (Figure 1.1) that form the case study, and where residents' experiences about urbanisation were recorded. These areas are experiencing tremendous changes as a result of the migration of Tripoli residents that are either too poor to afford city life or are more affluent and craving space and privacy – a situation similar to that in the new satellite cities in the eastern and western parts of the Egyptian desert (Abaza, 2011:1075).

The change caused by human activities is apparent in the transformation of the landscape and the development of areas once dominated by farming and natural ecosystems. Using quantitative and qualitative methods, this research investigates the process of urban growth and how it affected the demographic and socio-economic

characteristics of residents. My thesis offers a way of interpreting that data and offers some proposals for the adoption of HIU as a guiding principle for post-war reconstruction and development of Libya. This thesis also provides a basis for further demographic, economic and social studies of the growth, dynamism and experiences of peri-urban residents. For example, the urban fringes such as Enjela and Khalt El-Ferjan selected for the study are now housing refugees who fled in anticipation of peace before moving back into the city of Tripoli.
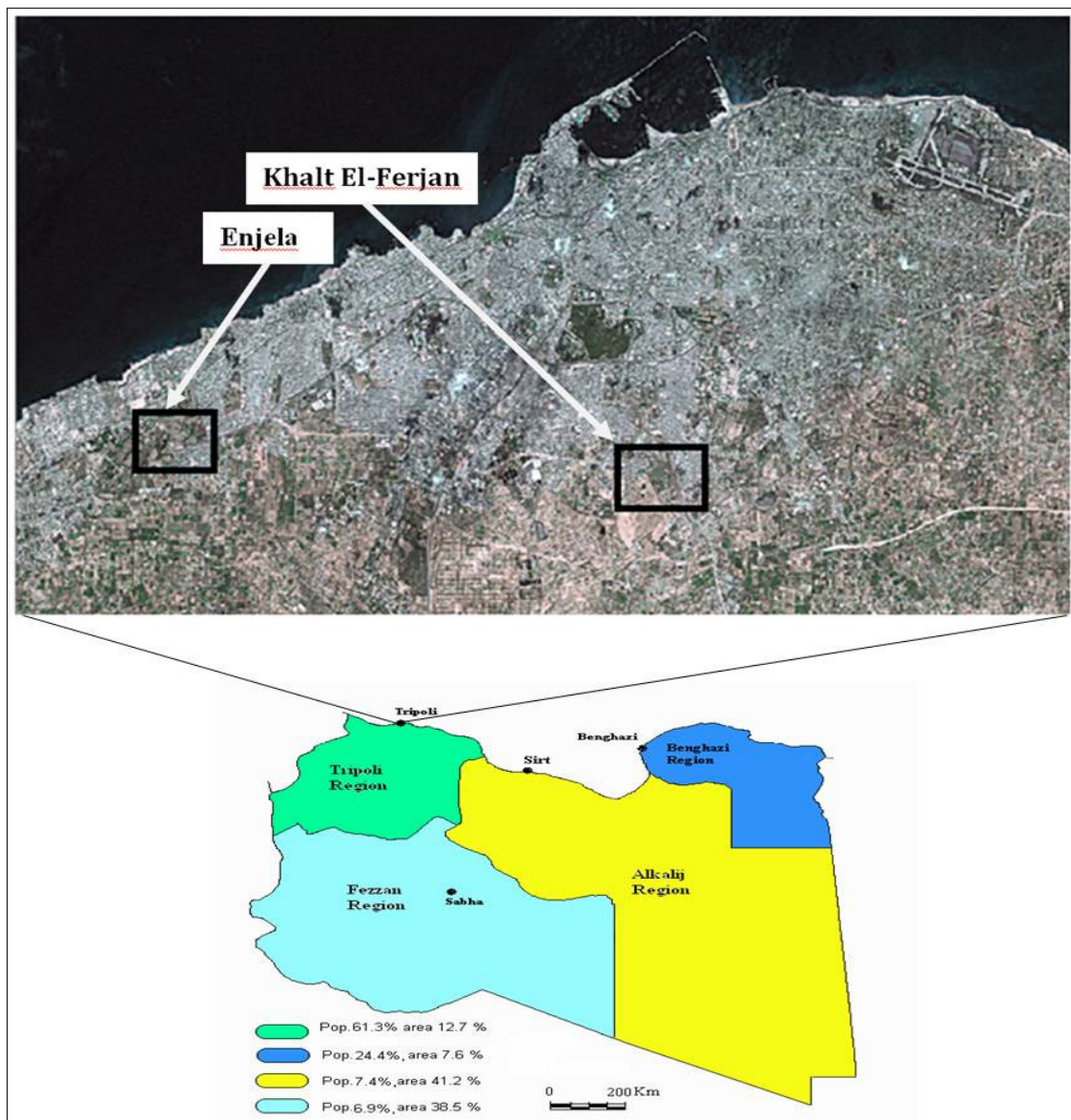
Figure 1-1Map showing case study: Enjela and Khalt El-Ferjan, Tripoli. Source: Urban Planning Agency (nd), Libya

In the first instance the thesis started out to assess urban change, but then had to change as political events overtook it. The methods initially developed were appropriate to Tripoli before the revolution but other methods had to be integrated into the research methodology in response to the revolution. For example, some methods - particularly the remote sensing data – were more important to my original project than to the final product. Basically, Tripoli's problems are now much more complex than can be illustrated by vegetation and land-use maps. However, by their inclusion they are not only useful in illustrating the pre-revolutionary problems of unchecked urban planning, but might also become useful *in the future* as a more sensitive and holistic planning regime takes root in the city.

This chapter is divided into six sections. The next section, Section 1.2, briefly explains the context of urbanisation and urban growth internationally, while the Libyan experience is further described in Section 1.3. Section 1.4 contains the underlying principles that have motivated the study. Based on the problems outlined in the previous three sections, the aims and objectives of the study are outlined in Section 1.5. Lastly, the organisation of the thesis in chapters is described in Section 1.6.

1.2 URBANISATION AND URBAN GROWTH

Urban growth is the result of an assemblage of many complex processes involving economic, social and environmental variables. Moreover, the impact of urban growth differs from one country to another. Some studies (such as Zhang, 2004) show that, as a result of human activities, more than one third of the Earth's land surface has been transformed into urban areas. Urban growth involves the development and expansion of urbanisation beyond its original and previous boundaries. It also involves the

conversion of peripheral or adjacent areas that have previously been used for other purposes into urban areas.

There are complex interactions between cities and their inhabitants where the economy spurs the creation and evolution of products, as well as the innovation of new technology. Urban growth is often rapid – it is usually fast during periods of economic growth and/or state consolidation, but can stagnate. Much of the outward expansion of cities involves competition between urbanising municipalities vying for residential economic development, the outcome of which has been that cities have grown to a great size and taken over vegetation areas. Leo and Anderson, (2007), as well as Maki (1988), have questioned whether cities can expand without destroying the green belt or vegetation areas, for example, by exploiting technology to direct urban growth to non-arable areas. In Libya, most of the northern coastal cities are surrounded by green belt, which plays an important role in limiting urban sprawl, bringing a healthy environment to urban dwellers and these are storehouses of carbon dioxide which can offset global warning (Reidacker *et al.,* 2008).

On a regional scale, each MENA country has a particular history that has shaped and defined its urban environment. For example, while Yemen is considered the poorest, and Saudi Arabia, the richest (and a major recipient of migrant workers), they still share some of the consequences of urbanisation, such as housing shortages, and common traits such as centralised government (Albassam, 2012). Similarly, while some of the countries have been occupied and colonised by Western countries, some have not been colonised but are only began to embrace modernity in the latter part of the 20th century. North African cities, for example, have passed through three phases: the Islamic era,

which is considered to be the original stage, followed by the formative stage, which started at the beginning of colonialism. The third stage of urban growth saw the city expand outside the walled city – creating a new neighbourhood parallel to the previous city (Lkahel, 2001). Due to exploration, as well as the effects of post-colonialism, the city has expanded enough to tackle the growth of the population and to solve any problems of housing, but has not taken into consideration the generation or conservation of green areas (Knox and Pinch, 2005). Further discussion of the urban geography of MENA can be found in Section 2.2.

Poor urban planning and housing development led to the construction of informal settlements at the peripheral areas of the city that often lack access to basic infrastructure and provide poor living conditions, such as unregulated traffic, noise, poor sewage and waste management. In the last 10-12 years, the Libyan government has used oil-based revenues to facilitate the growth of its cities. For example, the zero-interest loan given to select Libyans either as an individual or an estate developer, have facilitated the expansion of Tripoli. This action by the former government created issues of sprawling, unbalanced development and a general lack of planning that would sustainably accommodate the city's growth. This kind of scenario was described by Molotch (1976:309) as the 'urban growth machine' – a situation where government assist households and investors in the accumulation of capital for urban environment - can only increase Tripoli's urban sprawl. Such sprawl resulted partly from the state—through soft loans—in financing the urban growth machine, privatisation of Libya life and the increasing tendency to live in detached homes and duplexes, but mostly from the real estate capital accumulation.

In terms of the environment, the absence of sustainable urban growth means that any environmental impacts that may usually have a negative effect have now become very important. This means that the loss of any type of land due to urban expansion is significant (Gillham, 2002). In this context, we need to be aware of the significance of ensuring that the needs of the population are considered in both the short and long term. Most of this growth has been concentrated on the metropolitan areas around the world. However, the reality is that, as a result of improved life conditions, the size of the world's population has grown dramatically, especially in recent decades. While some people prefer to live in the city, others prefer the outer peri-urban areas because they offer the chance of a more comfortable life (Thorns, 2002). Most of the landscape transformation occurs within a regional context; however, specific yearly changes occur on a local scale and are often distributed in seemingly complex, random patterns. Enjela and Khalt El-Ferjan, which serve as the case studies for this research, are examples of sprawl that resulted within a relatively short span (Mubarak, 2004). What makes the study of the suburbanisation of Libya most interesting is the similarities and dissimilarities it exhibits with the modernisation models. This is because Libya, like many other cities in MENA, has struggled to balance the demands of a modern, globalised city and the traditional Muslim ideals of the community (Struyk, 2005). The former government created deliberate neglect of urban design policies that meets the socio-cultural and behavioural needs of local communities (Akbar, 1988). Thus, the adoption of an appropriate planning paradigm such as HIU, with close monitoring of rapid urbanisation, is not only timely but crucial for the creation of sustainable urban Tripoli. In brief, the next section contextualises Libyan urban growth, but this is examined in detail in Chapter Four.

1.3   THE LIBYAN CONTEXT

The discovery of vast oil deposits in 1959 improved Libya's economic circumstances, but has also brought problems. Libyan cities have experienced rapid population growth, residential redevelopment and the reshaping of land. More importantly, Tripoli has had to adapt to modern requirements, particularly due to the emergence of the automobile, the construction boom, a population increase and the decentralisation of residences and businesses. These changes have occurred at an unprecedented rate.

The history of the Libyan planning of cities has witnessed four phases. First was the period of the decline of the Ottoman Empire (1835-1911) that is considered to complement the phase of the Islamic regime. Tripoli was divided into seven municipalities (Baladih) and the task of development and planning was entrusted to the heads of the municipalities. The second stage was the colonial stage in which, in 1918, Italy began to establish the work of surveying and mapping Tripoli. The work was done by the Italian army and identified areas for markets and medium industries along with some parks and green areas of the city, and allocated areas in which new neighbourhoods could be set up (Antorp, 2005). The third stage saw potential changes in development during the planning period (1952-1964) enacted by the American army to assist in structural works. In the final stage, regional and local development of the country was implemented (from 1981 to 2000) as a result of the orientation of the Libyan government towards the Soviet Union (later, Russia). Libya at this stage had a flourishing economy due to oil income, but for political reasons, there was little progress in the operations of economic life and urban planning (Urban Planning Agency, 2005). Urbanisation in Libya, like other developing countries, has resulted in dire physical problems, as well as severe social and economic challenges. Common

features included high density of traffic and building, especially in the city centre; expansion of commercial activities along main roads; pollution; inefficient infrastructure; widespread unemployment; and the on-going migration of low-income groups to the cities. For any future government to achieve stability, these quintessentially urban problems will need to be addressed through HIU.

Throughout the twentieth century, colonial occupation, new technology, a booming oil economy, and the quest for Arab supremacy, unity and modernity have all had major influences on the rapid growth of Tripoli. The identity of Tripoli has been transformed by foreign architecture and planning – the traditional urban forms are gradually disappearing, except in old Tripoli. Further, the history of Tripoli has been ignored – the city now suffers from a crisis of identity, acceptance and sustainability, particularly as reflected in its built environment. Also, the rapid urbanisation of Tripoli is adding to enormous pressures on housing, services, infrastructure and jobs to meet the growing demands and needs of the residents who are becoming poorer. This situation has been accompanied by significant inequality in the distribution of country's wealth and unemployment, and these were contributory factors in the revolution.

Before the modern period, which started with the Italian occupation of Libya, most Libyan cities shared an architecture that reflected common features of social and religious structure. Shawesh (2000:1) puts it this way: "the formation of these features were the outcome of many factors developed over long periods of time, such as Islamic principles and values, customs, habits, relationship with climate, an agrarian economy, and characteristics of the place". Modern Tripoli is now composed of a central and dominant business area, surrounded by a number of residential development zones. The

oldest residential areas of the city grew outward through the gradual expansion of the gridiron street system. This is similar to Madanipour's (2006) description of Tehran which has grown in size and complexity to such an extent that spatial management requires additional tools that hitherto have been ignored or overlooked. The quest for living space and economic conditions, combined with people's strong desire to escape from urban life for a more comfortable life, are some of the pulling factors for settlements on the outskirts of the city that needed to be taken into account. The most important consequence of this kind of horizontal growth is the continuous pressure on existing limited public services and an infrastructure that is unable to cope.

Despite Madanipour's (2006) observation, current planning in Libya continues to adopt the early architecture and urban forms driven by designs developed by those with little awareness of local conditions. The city's architecture and planning is like other cities in the MENA (such as Dubai, Cairo, Jeddah and Doha), thus it may not be possible to distinguish this city from other cities during this modernist period. In pursuit of modernity, the changes and growth fail to take into account of local conditions such as social and family structure, customs, habits, climate, and above their religion. Libyan people have lived under more traditional conditions, characterised by extended families and a hierarchical family structure. Modern planning approaches have not taken this long tradition into account in the design of the urban environment, especially housing, which emphasises individualism and the patriarchal nuclear family system. Furthermore, urban management and governance issues are arbitrarily made and taken by those selected and imposed by the late dictator of Libya. What makes the Libyan situation peculiar is that urbanisation has contributed towards the current revolution that has led to the political change whereby Ghaddafi's 40 year rule was ended (see chapters

six and seven). It is also important that any future development by the incoming Libyan government should be informed by an understanding of the above problems. It is within this context that this study examines urban growth in Tripoli and recommends ways that are sustainable and culturally sensitive to the society. Furthermore, this project has evaluated the role of socioeconomic and cultural factors on the process of growth.

The contribution of this thesis is twofold – practical and theoretical. The practical contribution is aimed at those who work in and study urban geography, offering a better approach and focus that is not substantially found in other urban geography studies. In this case, the thesis makes a contribution to the growing argument about the adoption of modernity in a context that is suitable to local conditions. The theoretical contribution of the thesis lies in its description of HIU as an important factor in urban sustainable development. This is because it is rooted in the religious principles and traditions of the people, as against modernisation principles that have proven unsustainable. Thus, the thesis expands urban geography into an area (holistic Islamic urbanism) that is not well understood, but has deep roots in the MENA's urban history.

1.4 RATIONALE FOR THE STUDY

The recent revolution has provided an opportunity for the residents of Tripoli to demand the adoption of planning and growth theories that are both compatible with their societies and in line with modernity. Thus, a holistic and Islamic approach to urbanism is advocated, by examining contemporary, post-industrial and post-colonial physical growth together with the socio-cultural, political and economic developments shaping sub-urban city growth (Mubarak 2004). In order to prevent the reoccurrence of the Libyan conflict in any part of the MENA region, there is the need for a partnership for

urban governance to include the new and changing role of elements of civil society. This thesis addresses the complex fabric of urban growth in the region by adopting a holistic process which highlights the compatibility between theory and practice.

A further justification for this study is that previous studies about urbanisation in Libya have focused on housing (Amer, 2007), the morphology of the built environment (Shawesh, 2000), social change (Elbendak, 2008), and migration (Saad, 2010), but they were uncritical of the consequences of Ghaddafi's top-down policies at the time (because they had no opportunity to denounce his policies and programmes). Thus, there is a need to study Tripoli's sustainability in the light of its growing transformation and encroachment on neighbouring peripheral areas. However, this is not the only rationale for the study's focus on Tripoli, as my observations have shown that much of the migration and unplanned development is taking place in these peri-urban areas. I have found that there have been few, if any, studies of the rapid urbanisation of Tripoli in the peripheral areas such as those covered by this study. More importantly, the experience of residents in relation to housing issues and the consequences of unplanned development have not been analysed at all. The consequent need for revising or reforming city planning and social policy based upon modern relevant data and local conditions means that this study is imperative for planners, policy makers and is to be a starting point for similar studies or adoption, for Libya in particular and the MENA in general. Based on this, certain aims and objectives are set for the study in the following section.

1.5   AIMS AND OBJECTIVES OF THE RESEARCH

This study attempts to fill the gap in urban geography by investigating the complex relationship between humans and the environment in the context of economic, social, cultural and environmental variables in urbanisation in Libya. Through empirical approach, this study presents four principal aims in the following manner:

1. To contribute to urban geography of the MENA region and explain the distinguishing elements of sustainable urban growth in Libya through the following objective:

- To conduct a survey of academic and policymaking literature on the causes and consequences of urbanisation considering that rapid urbanisation of some countries in this region created the social tensions that ultimately led to their revolutions.

2. To explore rapid urbanisation of Tripoli and explain the catalyst for urban sustainability using the following objective:

- To analyse Libya's patterns and processes of urbanisation and to determine whether current approaches are sustainable, or not.

3. To assess sustainable growth in Tripoli as well as to determine the shape and structure of urban growth to adjacent areas, in light of the following objective:

- To conduct a case study of urbanisation in peri-urban areas of western Tripoli and document residents' experiences of urbanisation and modernisation.

4. To develop a framework for planning in the new Libya through the following objective:

- To examine the various literatures and the experiences of residents regarding current forms of urbanisation. HIU was devised based on evidences gathered

through documentary analysis and fieldwork from two peri-urban areas of Tripoli.

1.6 STRUCTURE OF THE THESIS

The thesis is organised into eight chapters, each reflecting on a particular theme, starting with an introduction to the literature, followed by research methods, to substantive findings, and then the conclusion which sums up the argument of the thesis on the need for a holistic approach to urbanism for the sustainability of the Libyan urban environment. Within the body of the text, certain key words and phrases are used either for emphasis or expression of terms, and for non-English words that may have broader meaning. The contributions and quotes of some interviewees are referred to by codename for anonymity, while others are clearly named (where I have their consent to do so). Supplementary information in the form of maps and text that are not readily integrated into the substantive chapters are compiled as appendices. A summary of the contents of each chapter is illustrated in Figure 1.2 and briefly outlined.

Chapter Two provides a review of the literature on urbanisation with particular focus on the situation in Libya and the wider MENA region. This chapter charts the theoretical context of urban geography in general, and the gaps that exists in relation to the MENA region, particularly in the current drive for political change. Attention was paid to the concepts of the ordinary city (e.g. Robinson, 2006), the city as a whole (e.g. Le Corbusier's Radiant City in Fishman, 2006), and relating them to a Libyan context. The literature also introduces the concepts surrounding sustainability and sustainable urban growth, urban morphology and metropolitan development, and urban sprawl and growth, which impact upon the population and the urban area.

Chapter Three describes in detail the research methodology and the justification for the need to adopt multiple methods based on the need to gather information from primary and secondary sources in the study of urbanisation in Libya. The research used quantitative methods (remote sensing and a questionnaire survey) to examine statistical information on change in urbanisation and to establish relationships. The qualitative methods of focus groups and interviews were adopted in order to formulate a more in-depth analysis by involving a number of government officials and residents from two peri-urban settlements in order to understand their experiences about urbanisation and the modernisation of Libyan cities. An evaluation of the methods used in the study is contained in the last section of this chapter.

Chapter Four enumerates the factors which have led to substantial urban development and population growth in Libya. The chapter is divided into five sections looking at: the demography of Libya, and the characteristics of natural population growth and migration. The historical development of oil in Libya was also considered in the light of growing population and infrastructure. The section concludes by considering alternatives to oil production for the sustainable economic prosperity of the country. This chapter would be incomplete without looking at the socio-political change brought about by Ghaddafi's military coup in 1969 and its influences on urban change. The last section takes a snapshot of some of the development achieved under Ghaddafi's regime and why it is unsustainable.

Chapter 1: Introduction	• Urban growth, Libyan context, Rationale • Aims and objectives and structure
Chapter 2: Literature Review	• Urban geography of MENA, Urban growth • Sustainable urban growth, Planning and policy, The city as a whole
Chapter 3: Research Methodology	• Research design, Data collection methods, Analytical techniques • Ethical considerations and methodology limitations
Chapter 4: Urban Growth in Libya	• Demography, Natural population change, Migration • Economic development, Socio-political change, Planning and environment, Libya under Ghaddafi
Chapter 5: Tripoli's Urban Transformation	• Tripoli after oil discovery, City planning, • Enjela and Khalt El-Ferjan, Planning implications, Tripoli today, Sustainability issues.
Chapter 6: Khalt El-Ferjan and Enjela: The view from the Ground	• Reasons for migration, Demographic characteristics, economic factors, Housing, Daily life • Availability of infrastructure, and the environment
Chapter 7: Discussion of the Key Findings	• Housing and policy, Socio-cultural and gender factors, Climate and sustainability
Chapter 8: Towards a Holistic Islamic Urbanism	• Contribution of the study, holistic Islamic Urbanism, Vision for Libya's future, Alternatives to oil • Limitations and areas for further study

Figure 1-2 The structure of the thesis.

Chapter Five offers a comprehensive picture of the geography of Tripoli, taking into account some of the forces that have influenced the physical and social transformation of the city. It begins with the transformation of Tripoli after the discovery of oil, including factors that were responsible for the expansion of the city to the neighbouring towns. Further, an analysis of change in the urban growth of southern and western Tripoli into peri-urban areas of Enjela and Khalt El-Ferjan is presented to provide important baseline information about the changes that have occurred over a period of ten years. These two areas were identified based on their distance from (or proximity to)

Tripoli city. Some issues relating to planning policies and how the city can be made more sustainable from its current unsustainable form are also contained in this chapter.

While Chapter Five provides an overview of the changes that have occurred in Tripoli over the last decade, Chapter Six provides detailed analysis and discussion of urban change in the selected peri-urban areas (Enjela and Khalt El-Ferjan). The in-depth study highlights not only residents' socio-economic characteristics, but also their experiences of urbanisation. The chapter expands upon residents' experiences to look at the influence of modernity on the size, types and ownership of housing and whether or not they are acceptable to the residents. The chapter concludes with a discussion of the environmental consequences of urban growth.

Chapter Seven combines and discusses the key theoretical and empirical findings of the preceding chapters. It brings together and organises the emergent key findings in order to answer the need for a holistic Islamic approach to urbanism in the light of the need for change that is already apparent in the evolving shape and structure of the city. The overarching issues discussed have been categorised into housing and policy, society and culture (including gender) and climate and environmental sustainability. Taking these issues into context, the chapter proposes a new approach to planning for Tripoli – and by wider implications for the MENA region as a whole – based on the principles of 'HIU'. Chapter Eight is the last chapter of the thesis and it draws key conclusions and makes recommendations concerning the implications of the findings and offers some suggestions on areas for further research post-Ghaddafi regime.

1.7   SUMMARY

Research of this kind integrating urban geography within the framework of sustainable urban growth and Islamic urbanism in Libya is unique. A key aim of this thesis is to bring issues of Islamic urbanism and sustainable urban growth to the geographical eye, and to understand the role that holistic Islamic urbanism can play in safeguarding the environment and society especially in this period of Libya's post-conflict reconstruction. This research project set out to do something original, but circumstances developed in such a way as to make it very unusual indeed – studying the prospects for urban change against the backdrop of a civil war. In this manner, the focus on urbanisation, modernisation, Islam and sustainability is a core part of the future of urban geography in the MENA in the wake of the Arab spring. The next chapter situates the theoretical base of the study and reviews existing literature relating to urbanisation in the MENA in general, but with particular relevance to Libya.

2 LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews the concepts, theories and practices relating to the fundamental aims of the research stated in Chapter One. The first section of the chapter discusses the studies of urban geography in a general context, and the gaps that exists in relation to the Middle East and North Africa (MENA) region. Section 2.4 introduces the concepts surrounding sustainability and sustainable urban growth, urban morphology and metropolitan development and urban sprawl that impact upon the population and the urban area. Section 2.5 then reviews the implications for planning and policy of the various concepts and theories discussed in the previous sections. This is followed by a discussion of Anglophone urbanism such as the ordinary city, the garden city, Le Corbusier and the city as a whole, in order to set out the framework for Holistic Islamic Urbanism. The chapter concludes by setting a conceptual framework for HIU. Meanwhile, section 2.2 discusses urban growth in MENA, from their pre-colonial urban form to the colonial and post-colonial era blemished by influences from Italians, Romans, Spanish and Russians. It also contains brief account on the influence of Islam and the modernisation of Islamic cities around the Arab world as a sign of economic strength and superiority.

2.2 URBAN GEOGRAPHY OF THE MENA REGION

2.2.1 GENERAL URBAN GROWTH IN MENA

Urbanisation is a global and common phenomenon in the 21st century. The United Nations Population Division (UNPD) has estimated that since 2010 more than half of population growth has occurred in urban agglomerations. It is further projected that by

the end of 2050, around 70 per cent of the world's human population will live in urban areas (United Nations [UN], 2008:74-75). Figure 2.1 shows that the year 2010 was the convergence point where the rate of urbanisation made astronomical growth while that of the rural population began to decline. However, each country experiences this process in varying degrees, irrespective of its political ideology and socio-cultural background. Figure 2.2 show that the rate of urbanisation is relatively slow in developed countries, and the rate of urbanisation is continuing to rise in developing countries due to economic prosperity. The least developed countries are growing at a much slower rate because of low income and high mortality rates.
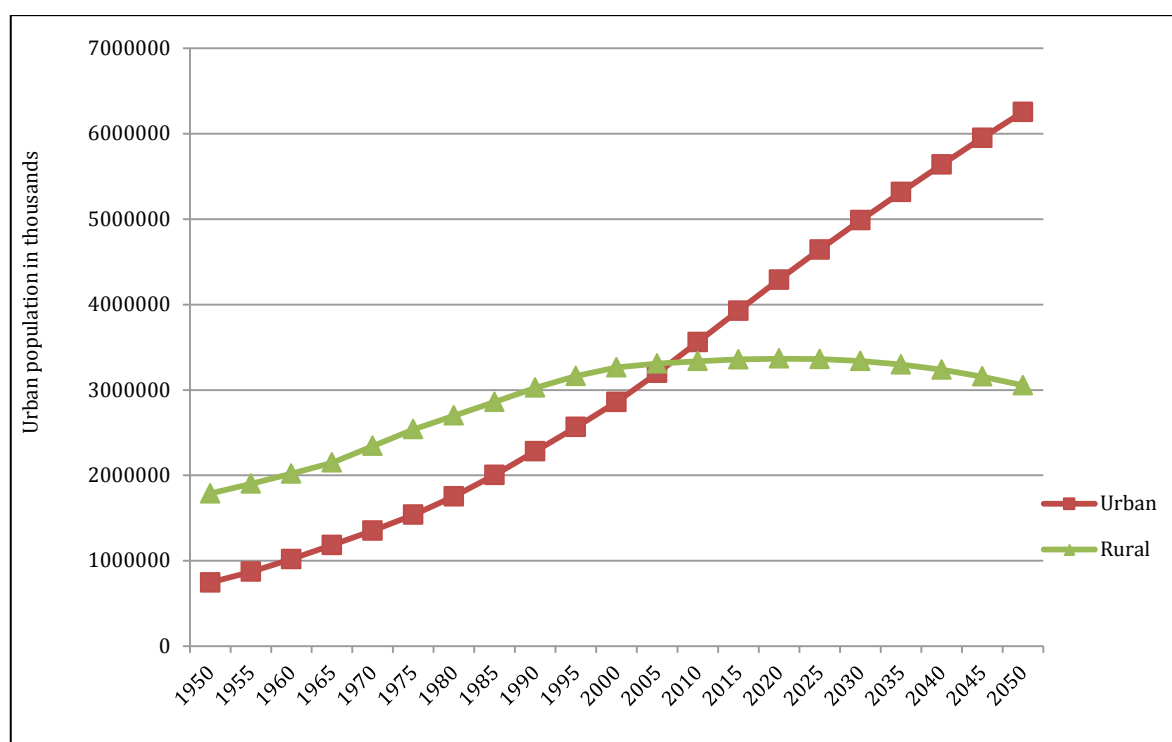
Figure 2-1 World urban population from 1950-2050. Source: compiled from United Nations Department of Economic and Social Affairs (2012).

Urbanisation is most advanced in the more developed nations of Europe and North America, with about a 75 per cent urbanisation rate. However, a low rate of natural increase has slowed down urban growth rates from one per cent in the 1960s to less than

0.3 per cent in 2010. In the less developed countries of Africa, the Middle East and Asia (except Japan and China), the annual urban growth rate is between one and five per cent. The most rapid of growth occurs in Africa, the Middle East and Latin America, where the urbanisation rate is as high as two per cent. According to Abidemi (2007), urbanisation in the less developed countries is characterised by a high rate of urban population growth due to migration and natural increase.
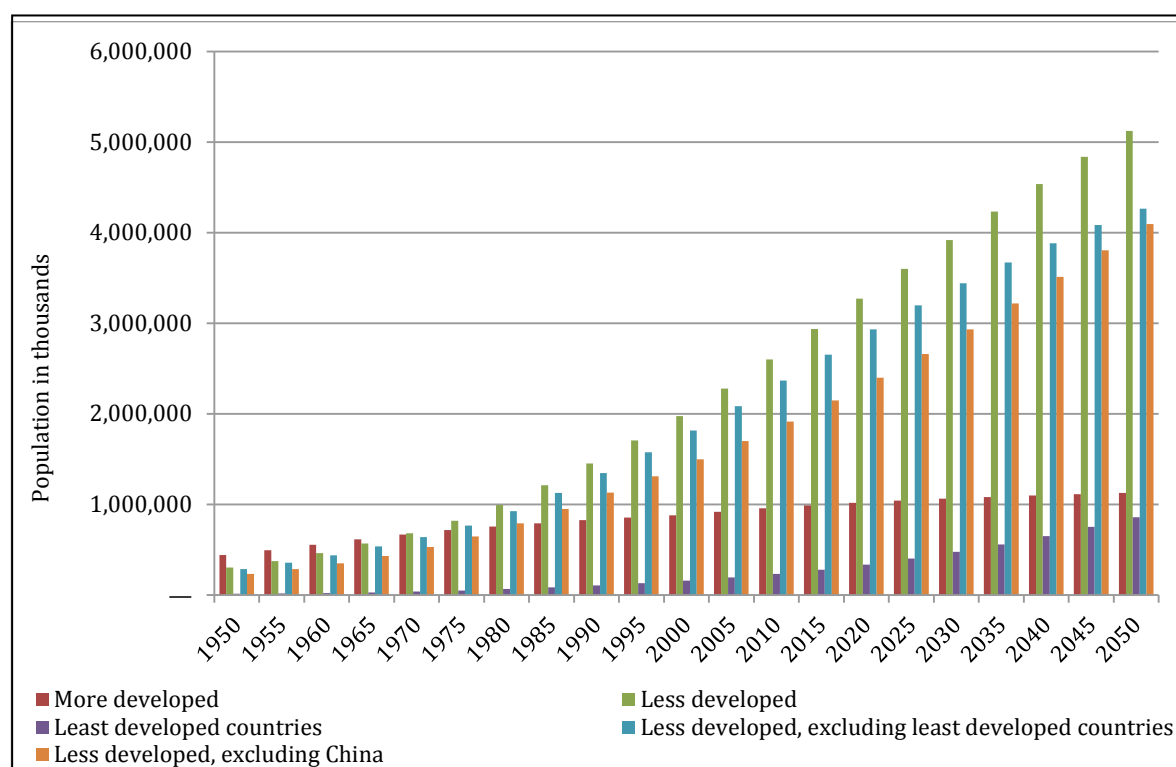
Figure 2-2 World regional urban population. Source: Department of Economic and Social Affairs (2012).

The United Nations (2008) projected that by 2050 almost eight billion of the global urban population is expected to be living in less developed countries; 1.2 billion in more developed countries and another one billion will come from the least developed countries. It is important to note that all the MENA states fall into the category of 'less developed' countries, as attested to by the UNDP data.

A number of writers and experts in different fields (such as Burtenshaw *et al.*, 1991; Elkin *et al*, 1991; Hall, 1988; Herbert and Thomas, 1997; McFarlane, 2006; Robinson, 2006) have built a better understanding of the nature and the functions of urban cities in the 'developed' world. Similar studies of this nature are simply inadequate to identify distinctive attributes of MENA cities in order to make informed judgements about current urban development (Akbar, 1997). The limited studies of urban growth in the MENA region are posing serious challenges to decision-makers on how to solve the local economic, social and environmental problems related to the growing and expanding cities in these countries. In addition, much of the literature comparing urban development has focused on the context of North-South, except for scholars like McFarlane (2006) and Robinson (2002, 2008) who are calling for less North-South comparisons and more South-South comparisons, so that cities are compared with other places to which they are more similar in history and function. By so doing, the different contexts and regions may help to add knowledge through a more global approach and coverage of case studies (McFarlane, 2006). This research therefore contributes in a great way to understanding the peculiar issues surrounding urban growth and how to sustain cities in Libya. Hence, the study will unravel some of the many local issues and peculiarities that are completely different when compared to some of the cities in the North or even some parts of the MENA or the South.

The current English-language literature has under-studied urban growth in the MENA region relative to its coverage of urbanisation in Europe, North America and the Far East. However, the literature that exists is not specifically about urban study and does not underscore the growth of MENA cities. For example, Bialasiewicz *et al* (2007) and Ramadan (2009) focused on politics and violence in Iraq and Palestine. Bialasiewicz *et*

al (2007) has interpreted how the power of the United States military is very important in preserving and continuing neo-colonial territorial control. Romola's (2008) study on Palestinian refugee camps in Lebanon indicates that these camps took a long time to establish and yet are still viewed by both local authorities and their inhabitants as temporary settlements. The camps are built with total disregard for planning and legal provisions. Romola concluded that these uncontrolled sites constitute places of embedded poverty in housing. However, there are cities that follow similar patterns of development that are not refugee camps. For example, housing poverty is found in the fringes of Tripoli, such as Enjela and Khalt El-Ferjan. For a comprehensive understanding of the nature of urban areas in the MENA, it becomes desirable to have more scholars from different perspectives to conduct a variety of studies about the urban geography of the MENA. Robinson (2002) emphasised that: 'If a cosmopolitan urban theory is to emerge, scholars in privileged Western environments will need to find responsible and ethical ways to engage with, learn from and promote the ideas of intellectuals in less privileged places' (Robinson, 2002: 549 – 550).

After the Second World War, the world became familiar with terms like 'Developed' and 'Developing'; 'North and South'; 'least developed and developed'. Since then, these terms have been widely used in the academic literature and institutions to indicate the level of economic development of countries (Waugh, 1990). Earlier, United Nations (2011) described the least developed countries as those with low per capita income and high unemployment rates. The theories of urbanisation developed in Western societies, may not be applicable to all cities. In this manner, Robinson (2006) found it difficult to apply urban theory globally to predict future urban growth after the periods of colonialism. Already, Chakrabarty (2000:532) argued that historical studies of urban

growth tend to be based on "western experiences and scholarship's intellectual traditions". Rather than relying on the dichotomy between the North and the South only, urban studies should take into account environmental sustainability alongside other factors. For example, urbanisation in the MENA region has largely affected ways of life of the people and that of their cities in the current world of modernity and globalisation.

2.2.2   PRE-ISLAMIC CITY FORM

Some of the above cities existed before the emergence of Islam: Mecca and Damascus for example have experienced the great planning impact of the Islamic era (Elbendak, 2008; Elsheshtawy, 2008). The system of planning has introduced a new urban shape, meaning that Islam is an "urban" religion, which both depended on and required that people live together in communities (Al-Ammar, 1992; AI-Khayat, 1988; Atash, 1993). Therefore, the significant organisational value of the Islamic Society has considerably influenced the ideology of planning design of MENA cities, where Islamic values about human character, human behaviour and activities are inculcated in the design and structure of settlements. However, Arab urban researchers such as Saoud (1996) doubt whether a pre-Islamic city ever really existed. This is as a result of the fact that Arab Muslims did not settle exclusively in one place because the majority of them were nomads. Rather, wherever they settled in search of pasture or for the propagation of Islam, a town originated (Lapidus 1969 in Çaha and Karaman, 2000). Hamdan (1962) confirmed that the development of towns in the Islamic era was simply an extension of the pre-existing ones, and some of their morphological characteristics such as Suqs, Citadels and Residents Quarters were inherited from the pre-Islamic era. Saoud (2004) corroborated this argument with the findings that new towns were only created to assist

the spread of Islam. Simone (2004) stressed that ownership and utilisation of land are significant in shaping the structure of most MENA and African cities.

2.2.3 ISLAMIC INFLUENCES

The spread of Islam across North Africa and South-West Asia by the Arab armies has led to the emergence of some of today's renowned cities. A number of factors played pivotal roles in ordering and shaping the plan and form of the Muslim City. In addition to the influence of local climatic conditions and physical appearances of pre-existing towns, the Muslim City reflects the general socio-cultural, political, and economic structures of the people. The Arab garrison settlements were prepared on tribal principles so that a variety of tribes were established in their own quarters which, under the tribal leader, were coherently preserved for some time (Soffer *et al.*, 1986) With the passing of time, an urban character appeared in the Arab camps and they became civil rather than military. The Arab Muslim conquerors settled down in barracks situated either in the suburbs of the existing cities or near to them (Cohen, 1970; Lapidus, 1973). Consequently the ancient cities were confronted by Arab-settled places, which gave rise to a double city tradition to become a multicultural city under Islamic principles (Alfra, 2002, Azlitni; 2005; Lapidus, 1973). Damascus and Cairo are examples of the cities that have emerged since the 7th century A.D. and are still expanding.

More so, Al-Sayyad (1991) and Hakim (1986) argued that the Muslim city has special characteristics. Islamic towns were erected at an early stage to protect areas under Islamic rule, and then to preach and practice Islam. In terms of houses, low built dwellings of settlement were a common feature. Therefore, many prosperous towns emerged due to this religious role e.g. Mecca and Medina in Saudi Arabia. In the 1920s

the conception of the Islamic city was pointed to by French scholars during their studies of cities in North Africa – "the Arab Maghreb". The emergence and development of city is guided by Islamic principles of governance and growth principally taken from Islamic sources (Shariah).
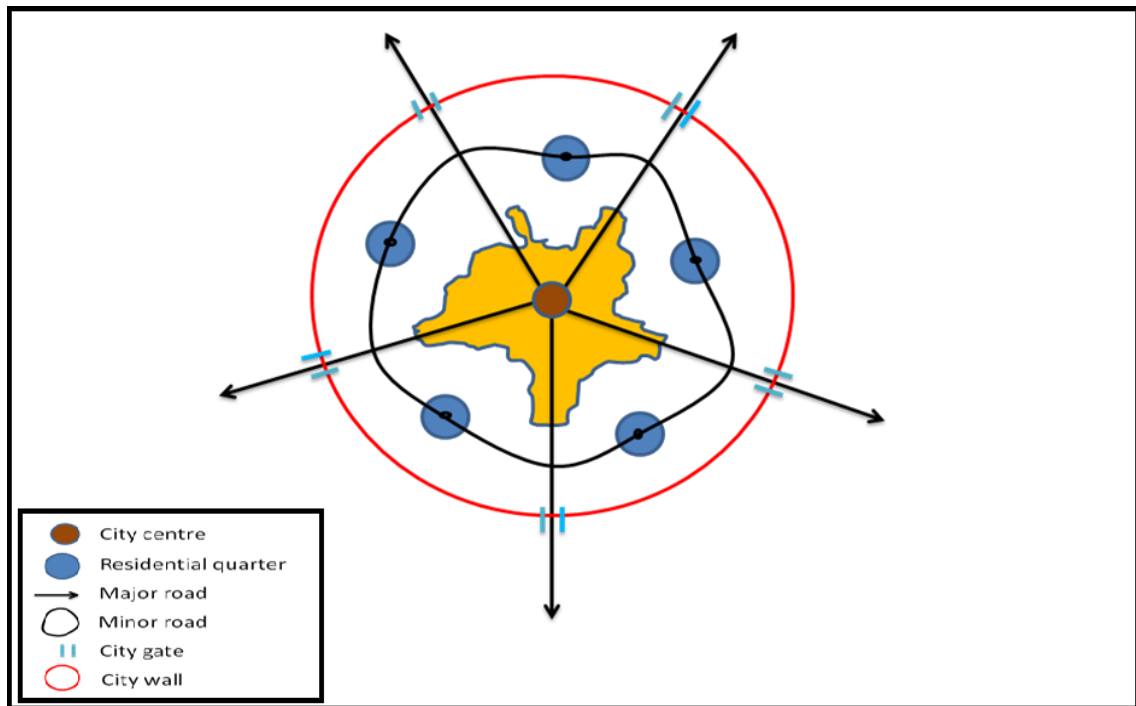
Figure 2-3 Model of Medieval Islamic City. Source: Modified from Atash (1993)

2.2.4 COLONIAL INFLUENCES ON THE ISLAMIC CITY

Medieval Islamic cities were walled and divided into private and public spaces, with many city gates as entrances (Ennahid, 2002). Figure above 2.3 is a model of a medieval Islamic city. There are major roads that connect the centre to the hinterland. On each of the roads, there is a city wall with an entry gate into the city. These streets are connected to the residential quarters and to the rest of the city fabric (Atash, 1993). The population distribution, similar to those of Medieval European cities, was based on tribal membership, immigrant status, and religious affiliation. Residential segregation was created by the people's custom that different tribal groups should live in a specified

residential area. In contemporary times, this pattern of distribution can be found in the traditional cities of the Libyan interior, particularly in Sabha and Al-Kufra.

During the period of colonialism, there were two kinds of residential settings. One was the indigenous population that was confined to the old city, the other the colonial 'masters' who relocated into new settlements built as a section of the old city, popularly known as 'reserved areas' (Atash, 1993). The colonialists did not take into account the development and services requirements in the old city, which was home to the indigenous people. New infrastructure was concentrated in the colonial settlements (National Authority for Information and Documentation, 2003), thus there was a clear emergence of a socio-economic gap between the indigenous and foreign residents within a particular city. Natural disasters, population increases and migration, including the scarcity of land in the old city, is some of the reasons that compelled the indigenous people to move to the peripheral areas of the city since they could not be accommodated in the new city. The old core of cities in the MENA region was traditionally populated by a mixed population with different income levels. For example, the old city of Cairo is overcrowded, and is described by Atash (1993) as an urban slum and/or, at best, a lower-class district where newcomers often occupy its residences. Cairo is a traditional city with high and low income people living together without any boundary separation. A significant difference in income levels emerged due to the lack of social justice after the 1950s. The rich elite became more segregated from the public class. As Wehiaba (1980) has explained, around 85 per cent of houses built and expanded between 1960s and 1980s were out of reach to low-income earners.

2.2.5 THE MODERN ISLAMIC CITY

The Islamic city of today is an extension of the ancient cities (pre-Islam), from conception, planning and architecture to implementation. This is based on the Islamic principles that emphasise intrinsic values instead of external appearance, as well as social equality (e.g. Haneda and Miura, 1994; Knox and Marston, 1998; Wagstaff, 1980). Thus, harmony between the individual self and the configuration of buildings are parts of Islamic ways of living. Similarly, important principles of the Islamic city guided land policies, physical planning and the formulation of urban areas. Land policies apply evenly to all sectors of the society and do not support a pattern of development in conflict with the egalitarian notion of Islamic Shariah Law. Land policies promote cohesion among society members, as well as safeguarding family relations. Stowasser (1994) reported that the teachings of the Shariah give high esteem to the concept of privacy (e.g. gender segregation of especially strangers), thus, land policies ought to consider this concern in the process of land development control techniques (Al-Yemeni, 1998). Certainly, the mosque (Masjid) is the most significant feature of the city in Islam and the place in which community members associate, and to which Muslims go five times each day to pray. Any contemporary land policy must see that the mosque remains the main point of the Islamic community. In summary, unlike cities in the South that are built for certain purposes (such as administration or trade), cities in the MENA are built for religious purposes and the functions of the cities are greatly influenced by the dictates of Islamic religion.

Contemporary cities in the MENA are a combination of the old and new, wherein the urban fabric in the cities comprises a mixture of religions, cultures and postcolonial legacies, such as the influences of Italians on the architecture of Tripoli. The

combination of the above elements not only links traditional with modern urban cities, it influences the shape and configuration of those cities. The old city was pedestrian-oriented with mixed uses and narrow streets patterned with high population density, while the new urban development is car-oriented with low population density; it has multiple functions (Al Hammad, 1988). It is clear that cities in the MENA region share much of their past and present development (Shechter and Yacobi, 2005). Therefore, studies of this nature must take into account both the requirements of a modern society and the historical heritage of the people. There has been conflict between traditional and modernising approaches to urban development in the post-colonial era. The approach of the current development differs from the cultural and historical identity of the people. So the pertinent question is: can tradition and modernisation co-existence with each other? Benjamin (2000) expressed the way in which the modernisation approach to development can itself create dialogue with traditionalists, taking into account peculiarities that would apply throughout cities of different kinds.

Location and financial resources can transform urban areas into mega cities and centres of excellence. Cities such as Dubai and Riyadh have become international centres of commerce and communication. Because contemporary research focuses on producer services, certain cities within the region have not significantly benefited from studies and planning that can connect them to globalisation. Undoubtedly, Dubai has undergone an impressive urban revolution – even though not a sustainable model - it is a prime model for urban development in the MENA region (Bassens *et al*, 2010) and an 'Urban growth machine' (Molotch, 1976). The spectacular development in Dubai is based on a modernisation approach and supported by decentralisation in political and economic aspects. But the question in this regard is: are the traditional criteria (historical and

culture) taken into consideration in urban planning in Dubai? In fact, Dubai's urban planning developers have changed and modernised the local landscape. As a result of the complete change of lifestyle and values brought by modernisation, a proportion of the indigenous population has escaped to the rural areas. A second question to note is the sustainability of the modernisation approach adopted in Dubai. Meanwhile, Tripoli under the rule of Ghaddafi is purported to have adopted neoliberalism to attract industrial development, foreign investment, and to create a centre of commerce for the North African sub-region. The next section discusses a new approach to urban development that takes into consideration the complexity and diversity of the city.

2.3   URBAN GROWTH

Since the oil revolution about five decades ago, some of the MENA countries (mostly those with oil wealth) have experienced a wave of transformation of their population and cities. The MENA became one of the world's rapidly expanding populations with an average growth rate of about two per cent per annum between 1990 and 2003 (UN-DESA, 2011). Consequently, the region's urban growth rate was close to 60 per cent in 2000 and is forecasted to grow to over 70 per cent, five years from 2000. The major countries in the MENA are more than 50 per cent urban, whereas states like Libya, Saudi Arabia, Bahrain, Qatar and Lebanon are more than 85 per cent urbanised (Mirkin, 2010). Rapid population increase and urbanisation raises questions of the ability of cities in the MENA region to cope with the growing population and infrastructural demands. Already, population growth and urbanisation are occurring in a situation of a highly monopolised and non-diversified economy, and where unemployment, regional insecurity and political instability are on the increase. Therefore, the urbanisation of poverty associated with the region's rapid urbanisation is also adding to the massive

pressures on cities to deliver infrastructure, and all the facilities needed to meet the increasing demands of the urban poor (UN Habitat, 2009). The following section explains the metropolitan development of cities.

2.3.1 URBAN SPRAWL AND GROWTH

Urban sprawl symbolises the pattern of dominant growth in urban areas (Al-Rwashda, 2000; Al-Thahery, 2000; Carruthers, 2002). Urban sprawl is a consequence of cheap open space outside the city. For example, ownership of an automobile, the ability to own a house, the wish for a single family to possess a home, and overcapacity within urban areas are some of the major reasons identified as reasons for the sprawl of urban areas (see Nelson and Duncan, 1995; Neuman, 2003; Young, 1995). Burchell *et al.*, (2002) stressed that both the operating and capital costs of urban sprawl development are more costly than compact city development. For instance, urban sprawl in the United States is a form of urban growth producing unrestricted outward urban expansion into the periphery. It may also be due to uncontrolled planning by a local authority or as a result of prevalent commercial development along major roads and widespread housing for low-income households, among others. Most of the African and Asian cities, including the MENA cities, are characterised by low densities, peripheral sprawl and economies dominated by informal activities and squatter settlements with limited services, as in the case of Tripoli (United Nation Habitat, 2009).

There are many negative consequences of urban sprawl; it is considered uneconomical, inequitable and environmentally inefficient and insensitive (Carruthers, 2002). There is a high cost of providing infrastructure because it promotes segregation and social division through housing markets. The consumption of natural resources such as

forestry and farmlands keeps rising as the sprawl continues to expand, thereby adding pressure to available resources (Brueckner, 2000; Carruthers, 2002; Smart Growth, 2001; Whitehead et al., 2006). An urban development strategy that seeks to direct growth in a coordinated manner with distinct policy targets appears to be the road to sustained urban growth. An urban growth strategy should include many options like urban containment techniques, infrastructure sufficiency requirements, population caps and so on, that will shift from growth to contraction. A clear example of how to manage an urban development pattern can be seen in Portland, Oregon's urban growth boundary, which limits growth to within protected lands outside the border. So successful was this at one time that Richardson and Gordon (2001:10) claimed that "Portland has the reputation of being the municipal pioneer of sustainable development".

During Tripoli's expansion outwards, city agencies provided poor planning and individuals neglected planning policies. The rate of urbanising Tripoli has led to the spread of sprawls into areas that are originally for agricultural land-use. The following literature examines how growth in urban areas can be managed in the long-run, so that it does not undermine human development.

2.4 SUSTAINABLE URBAN GROWTH

The concept of sustainability in urban growth is an important step towards managing factors – such as housing, waste disposal, conservation areas and other lifestyle – in urban planning (While *et al*., 2004; Whitehead, 2010). Sustainability can be viewed as an intersection of social variables and ecological space: social, economic and environmental (see Figure 2.4) to preserve present biodiversity, especially where human

settlements can have significant impact on the environment (Thorns, 2002; Whitehead, 2003; Whitehead and Carr, 2001). Thus, the question that arises is whether this is practicable in the MENA region? Does urban growth in MENA consider development strategies that take into account the requirements and desires of both present and future generations?
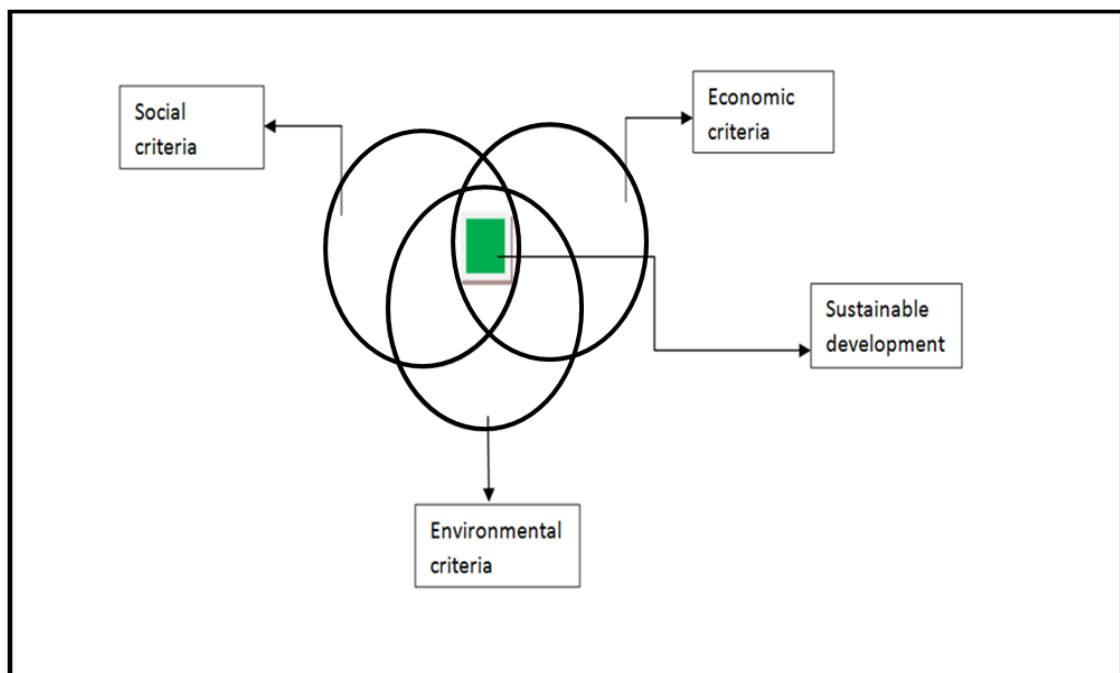
Figure 2-4 Sustainable development criteria. Source: Modified from Thorns (2002)

At present, sustainable development is a widely debated concept in urban development studies and planning (Krueger and Agyeman, 2005). Sustainability can be viewed as a process that should be worked towards, rather than an achievable endpoint. Given the scenarios of the future development of MENA cities, land-use patterns should be defined on the basis of social (population), economic, political (including administration and institutional capacity) and environmental dimensions of sustainability (Barredo *et al.*, 2003; Campbell 1996; Eden *et. al*. 2000; Romaya and Rakodi 2002). However the potential conflict between socio-economic and environmental considerations,

particularly in the MENA is considered a key challenge to sustainable urban development. For example, conflict for diminishing finite resources, such as arable land and water, is on the rise. This is further compounded by environmental degradation, climate change and population growth. The mismanagement of natural resources is contributing to new conflicts.

Sustainability of urban centres is the result of an assemblage of many complex processes involving economic, social and environmental variables. Rapid urban growth causes many problems, such as insufficient housing and urban services. For example, sanitation, transport, water, land costs and deterioration of the urban environment (Al-Tellawy, 1995). In Libya, one of the negative effects is the lack of vegetation or conservation areas. The situation today is far worse, as conservation areas in Libya are just about one per cent of the country's landmass. As such, this project focuses on horizontal and random urban growth of buildings. A horizontal urban growth pattern is considered to be the main cause of the degradation of green areas. There is a global propensity in the direction of towns and villages becoming increasingly urban. The wave of urbanisation is more than double what Weaver (1977) envisaged in the last 30 years. Considering the functions of Tripoli city as a centre of government and the economy of Libya, this study supports Portney's (2003) assertion that the city is seen as a growth machine and growth is seen as the engine that drives the health of the city.

Cities are continually involved in complex processes of alteration. A variety of socio-economic factors influence the growth pattern and how cities change: technological innovations (Hall and Pfeiffer, 2000; Hart, 2001); internal and external migration (Thorns, 2002); public strategies (Carruthers, 2002; Nelson and Duncan, 1995); and

globalisation of economic activities (Douglass, 2000; Robinson 2006; Sassen, 2011). Many cities (especially in the MENA region) are witnessing change and rapid urban growth and therefore pose a challenge for sustainable development. In an attempt to address the situation, long before the term 'sustainable development' burst into the global lexicon in the 1980s, Hirschman (1958) and later Friedman (1969) argued that the spread of cities from the centre to peri-urban would affect sustainable socio-economic development. The issue is how to attain sustainable development rather than demeaning long-term human activities (Sorensen *et al.*, 2004). The urban growth pattern and change which is distinguished by its speed, volume and intensity, creates both chances and constraints for sustainability. To achieve the sustainable growth of cities, it is essential to examine the interactions between socio-economic and environmental concerns arising from urban growth and change.

To a large extent, urban growth is an issue of social scientific concern, as it involves both theoretical and practical aspects as well as the interaction between economic and population geography. There are complex interactions between cities and their inhabitants where the economy spurs the creation and evolution of products, as well as the innovation of new technology. Much of the outward expansion of cities involves competition between urbanising municipalities vying for residential economic development, with the outcome that cities are growing to a great size that takes over agricultural areas (Maki, 1988; Leo and Anderson, 2007). However, the concern is whether cities can expand without destroying the green belt or agricultural land.

Contemporary urban growth in developing countries, particularly in MENA countries, seems to follow the first quarter of the 20th century experiences of most developed

countries in terms of the speed and patterns of urban growth (Cohen, 2006). Thus, the urban demographic transformation influences and is influenced by many trends: 1) economic development worldwide where globalization is tying cities to each other through international networks; 2) evolving international development agenda e.g. "Development Goals", which recognise urban and rural poverty; and 3) the urban consequences of global climate change and other acute weather events that can cause harm to lives. In reality, the MENA region contains both some of the world's poorest and the wealthiest countries; this has resulted in political and economic heterogeneity within the region. Despite this socio-cultural difference, they are inter-related. Probably, the need for people in many parts of MENA countries to have enough access to water, combined with the pace of industrialisation and high rates of migration to oil-rich countries in the region, has further resulted in increased urbanisation. As a result of urbanisation; the increased demand for water is thus depleting aquifers (Burnley and Murphy, 1995).

At the moment, the increasing rate of urban growth in the developing world does not correspond to economic development. Moreover, the rapid un-planned and uncontrolled physical urban expansion of cities significantly exceeds the availability of resources, and has created socio-economic and environmental challenges for these countries (Hardoy, 2001). In some developing countries there is no sufficient infrastructure, and the available services are inadequate for the ever-increasing urban population (Abiodun, 1997; Al Farrisse, 2004; Azlitni., 2005; Cheema, 1993, 2003; World Bank, 2011). The lack of financial resources and administrative capacity to present the infrastructure and essential urban services further makes the situation hopeless. The expansion of the city periphery is caused by people who seek escape from a busy life and new immigrants

who prefer to live in a less costly environment (Cohen, 2006). Generally, the issue of the urban growth of MENA cities towards arable land is a consequence of inadequate planning by local governments. For instance, in Egypt more than 10 per cent of the country's agricultural land has been lost due to the expansion of Cairo, despite the availability of some spaces within the core city that are still undeveloped (Hardoy, 2001).

From a broader perspective, urbanisation is one of many ways in which humans are altering the global landscape. Most of the landscape transformation occurs within a regional context; however, specific yearly changes occur on a local scale and are often distributed in seemingly complex, random patterns. At the core of peri-urbanisation is a form of urbanisation separated from the original form of the metropolitan area. Many studies have looked at maintaining the peri-urban sites and preserving agricultural land. Pacione (2005) stated that the most important growth theories assume connections between three entities: the dimensions of knowledge, human capital and economic growth.

The contemporary city, according to Islamic principles, is not a homogenous entity. The city in Islam evolves in response to a natural role exercised by residents and illustrated in the Islamic principles (from the Holy Quran and Hadith). The control exercised by neighbours in defending and protecting residents' rights to privacy and access over the development of the vicinity is considered a key aspect in determining the physical character of the city in Islam (Abu-Lughod, 1983). Because MENA countries are, in theory at least, and to varying degrees, governed by Islamic principles, an examination of contemporary and post-colonial physical growth must incorporate socio-cultural,

political and economic developments shaping sub-urban city growth (Mubarak, 2004). Moreover, decentralisation and democratisation are vital in order to diminish the power of the centre, and also enhance accountability at a local level. The International Monetary Fund (IMF) (2007) reported that 80 per cent of developing countries, including Libya, should become conversant with decentralisation. In fact, the MENA region inherited a heavily centralised system which started in the sixteenth century. However, Tosun *et al.* (2008) and Hanna (1995) have argued that some parts of the MENA have been affected by a European colonisation that propagates government centralisation. Therefore, the implementation of decentralisation in Libya is to provide the necessary structural motivations to encourage markets to promote performance at the local level, and consequently stimulate diverse economic development.

The majority of developing countries are in the transition period from the traditional to the modern form of urbanisation, especially oil producing countries in the MENA region. While modernisation theory is more familiar in the developing countries of Africa and West and East Asia, dependency theory has received more attention in South America (Omar, 2001). Kasarda and Crenshaw (1991) argued that the theorists of dependency created a social relationship between (different classes) of people. No doubt a number of MENA countries are operating a series of interconnected capitalisms that operate alongside other forms of economic relations in line with Gibson-Graham (1996).

Amin (1974) argued that the city in developing countries was intended to serve as the foundation for the accumulation of capital and then transfer it to the metropolitan centres in Europe. Urban development in the developing world is referred to as

'dependent urbanisation'. Friedmann and Wulff (1976) explained such dependent urbanisation, and stated that the developed world launched urban outposts in the developing world as a result, to extract surplus by way of primary products, to expand the market for goods developed under advanced monopoly capitalism, and to ensure the continued stability of indigenous political systems that will most willingly support the capitalist system (as quoted from Al-Buainain, 1999 in Armstrong and McGee, 1985; Potter, 1992; Potter and Loyd-Evans, 1998). Similar inferences can be found in Al. Maghreb Al. Arabi, where capital and seaside cities (such as Tunis, Algiers and Casablanca) developed due to their connection with the metropolis (Abu-Lughod, 1976). The next section considers the aspects of sustainable urban growth, starting with the social aspects.

2.4.1   POPULATION GROWTH AND SOCIO-CULTURAL ASPECTS OF URBAN GROWTH

In demographic terms, population growth rates in Libya have dramatically increased within the last three decades. In terms of the economy, major economic concentrations are distributed throughout metropolitan areas as strategic projects, with rapid growth being fuelled by revenue earned from high oil prices. As a result of improved life conditions and health care services, the size of Libya's population has increased considerably, especially in metropolitan areas, as in other cities of the world (Dionysia *et al*, 2006). It is true that population growth produces some of the most disturbing urban effects; however, it is not only population growth that has created urban growth: the type and size of households are other important contributing factors to growth stimuli (Thorns, 2002). Libya's population has risen considerably over the past century, generating a population explosion. Masek *et al.* (2000) claimed that from 1995 onwards, people around the globe have moved in unprecedented concentrations into urban areas.

The world's population is predicted to rise to 4.98 billion by 2030 (Cohen, 2004). By comparison the size of the rural population in the world is expected to increase only very marginally, from 3.19 billion in 2000 to 3.29 billion in 2030. The growth of population over the next 30 years will be concentrated in urban areas which would make cities reach an unprecedented density (Cohen, 2003). The shift of population from small cities and adjacent rural areas to large cities in the developing world is a consequence of the bias of government planning and policies towards large cities (Kezeiri, 1992). Libya's situation is not an exception, as Ghaddafi government's town planning policies were conceived to cater for urban rather than rural areas. In the early 1950s Libyan urban population areas were around 18 per cent, and the rest of the young population were moving from place to place to look for work and a livelihood (Kezeiri, 2005). As a general rule, the total urban population of the developing countries will massively change in both absolute and relative terms. Montgomery (2008) reported that the UN estimated that urban population in the developing countries will increase from 1.97 billion in 2000 to about four billion in 2030 and 5.20 billion by 2050. If this rate of urbanisation is sustained to the second half of the 20th century, the urban population of these countries would likely double in 17 years (Cohen, 2004).

The population in the MENA region was mostly rural until the 1950s, when only 27 per cent of people were living in urban areas. By 2000 both the size and the spatial distribution of the population had change considerably. The urban population has grown to 58 per cent of Libya's population and risen over eight-fold over the second half of the 20th century (UN, 2002; World Bank, 2002; UNDES, 2011). As indicated in Figure, the rate of urbanisation in the MENA region is projected to reach more than 70 per cent (UN, 2009). By 2030, 90 per cent of the total Libyan population is expected to live in

urbanised settlements (UN Habitat, 2009). The question is whether this number is mainly due to a natural increase or migration (see Libyan example detailed in section 4.2.1). As PolService (1980) explained, the aggregate number of migrants who moved to Tripoli in 1980 was about 344,000; however, transnational migrants from out of Libya who are using the city as a staging post for migration to Europe represented around 29 per cent of this number. In recent years, estimates have it that more than 75 per cent of migrants from sub-Saharan Africa are believed to migrate through Libya to Southern Europe (De Haas 2009).

There are also a substantial number of migrants from neighbouring Arab countries, especially those looking for employment opportunities (Fargues, 2009). For example, during the middle of the 2000s, more than one million Egyptian workers, and tens of thousands of Moroccan migrant women, took jobs to work at informal economic activities in Libya, the majority of whom reside in Tripoli. As more and more people settle in the city, it increases in size and complexity and then spills over into adjacent areas. Most Libyan coastal cities attract internal and external immigrants, the latter of which represents labour migration, in addition to natural increases.

Likewise, prior to the war, many Libyan cities were experiencing population growth: something expected to resume with political and economic stabilization. This tendency had already triggered the transformation of the metropolitan fringe into suburbia, which has fallen under the control of urban growth whereby emigrants from the (central) city have taken up residence to create illegal squatter settlements near the borders of metropolitan areas. These settlements over time try to legalise themselves by obtaining permits from planners through dubious means. To buttress this point, Simone

(2004:198) asserts: "squatting and land invasions, the manipulation and commercialization of customary rights, and de facto landowners who build outside the law all can combine to distort urban growth process".

The migration from rural to urban areas has increased in many places, especially in the MENA space; the numbers have grown beyond the capacities of modern cities to present infrastructure, such as social services, housing and employment (Kasarda and Crenshaw, 1991). This has occurred for many reasons, the most important of which is that the salary of unskilled employees in rural areas is very low when compared to the wages of city workers. This in turn persuades many rural workers to move to the city, with its increased labour mobility. The city is thus a centre of attraction for people, but is additionally a place of expulsion, as a result of factors such as congestion, expensive cost of living, overcrowding and so on. Aguilar (2008:136) points out that, in Mexico City, there has been "slower population growth in the Federal District in comparison with the other entities, and a transference of population from the former to the latter; an expulsion of population from the historical city; a higher growth of the central Federal District periphery that doubles that of the whole entity; and an accelerated growth of the metropolitan periphery. The outcome of this repulsion from the metropolitan areas is that people look for alternative places, which are normally the peripheral areas". This scenario is now occurring in the Khalt El-Frjan district – an area considered to be the largest suburb of Tripoli (Al-Zzanan, 2002). The invasion of private or public land in Libya has occurred on two levels: illegal occupations are associated with labour and poorer groups of people (as in Mexican cities) through the creation of shantytowns or illegal settlements which lack basic services (Aguilar, 2008).This phenomenon is not new to MENA urban areas. A significant reason for the expansion of most Libyan

cities, especially Tripoli, is that migration into the shantytowns begins to transform them into legal settlements, such as the Abu-Sleem neighbourhood in Tripoli (west) (Al-Zznan, 2002).

Hence, we can infer three characteristics of the adjacent areas that represent functions by which peri-urban growth becomes an attraction of 'in-migration' from inside metropolitan areas and 'out-migration' from non-metropolitan areas. The location of settlement in calm areas promotes habitation and creates a suitable atmosphere in which to establish private projects and commercial activities. In ecological terms, the localised classification of adjacent areas is similar to that of rural areas. While it may not be possible to distinguish between the space of population growth and economic growth, technology has had strong influence in urban growth as seen in section 2.4.2.

2.4.2   THE INFLUENCE OF TECHNOLOGY IN SHAPING URBAN EXPANSION

The relationship between urbanisation and technology is one of mutual reinforcement (Mega, 1996). Technology is seen to lead to urbanisation, with successive innovation triggering major changes in the form and function of cities, their borders and also rural areas. The broad effect of technology that results in the development of transportation has an important role to play in the overlap of land use (Al-Zzanan, 2002). Hauser (1965) suggested that the spatial expansion of cities as well as the increase in the size of the population and the continual evolution of technology, including transportation and economic growth, improve the relationship between inner and outer areas. However, achieving sustainability does not squarely rely on the adoption of new technology (Haque, 1999; Jacob, 1994; Reed, 1996; Youssef, 2007), but changes in the interactions of the ecosystem of socio-economic and political environment.

Technologies developed nowadays have evolved to be highly productive in terms of urban growth. Hence, whilst attracting unprecedented numbers of people to cities, they have led to the city becoming an undesirable place to live. Thus, the solution will be expansion at the expense of the formation of suburbs, which allowed people to live in a reasonably pleasant location away from the pollution and poverty of the inner city, while continuing to work in economically flourishing urban areas. This period of urban evolution represented the start of the decentralisation growth that characterises cities today (Gillham, 2002). Meanwhile the transportation system characterised by a highway road network that crosses the rural area and connects with metropolitan areas, supports the expansion of housing and makes it easy for many businesses to locate themselves in remote office parks far from conventional places of work (Behan *et al.*, 2008). However, advancing and encouraging transportation technologies facilitated this separation between the place of life and the place of work. For example solar-powered or electric transport technologies not only reduce carbon emission, but are cost effective in maintenance and fare. It is common for there to be ribbon patterns of growth along automobile routes, and these patterns are still clearly noticeable through the extension of mixed shops along streets, and the grid patterns of nearby feeder streets (Gillham 2002). So, urban growth expands parallel to roads to create ribbon patterns, as is the case with most commercial settlements in Libyan cities, which are widely spread.

MENA countries have relied on modern technology to modernise their traditional societies, which produced considerable transformation in all aspects. Dubai is a classic example of how oil capital has changed the traditional settlements to modern patterns (UN Habitat, 2009). The creation of new towns such as Burayqah in Libya and Al Jubail in Qatar, are both associated with the oil revolution. These are the kind of towns

that emerge due to the quest for industrialisation and modernisation (Grill, 1984). Also, Hernandez Moreno (2002) argued that the challenges of urbanisation are harder and technologies must create solutions to the different "pressures" that might affect the path to attaining sustainability such as: land use, construction and building (materials, planning and design applied to urban development and sustainable), urban transportation, management of the waste of the city, quality of the air, sustainable energy and sustainable management of water. In this regard, Layzer (2008), Myllyla and Kuvaja (2005) and Zavadskas *et al.* (2005) have argued that sustainable urban development alternatives have to be assessed taking into account economic, legal, environment, education, political, institution, and social, management, cultural and technological aspects. The conclusion to be drawn from Abubrig (2002) and Zavadskas *et al.* (2005) is that sustainable urban development should not only focus on the development with regard to the growth in the technology and global markets, but should also assimilate cultural and ethical aspects that will provide room for future generations to incorporate changes that meet their requirements.

2.4.3 ECONOMIC ASPECTS OF URBAN GROWTH

Economic progress can be measured in terms of citizens' welfare and their ability to pay for goods and services. Thus, economic policies in most countries tend to focus on the increase in the production of goods and services that generate individual and national income. Reducing inflationary trends and unemployment figures are among the important economic policies of most nations. These concepts are based on the modern mainstream neoclassical economics approach that focuses on prices, outputs and income distribution. However, neoclassical economics ideologies and assumptions have been challenged. One of the most recent criticisms is that humans have other hierarchies of

needs for their development beyond goods and services (Alkire, 2002). At the macro-economic level, research undertaken by the World Bank has suggested the role of international trade and globalisation in differentiating the attainment of urban growth rates among nations (World Bank, 1993).

It is important to note the fact that, as mentioned earlier, before the discovery of oil Tripoli's population did not exceed 30,000 people; however oil brought a form of prosperity to the city. With the discovery of vast oil deposits in the second half of the last century, the oil states commenced enormous investment programmes intended for general socio-economic development. There was significant economic improvement in most of the MENA countries, which resulted in wide-scale development investments (Al-Buainain, 1999). In addition, through national development plans, most of the countries began to invest massively in new infrastructure such as educational institutions, hospitals and roads. Also, housing problems were resolved by providing free land and allocating the finance needed for property development, which eventually helped to increase the size of urban centres (Al-Buainain, 1999). In order to improve the performance of public enterprises and also as alternative orientations of the economic approach, the present economic development strategy in Libya seeks to gradually achieve the privatisation of commercial services, activities of construction and small and medium size industries, as well as refocusing on regional and sectoral development (United Nations, 1996). Environmental aspects of urban growth now follow.

2.4.4 ENVIRONMENTAL ASPECTS OF URBAN GROWTH

Modern economic systems have recognised the need to manage available resources in a sensible way – because human welfare and development squarely depend on resource

availability and ecological services. Obviously, current realities indicate that simply ignoring the limits of our environmental resources means increasing the risk of undermining future existence. Al-Tellawy (1995) stressed that uncontrolled urban growth would affect the environment as well as result in desertification. This means that the loss of any type of land due to enlargement of urban areas is significant. For example, in America there is approximately 400,000 acres of major agricultural land lost to urbanisation every year. This has led to the devastation of the natural environment and the loss of many plant and animal species in the short and long term (Gillham, 2002). In this context, there is need to understand the significance of ensuring that the needs of the population are considered in the short and long term.

The need to protect natural resources is strongly underlined in the recommendations of various commissioned reports (Weber *et al*., 2007). These environmental resources are creating the life support essential for the present and future survival of humanity. Cities in some developing countries are not primarily suffering from an immediate lack of economic or/and environmental resources (Barbier, 1989). However, there has been inefficient distribution of resources amongst the residents due to corrupt power structures, powerless administrations and the looting of public finances under the previous regime. Despite Libya's abundant landmass, there is scarcity of suitable land for urban development and agriculture because of desertification and as a result of the growing rate of urbanisation, more and more other land use are turned into urban areas, without effective environmental management plans.

The promotion of environmental justice is an important dimension of social sustainability. This requires the fair treatment of everyone and in particular the

elimination of unfair discrimination based on age, gender, disability, race, sexual orientation and socio–economic status. The public planning policies of new Libya must actively strive to especially promote the position of those who are disadvantaged. In redesigning the transport sector (e.g. roads, pavements, buses and possibly rail), the authorities must ensure that, where practicable, the design minimises barriers to accessibility for all users -especially the elderly and those with disabilities. This is a response to the fact that public transport systems and public buildings have no provisions for disabled people.

Unfortunately, little attention has been paid to the issue of the environment, although the majority of MENA cities are confronted with environmental problems common to both developed and developing countries (Al Hammad, 1988). Despite the existence of urban administration departments of environmental protection in MENA states, laws concerning environmental preservation do not exist, and in many cases it is not stated which environmental protection activities fall within the responsibilities of the city administration. Moreover, MENA countries heavily rely on non-renewable resources or 'precarious resources' (Simone, 2004:198); particularly oil (Swilling, 2006). Meanwhile, some MENA countries authorities have adopted specific strategies to manage further expansion of capital cities to reduce population pressure. Some of them have attempted administration decentralisation, and established green belts around urban areas to preserve environmental space to prohibit construction on agricultural land (Oberai, 1993). In Libya, there are some procedures that have been taken in order to relieve the pressure upon Tripoli. The government promote the reverse migration to small cities by providing the necessary infrastructure in those cities, and rebuilding the structure of some sites inside Tripoli to limit city expansion and to protect open

agricultural land. A detailed analysis of urban planning and policy that follows must take into account the peculiarities of the MENA and the sustainability of urban areas.

2.5   PLANNING AND POLICY

It is difficult to separate the planning and policy processes of cities. At present it is almost impossible to distinguish between local and regional planning as a result of the overlap of areas between rural and metropolitan zones. Therefore, planning in Libya is a set of strategies that follow council coordination and urban development to organise geographical distribution in order to promote orderly urban growth (Alteer, 1999). Fainstein (1999) defined planning as the classification of space according to a philosophy and aims determined by those in power. Therefore, planning should take into account social, economic and urban factors as a single unit, and should be flexible to achieve various needs desirable to the people (Alteer, 1999). In this instance, there is now growing literature on 'insurgent planning' – the idea that in the developing world, informal community-led development might be quicker and more useful than large state-led interventions that come too late and are poorly focused on meeting the needs of communities in relation to the ways in which they actually live their everyday lives.

The aims of sustainable development are to take into consideration the existing life-styles, consumption behaviours and environmental awareness of population. However, capability and cooperation for urban growth through people's self-respect is considered by Naess (2001) to be more significant than mere planning. In this case, planners plan and execute programmes with no input from the people (who are the end users) whose opinion matters in the restructuring of their built environment. Urban planning has the ability to apply a sustainable urban development philosophy to present more affordable

housing, mass transportation, green urban design and mixed land use (i.e. compact design), so as to overcome rapid urban growth.

The challenges of sustainability will be different for urban planning in poor and wealthy countries (Parnell and Robinson, 2006). The main tasks of sustainable urban planning in rich countries are to improve the services standard, and housing and environmental problems, while in poor countries the focus is on the provision of basic infrastructure (Keivani, 2009; Keivani *et al.,* 2007). Under circumstances of rapid urban growth, the central challenge facing local governments is ensuring sustainable development and sustainable urban growth. Goals of sustainability for cities involve comprehensive planning to achieve permanent and sustainable urban development. Therefore, cities are attempting to reach sustainability goals through various policies and strategies. There have been many local efforts to ease and encourage movement towards making more sustainable societies (Bostrom, 2003; van Tatenhove, 2003).

Scientific planning was first applied in developed countries. In the UK, the first town planning was conducted in 1909 and concentrated on addressing health and housing inequalities (Planning Portal, 2012). At that time two factors were considered to be the most significant: disease and poor health, whereby the lack of sunlight had serious consequences in the densely packed buildings and the shortage of clean water along with insufficient sewerage and drainage had led to poor housing facilities (Thorns, 2002). In the American Planning of Communities Act of 1921, a strategy was established regarding the needs of human settlements and how they should be planned to create suitable, healthy and beautiful places in which to live (Talen, 2005). At that time, planning existed to create alternate solutions to urban issues. As Thorns (2002)

clarified, planning continues to seek legitimacy through technical skilfulness and scientific expertise. It is based on the idea of creating logical and systematic plans for urban evolution. Madanipour (2006), in his description of planning in Tehran, shows how the city has developed in volume and complexity to such a magnitude that its spatial administration desired additional means, which resulted in the complicated growth of a municipal organisation and in the development of a comprehensive plan for the metropolitan area.

In Arabic–Islamic cities, the main reason for developing built-up environments is the inhabitants. Cultural diversities, as well as social and economic factors, play decisive roles in ordering and forming urban areas (Mubarak, 2004). Libyan cities are looking to increase the exchange values of urban land use by promoting and sustaining urban development. From the 14th century to the beginning of the 20th century, Libya was controlled by several civilisations: Islamic, Italian and, in even earlier history, Phoenician, Carthaginian, Greek, Roman, Spanish, Vandal and Byzantine civilisations. As a result, urban planning and the form of most Libyan cities is deeply influenced by external ideologies and planning methods from foreign countries.

The PolService[1] report on Libya in the 1980s outlined a programme for the future development of the region that resulted, in general, in the rapid growth of population and a policy of socio-economic evolution. Within the all-inclusive planning operation, analytical tools, pointers and methods are taken to be appropriate. Its features comprise the notion that preparation should be effective and maximised. Success is probable if

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[1] * PolService is a Polish company which prepared a study of the whole of Libya's development plans.

certain prerequisites are met, such as the acceptance that the best way to approach matters may be confined, and recognition that thorough thought is a serious contribution to the implementation of any planning agenda, as well as an appreciation that the possibilities for planning are wider and more extensive than is usually thought (Landry, 2008). This indicates that even when all appropriate measures are taken in planning, it will be futile if other human factors are not extensively studied and integrated into planning principles.

Urban growth processes are not independent from prevalent social customs and traditions, and they are created by a culturally structured administrative order, which dictates the nature of urban processes of decision-making. However, to achieve sustainable development, planning is supposed to make use of both expertise and ordinary people's knowledge and consist of stand points from environmental, technological and social sciences. The high rate of urbanisation poses a challenge to infrastructure and public services. It is a challenge given the accumulation of un-serviced and under-serviced populations, and the rising pressure on the fragile environment from urbanisation in areas such as Enjela and Khalt El-Ferjan. Another major challenge is the very high proportion of informal housing, reaching up to 40 per cent in some parts of the MENA region, generating social pressures and connecting to opportunity of economy for lower income groups. There is also the need to focus on water scarcity and quality, coastal and air pollution, land degradation and desert encroachment, waste management, climate change, and standardise weak environmental institutions and legal frameworks.

The decentralisation agenda has not taken place in some developing countries, so urban planning decisions are still made by central government (UN, 2009). However, urban planning needs to find ways to sufficiently manage the urban growth process as a whole without exceptions. Myllyla and Kuvaja (2005:230) believes that: "the root cause of cities' environmental and social problems lies in a particular decision-making structure and political culture, which has historically fostered decisions that are based merely on self-interest rather than public interest". As a result of Libya being a huge country, in some cases the planning has essentially been forced by the road network. Sometimes, the importance of trade and business networks should be recognised in terms of urban decision-making rather than decision-makers, as is the case in Khlet-El Ferjan, in the suburbs of Tripoli (Al-Zzannn, 2002).

Having considered physical, socio-economic and technological aspects of urban growth in MENA, the following section introduces some of the different theoretical approaches to the understanding and measuring of urbanisation. Particular attention is given to the forms of explanations on urban growth that are within the context of this research, which includes, the whole city, the ordinary city, Le Corbusier and the garden city movement.

2.6   URBAN GROWTH MODELS

The idea of the 'city as a whole' describes various attempts to understand whether a city should be viewed as a physical, economic, social, cultural unit or a collection of interdependent neighbourhoods and communities. It is a feature, in particular, of nineteenth and twentieth century utopian urbanisms that conceived the 'whole' of the city and sought to design 'whole' cities from scratch – e.g. the 'Garden City'

movement, Le Corbusier, and more recent theoretical considerations of the ordinariness of (all) cities. The argument presented in this section draws from these past planning models, which can be used today to improve the quality of Libya's contemporary built environment, and to develop the framework and mechanisms necessary to allow cultural identity to be reflected in the architecture and overall built environment, using Islamic urbanism principles in its entirety.

The 'garden city' movement was founded by Ebenezer Howard, who was trying to resolve opposition between town and country, because of extreme provincialism and a lack of society that existed in the countryside. Howard's original conception of the 'Garden City' can be seen in his book, *Garden Cities of Tomorrow,* published in 1898. In the 'Garden City' plan, he demonstrated, in pictures and diagrams, how a model garden city might be realised, emphasising the importance of a permanent girdle of open and agricultural land around the town. The ring and radial pattern of his imaginary garden city was not only favoured by planners because of its perceived superiority from both engineering and architectural viewpoints, but also for its vision of planned, self-contained communities surrounded by green areas and parks, containing proportionate areas of residences, industry and agriculture. By so doing, pollution, overcrowding, and chronic housing shortage suffered by urban working-class populations would be minimised.

Indeed, the spread of Howard's garden city concept proved to be an important development in the history of modernist strains of urbanism, as they took inspiration from and reacted to the garden city movement. The movement spread the most in Germany; other countries that relied on the garden city concept to develop their cities

include the United States, England, Peru, Brazil, Argentina and Australia – so far there is little documented evidence of these concepts being adopted in MENA. Garden city principles greatly influenced the design of the post-colonial capitals of New Delhi and Tel-Aviv. Most of them have, in contemporary times, devolved to commuting or satellite towns, which differ from Howard's vision of an ideal society (Fishman, 2012). For example, Schrader (1999:408) concluded that the 'Garden City' movement proved incapable of effecting any great change in New Zealand's urban morphology, most significantly where the suburban pattern continued apace with only piecemeal reference to garden city planning ideas. In recent times however, the influence of the garden city movement has waned because of improved economic conditions and a public reluctance to embrace the movement's social agenda (Schrader, 1999:395). As a result of the economic boom during the mid-1960s and early 1970s, an acute housing shortage due to increasing population led to massive public housing projects in Libya, in a similar manner to the garden city movement. This scheme was to be the closest Libya came to realising the garden city ideal, because of the initial way houses were developed in the city of Tripoli, although without taking into account the socio-cultural and climatic aspects of the local Libyan environment.

Inspired by garden city movement, Le Corbusier was the leader of a modernist art and architectural movement that sought to create better living conditions and a better society through the provision of adequate and affordable housing. He thought that industrial housing techniques led to overcrowding and a lack of a clean landscape. What was needed was a new architecture that would solve the housing question and avert revolution. As Teige (2002:5) presumed: "Le Corbusier thinks that change can be accomplished without revolution and without the abolition of private property. Instead,

he answers his own question ('architecture, or revolution?') with the slogan 'architectural revolution'". This model was useful to urban real estate development post World War II because they justified and lent architectural and intellectual support to the desire to destroy traditional urban space for high density high profit urban concentration, both for commercial and residential uses.

At the same time, Le Corbusier's emphasis on the place of nature, sunlight, and clean air makes an important contribution in the transition toward the revolutionary urbanism of Russia during the post-war construction era. Indeed, Le Corbusier claimed that the whole city is a park where the natural environment had to be integrated into the modern city, for reduced environmental impact and health. In essence, the garden city movement and Le Corbusier's model are merely strategies to ensure the maximum benefit of nature in cities. This is contrary to Hou's (2006) ecological urbanism that argues for a more holistic approach to urbanism by establishing new ethics and aesthetics of the urban without necessarily disturbing nature's pre-established harmony (see Fishman, 2006 for an extensive discussion of Le Corbusier's Radiant City, resilient cities and the need for cities to be resilient to climate change and any other potential shock or disaster).

The ordinary city is one of those principles that tried to provide an answer to the question of idealness of the city of the twentieth century. Amin and Graham (1997:411-412) argue that: "there is much confusion and ambivalence about what the 'city' is and what its specific assets are likely to be – as a place and as an arena of representation – within the context of global economic, technological and cultural shifts". An ordinary city gives a citywide viewpoint, appreciative of the complexity, multiplicity and

diversity of all the aspects of city, and to keep the city as a whole in view that have to tie as one the objectives of economic growth and redistributive urban policies (Amin and Graham, 1997; Robinson, 2006). Ordinary cities differ from categories of global/world cities and earlier development interventions in cities. This provides the opportunity to see cities as 'ordinary', and to take into account the challenges of the complexity and diversity of each specific city's economic activities and social relations. It focuses on addressing the complicated mutual-relations of the complex economic diversity, political constituents and social groups that together come to determine the future of their city. Rather than hierarchising and categorising cities on the basis of a small part of the economic activities – such as Le Corbusier – that circulate through or settle in them, the ordinary city proposes to work with inventive co-existences based on social relations and economic diversity (Robinson, 2006). To see a city as ordinary is not only to see a city as a whole, but could provide an insight into how cities can be planned for a sustainable future. Furthermore, the 'ordinary' plays the decisive role in defining the relationship between modernity, development and the city.

In an attempt to expand the 'ordinary' city approach, the 'city as a whole strategy' was proposed in the mid-twentieth century to understand whether a city should be viewed as a physical, economic, social, and cultural unit or a collection of interdependent neighbourhoods and communities. Fairbanks (1998) and Wilson (1998) were the first to enrich contemporary scholarship on how civic leaders and government officials, among others, conceptualised the city, and how their thought affects individual behaviour. The whole city strategy, regardless of the planning paradigm applied, emphasised the "precedence of the needs of the city as a whole over the wants of particular populations, neighbourhoods, or other special interest groups" (Fairbanks, 1998:3). In his book

entitled *For the city as a whole – planning, politics and the public interest in Dallas, Texas, 1900-1965*, Fairbanks dealt with Dallas and efforts across Americas at making the city as a whole, as against meeting individual needs of the city inhabitants. He also described how a few people had too much power and control over the city's development and how it was too easy to neglect the special needs of the poorest groups and neighbourhoods. The approach has not advanced social justice even though, on several occasions, task forces and leadership groups invoked the idea of the good of the city in calling for actions to improve race relations. However, it extends our understanding of the actions of planners by linking their definitions of and responses to urban problems to their perception of what the city was or could become.

Because of Libya's recent history, Tripoli, Benghazi and other cities have been regarded more as sites of state policy intervention than as 'whole' places in their own right. In other words, what I am seeking to draw together here as an HIU has been sidelined in favour of Ghadaffi's internal and international expedient 'realpolitik'. If Tripoli as a city was conceptualised as a real civic entity of inextricably linked parts and functions, Ghaddafi's regime would have responded to its problems differently. This was not so, because they have viewed and conceptualised the city of Tripoli as nothing but a sign of financial power and the embrace of modernity. I therefore contend that changing priorities in public policy can best be understood by linking them to the changing definitions of the city. There is no better time to change the city than now, as the country is undergoing structural political revolution and social re-orientation, just as Howard, Le Corbusier, Fairbanks, Robinson and Amin and Graham made or proposed radical reconstruction of the cities that would solve not only the urban crisis of their time, but the social crisis as well, albeit each with a different emphasis.

The very wholeness of their 'whole city' ideals demonstrated their convictions that the moment had come for comprehensive programs, and for a total rethinking of the principles of urban planning: a planning paradigm that would combine the 'city as a whole' approach with sensitivity to the rights and needs of individuals (irrespective of their nationality or racial/ethnic groups) and the environment, that would provide serenity for healthy human dwellings. Similarly, the ordinary city view would offer both a comprehensive and an alternative perspective of the city for local policy makers. The challenge now falls to local planners to adequately solve problems through the formulation of appropriate planning policies based on local conditions and citizens' participation (Legg *et al.*, 2008). In the past years, crucial urban discussions were made within a pluralistic political structure in which no one individual or group had total knowledge or power, and in which, consequently, the decisions made could best be described as disjointed or sectional. In such process buildings spring-up illegitimately, physical infrastructure is being installed haphazardly and the environment is being polluted (see details in Chapter Six).

Bonine (1997) and Scholz (1997) have documented that the Gulf States in the MENA region have shifted from a horizontal tribal-based system to a vertical class-based one where marginalisation of the population is based on class distinctions. If you look at the Libyan people, they all speak Arabic and believe in the same religion (Sunni Islam). But the horizontal tribal-based system of social distinction by ethnic group has not shifted in Tripoli despite its exposure to globalisation and the influx of African and Asian in-migrants. Ghadhafi would not have made several attempts to destroy the power and influence of tribes and the tribal leaders of the cities if he had applied any of the whole city principles. Tribal affiliation simply remained the main source of allegiance

(Stewart, 2001). For example, after the 1969 military coup, he established Tripoli as the capital of Libya and subjugated Benghazi, and he also used his authoritarian regime and the country's oil wealth to control or co-opt Libya's tribes, many of which belong to his and other minority groups. Conversely, the city by its origin is a concentration of heterogeneous old and new populations with diverse backgrounds – professional, social, ethnic, local, national, regional, language, cultural, generational, gender, – whose individual or collective interests must be incorporated in planning (Sennett, 1992).

The Holistic Islamic Urbanism (HIU) approach would extend the 'city as a whole' approach to cover gender and cultural affiliations, remedy the limitations of whole city approaches, and provide convergence for the complex ethnic divide promoted by the Ghaddafi regime. The on-going 'Arab Spring' is an offshoot of the sharp social differentiation made by the ruling class, which undermines the rights of the poor or disenfranchised members of the society. An HIU while preserving the heterogeneity of the city, also views the city in accordance with Wirth's (1938:3) assertion that: "if the city is the product of growth rather than of instantaneous creation, it is to be expected that the influences which it exerts upon the modes of life should not be able to wipe out completely the previously dominant modes of human association". Stewart (2001) and Good (2003) substantiated this view by observing traditional Islamic cities as satisfying human needs more sensitively, be it culturally, economically or socially, and stressing the importance of being more ecologically adaptable to the arid climates of the MENA region. In this manner HIU has expanded the scope of the garden city, Le Corbusier, the whole city and the ordinary city propositions in a way adaptable to the peculiar local conditions of MENA.

Furthermore, Omer (2007:61) posits that: "activities which the people engage themselves in settlements, especially urban ones, is what we call cultures and civilizations but which vary by reason of the principles and values on which they rest, as well as by reason of the objectives intended to be thereby achieved". This description squarely fits the meaning of a Madinah – a prototype Islamic city – a term derived from the word 'tamaddun', which means civilisation. An example of a typical Medina across the MENA region can be found in Chapter Five. The creation of decent houses and neighbourhoods, in line with Le Corbusier's housing as a remedy to revolution, is a societal duty that must be integrated in HIU: failure to do so becomes wrongdoing and undermines the Islamic dictum of man's vicegerent on earth (Qur'an, 2:30-33; Omer, 2007). This assertion simply defines the provision of housing as an obligatory function of the state, which should be planned and designed in such ways that individual, family and societal values are upheld and advanced (Ehlers, 2001; Stewart, 2001).

As stated earlier, one of the limitations of the 'city as a whole approach' was its inadequate attention to social justice. For example, David Harvey's *Social Justice and the City* is perhaps the most widely cited work within the field of geography. Having analysed core issues in city planning and policy – employment and housing location, transport, concentrations of poverty – he asserted that geography could not remain objective in the face of urban poverty and associated ills. Based on his inquiry, he established the relationship between social justice and space. Islam also frowns at discrimination, prejudice, wrongdoing, double standards, disunity and conflict, and promotes justice, righteousness, equality, unity and brotherhood. The Quran (5:8) states that people should act: "... with equity, and let not antagonism of a people provoke you to not do justice. Do justice; that is nearer to piety." In this instance, Tripoli's urban

renewal was designed without drawing from the suggestions made by Harvey. This is in addition to putting these important religious and cultural principles into account. It is no wonder that there is reported dissatisfaction with the current planning paradigm because it has failed in housing structure, environmental management, governance, and in gender issues. Chapters 5-7 contain detailed analysis of housing, culture and gender in Tripoli.

In terms of gender, for example, the inclusion of women in public policy and political activities would ameliorate gender polarisation. Islam and tradition guide the position of women in Libya, but their rights were limited by the ruling powers of Ghaddafi. That is why the country ranks 91 below Kuwait (71) and Egypt (82) out of 102 countries sampled for gender equality by the Organization for Economic Co-operation and Development (OECD, 2012). Islamic feminism has given women a role in the political mobilisation in Libya's male-dominated societies, as anywhere else, thus shattering the myth that Muslim women's lives are no more than their homes and their roles nothing more than child minders and the kinship circle (Golley, 2007). Even though the dangerous environment during the past regime served as an automatic deterrent for ambitious women, there is hope, now that the government has been dismantled: they will enjoy a safer, more enabling environment and freedom (under a holistic Islamic urbanism approach) to realise their political aspirations. As Moghadam (2003:6) puts it: "Why Muslim women lag behind Western women in legal rights, mobility, autonomy, and so forth, has more to do with developmental issues—the extent of urbanization, industrialization, and proletarianisation, as well as the political ploys of state managers—than with religious and cultural factors". Therefore, gender inequality and the status of women in MENA cannot be totally attributed to Islam. Introducing Islamic

thoughts in the urban environment of today's Libya's is the most important issue for Libya's future. Islamic urbanism can be seen as a modern urban movement that is metaphysical, religious and spiritual, in addition to Anglophone urbanism theories.

2.7   SUMMARY

The concentration of the development of services and infrastructure, population growth, immigration (rural – urban, internal – international), urban sprawl, encroachment into agricultural land, and unemployment can impact upon the environment of the city to a substantial degree. The planning for sustainable development and land use policy in developing cities (in the MENA) has differed in a number of ways from that in Western cities. To understand these differences, certain theories were examined according to the conceptual framework of the research. The theoretical discussion concentrated on the assessment of different aspects explaining the issues of sustainability and urban growth in the context of the developing countries. Modernisation theory is more applicable and widely used in the developing countries of Africa and in West and East Asia. The MENA region has adopted both traditional and modern economic and demographic transition theory, and is transitioning from a rural to a modern life-style. The dependency/world system theory was discussed on the basis that through this theory developing countries are made dependent on developed countries. The main aspect of sustainable development was discussed within the urban context, and the essential requirements needed to achieve sustainability in the ever-growing cities of the MENA, and Libya in particular.

There seems to be a complex interaction between Tripoli and its inhabitants, and technological advancement: increased wealth from oil and migration have resulted in

the city growing to a great size. The morphology of the city is changing with horizontal expansion creating different patterns of urban shapes and covering the adjacent areas of the city. Tripoli has adapted to modern construction with the planned centralisation of places of residence, industrial estates and centres of commerce. These circumstances have generated a complicated interaction between the extension of the city into adjacent areas and the strong desires of people to leave the city looking for a better life. The population increase and in- and out-migration have the important role of having the most disturbing environmental influences. Furthermore, the result of non-compliance to the planning criteria has led to the establishment of haphazard settlements, in the periphery of metropolitan area, and in particular on the street network. Thus, there is a possibility to suggest that sustainability and development questions are multidimensional issues, combining socio-economic, political, cultural and environmental aspects of the society.

Effective as whole-city rhetoric was on some matters, it proved to have limited range in problem solving especially for those whom city-as-a-whole historically meant exclusion. In view of the peculiar situation of Tripoli, ravaged by a dictatorial rule in an undemocratic setting, these limitations suggest that the whole-city approach may not solve all the problems, particularly as the concept was silent on religion and some cultural issues that govern urban spaces. The modern city approach used in the development of Tripoli was shaped by more global forces such as population increase, rural-urban migration, economics, politics, and the petro-dollar, with little or no recourse to tradition and religion. Using a modernist approach, the architecture and planning concepts placed emphasis on the physical structure rather than the spaces created by it. HIU can be viewed as an extension of the 'city as a whole' strategy as a

post-Ghaddafi urban planning approach that would satisfy human needs more responsibly and sensitively, while being more traditionally compatible and ecologically adaptable to the environment in a more comprehensive manner than the ordinary or 'city as a whole' approaches. I strongly argue that Holistic Islamic Urbanism would at the very least redefine policy makers' definition of the urban as a spiritual, physical, socio-economic and cultural space driven by the triple concern of privacy, community and justice. While the integration of human and environmental factors into planning is advocated for adoption in Libya (under HIU), it can still borrow from the concept of the garden city, Le Corbusier and the ordinary city to make a 'whole city' approach. The subsequent chapters of the thesis therefore analyse the history of urban growth in Libya and, in Tripoli, identify the major causes of urban growth, and analyse the experiences of peri-urban settlements in Libya. The findings are synthesised to reveal a picture of urban growth and sustainability in Libya. The next chapter discusses the methodological approaches used in the study.

3 RESEARCH METHDOLOGY

3.1 INTRODUCTION

The previous chapter argued for the adoption of holistic Islamic urbanism (HIU) because current Libyan urban growth principles rely more on modernisation and economic factors, and not policies that fully integrate religious, socio-cultural and political principles appropriate to urban life in Libya. The literature revealed that there was insufficient study about the drivers and consequences of urban growth to peripheral areas. As such, this study is the first of its kind to adopt a mixed-methods approach to examining urban growth and the experiences of residents in peri-urban areas of western Tripoli. To achieve this, a range of methods was adopted to collect as much information as required for the study. The aim of this chapter is to justify the choice of methods as consistent with HIU. In this context, the chapter includes detailed discussions of the process of designing and conducting the empirical research, including the sampling techniques, methods of data collection, the survey, interviews and analysis of data. In addition, it explains the remote sensing techniques adopted. Ethical issues and the limitations of the study are also presented.

It is important to point out here that the methods were designed and the fieldwork was carried out before the civil war, and could not be amended during the war, but that they have been augmented since the war, by both my own reflections, and my communication with the Libyan Diaspora in the United Kingdom. The materials derived in between these periods have been integrated throughout the thesis. The chapter is structured into seven main sections, excluding introduction and summary. The second section deals with the designs developed to meet the aims and objectives of the study.

Section 3.3 describes the procedure behind the choice to study Tripoli's peri-urban areas – Enjela and Khalt El-Ferjan. Section 4 explains the various techniques of sampling and collecting data. Both primary and secondary sources of materials are used in the study to measure and understand people's experiences of urban growth and are contained in this section. The analytical techniques employed for the data collected in section 3.4 were explained in section 3.5. It also presents remote sensing techniques and how they were used to evaluate urban change overtime. My involvement with the Libyan Diaspora was briefly examined in section 3.6. In section 3.7, ethical issues are also reviewed, in addition reflecting on my position as an insider conducting fieldwork in home country. As with any research, there are limitations and these have been outlined in section 3.8.

3.2   RESEARCH DESIGN AND PROCESS

Social science research uses a structure upon which data collection and analysis rely. This research was therefore designed to satisfy the aims and objectives set out in section 1.5 and in line with HIU – taking into account social, religious, cultural and environmental aspects of urban development. The design provided guidance in the process of collection, analysis and interpretation of data relating to urbanism in Libya. This design, in essence, structures the collection of evidence that answers research objectives itemised in Table 3.1 as unambiguously as possible (Kitchin and Tate, 2000). Similarly, Yin (2003:21) describes research design as: "the logical sequence that connects the empirical data to a study's initial research questions and ultimately, to its conclusion." Each of the four research objectives in this study was addressed using a selection of one or more methods. Table 3.1 contains the aims, objectives and methods

used in addressing each objective, but with considerable overlap in the data gathering

process.

Table 3-1 Research objectives and methods used

Aims	Objectives	Methods	Location
To contribute to urban geography of the MENA region and explain the distinguishing elements of sustainable urban growth in Libya	To conduct a survey of literature on the causes and consequences of urbanisation, and the factors to take into account to make the MENA cities sustainable	Documentary analysis: Academic literature survey in books and journals. Official as well as unofficial information in the form of technical reports, newspaper extracts, government pronouncements and reports.	International, regional and national: particular reference to urbanisation in MENA
To explore the rapid urbanisation of Tripoli and explain the catalyst for urban sustainability	To analyse Libya's patterns and processes of urbanisation and to determine whether current approaches are sustainable or not	Quantitative: 2002 and 2010 satellite database obtained from government. Interviews and questionnaires	Libya Tripoli Case study
To assess sustainable growth in Tripoli as well as to determine the shape and structure of urban growth to adjacent areas	To conduct a case study of urbanisation in peri-urban areas of western Tripoli and document residents experiences of urbanisation and modernisation	Questionnaire Interviews	Tripoli Case study areas
To develop a framework for planning in the new Libya	To examine the various literatures and the experiences of residents regarding current form of urbanisation	Documentary analysis Interviews and questionnaires	Libya

In order for a researcher to achieve the aims of a study, it is important to select the

appropriate methodology from the two broad types of methodology: quantitative and

qualitative. Qualitative methods include interviews, observations and analysis of

archival documents, while the quantitative method includes experiments and

quantitative surveys with the use of statistics and mathematical techniques (Osborne,

2008). A mixed method approach was adopted for this research using different approaches so as to gain a holistic perspective of the study, as opposed to relying on one particular perspective that would reveal a narrow view of the complex issues discussed in the research. While the quantitative method was used to collect survey information and data from satellite images, qualitative methods such as interviews acquired in-depth opinion relating to attitudes and experiences of peri-urban residents and government officials. According to Hart (2003:28) any one or a combination of the two methodologies:

> "...facilitate the collection and analysis of data. It provides the starting point for choosing an approach made up of theories, ideas, concepts and definitions of the topic; therefore the basis of a critical activity consisting of making choices about the nature and character of the social world" (Hart, 2003:28).

It was believed that the best approach for investigating urban growth in the Libyan environment was to design the study around a methodology comprised of both theoretical and empirical approaches. The theoretical approach is based on a review of relevant literature, and gives an overview, discussion and analysis of urban geography in the MENA. The empirical approach explored the real life experiences of urban growth in a particular context (Tripoli, Libya). In this sense, the major data and information were collected from local residents of Enjela and Khalt El-Ferjan, planners, decision makers, researchers, academics and other participants associated with urban development. On one hand, remote sensing data was used to compare two periods and two areas to provide additional valuable information about the change to support the above methods. On the other hand, the questionnaire data and interviews carried out on locals, experts and decision-makers provided the basis for deeper investigation to assess sustainable growth in

peri-urban (West and East) Tripoli, as well as to evaluate the role of social, cultural and economic factors and their effects on the process of growth on the ground.

For the remote sensing data, I was able to ground-truth what my results have shown during the second fieldwork. To ensure that the evidence and findings emerging from Tripoli city were valid, the theoretical framework of the study discussed in Chapter Two guided the discussion, analysis and interpretation of the findings. Furthermore, in order to be able to generalise the findings of the study to Libya in particular and the MENA in general, examples are drawn from other regions in the MENA and beyond.

The process consisted of five dynamic and continuous stages from the initial literature review to the writing-up of the thesis. The first stage was the review of the existing literature discussing urbanisation in the MENA, Libya and Tripoli. In the course of the literature survey, certain gaps were identified which serve as the research questions, and the aims and objectives of the research were based on the literature of urbanisation in the MENA. This essence of conducting the literature review is to use it as means to an end (Yin, 1994) – i.e. to understand what is already known, and to generate and develop important questions about the research and develop an appropriate theoretical framework for my research. Based on the outcome of the first stage, the research methodology was designed and developed in the second stage. In this stage of the study, the case study areas were identified. In the third stage a pilot study and full fieldwork was conducted. Some secondary data such as survey records and remote sensing techniques were collected at this stage. Furthermore, any individual or institution that would support the research was visited and information retrieved.

The fourth stage involved data preparation, analysis and discussion of the findings. This stage was divided into two phases. Phase one was data preparation, analysis and the presentation of results from the remote sensing images to reveal the spatio-temporal changes in land use of the study area. The second phase then classified the empirical data collected and selected the appropriate techniques for analysis. The results from the first and second phases were synthesised and categorised into key thematic issues and aspects. The final, and crucial, part of this stage included the presentation and discussion of the findings of the study. Chapters Four to Seven are dedicated to the findings and discussion. The fifth stage included summarising and drawing conclusions from both the theoretical and empirical findings. Chapter Eight of this thesis essentially contains this stage, and in addition highlights the implications of the research in the context of Libya and other MENA countries.

3.3   CHOICE OF ENJELA AND KHALT EL-FERJAN

This study focuses on the investigation of sustainability and urban growth in the MENA region. The rationale for selecting Enjela and Khalt El-Ferjan in the western and southern part of Tripoli to investigate urban growth in MENA is discussed here. The selected areas of study are located on the fringes of the metropolitan area of Tripoli. Tripoli lies at the western extremity of Libya on the Mediterranean Sea, on the continent of Africa. In terms of urban growth based on the analysis of Landsat image Thematic Mapper (TM), Tripoli's built-up area has increased from 10,536.7 ha in 1976 to 18,064.4 ha in 1989, and again to 26, 229.7 ha in 2001. The increase in the settlement area has accelerated and has led to the loss of farming land in areas surrounding the city (El-Tantawi, 2005). I decided to select two case study areas - Enjela area in the west and Khalt El Ferjan area in the south - to provide geographical range rather than contrast.

The two cases are in-depth studies that provide geographical scope in the detailed study of an example of the ordinary Islamic city.

In addition to geographical coverage, the selection of these case studies was based on three main criteria. First, unplanned urban growth is resulting in haphazard development towards the suburban areas. These areas of study are the most affected by the uncontrolled level of development that have taken place after independence, when Tripoli began to experience rapid transformation of the urban environment (see Chapter Five). Second, the increasing population (see Chapter Six) has caused serious socio-economic problems and increasing pressure on vulnerable agricultural land. For example, Enjela used to be an agricultural suburb but is now mainly populated by people seeking to accommodate their families. The third reason was based on my previous work and experience: I have full knowledge and background (through cultural and personal links) of the area gained during the period of my Master's Degree in Libya where I conducted extensive research on land use change. In particular, this background enabled me to obtain the required data – directly from ordinary people through the questionnaire, and through interviews conducted with local planning and agricultural experts in the two study areas. In addition, my existing knowledge and my personal links has facilitated my gathering of the required secondary data (e.g. census data).

Finally, investigating the changes in two contrasting areas highlights more clearly the different drivers which cause change than would the study of one area alone. Comparative studies are more effective methods for analysing change as more general versus the site specific drivers can be identified. It is, therefore, crucial to understand that certain socio-economic, cultural, political and environmental factors have affected

land-use change in each case study area. Having selected Enjela and Khalt El-Ferjan as case studies, the following section explains the research instruments used in gathering both primary and secondary data. This is followed by the procedure adopted in studying urban land use and land cover change.

3.4 METHODS OF DATA COLLECTION

Ghauri *et al.* (1995) noted that research techniques are primarily concerned with how data are collected. However, the reason why the data are collected can be determined by the research method employed. In this instance, to achieve the objectives of this study, a mixed method approach was adopted to collect both secondary and primary data. Figure 3.1 show that questionnaires, interviews, documentary analysis and remote sensing data are the research instruments which present different opportunities for obtaining as much information as possible on urban growth and sustainability in Libya.
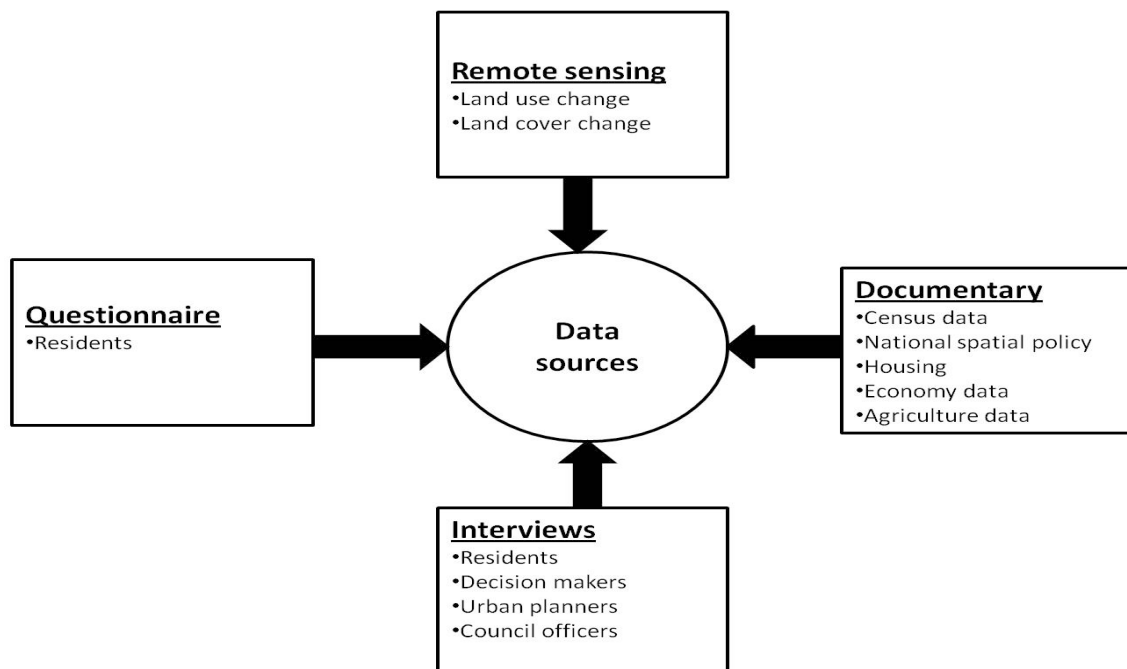
Figure 3-1 Data sources for the study.

In addition, I have augmented these sources with information (mid- and post-revolution) from the Libyan Diaspora in the UK, families and friends in Libya, and significant information from social media, such as Facebook, Youtube and Twitter (see O'Connor and Madge, 2012 on the use of internet for qualitative research). Relying on a typical case study, these methods are complementary and have provided a complete picture of the study area. Apart from the theoretical framework, the choice of methods also depends on logistics consideration, work plan and the peculiarity of the study area. The first phase of the fieldwork started in December 2009 to February 2010. During this period, I consulted some academic staff of Tripoli University (Al-Fateh University) familiar with urban studies to seek for their assistance in the design of the appropriate techniques. In the first instance, a pilot survey questionnaire was conducted prior to the administration of the formal questionnaires to ensure the clarity of the questions and to check their duration. This was followed by in-depth interviews (single and group semi-structure interview). The second phase of the fieldwork was conducted between June and July 2010 and it concentrated on the rest of interviews in two categories: people who have a position in decision making and local residents (especially women). Finally, photographs were taken to support arguments and presentations in the thesis. In addition, there are some secondary materials that were collected at this stage. The sections below explain the methods used in the study, including a justification of their appropriateness, starting with documents.

Before section 3.4.1, it is important to note that census data were an important secondary source of information and were used in this study to harmonise other methods of data collection. For example, population growth is one of the possible factors affecting land-use change (Chapter 6.2). Therefore, the use of census data is

imperative to track population growth in the two study areas during the last two decades. The main source of data used to investigate urbanisation processes was the questionnaire, which was complemented by interview and remote sensing images analysis. In addition, census data play a decisive role as further evidence of the extension of urban areas towards the adjacent areas of Tripoli. As stated in section 3.2, this study is itself a triangulated study.

First of all, secondary data was gathered from the published literature and primary data was collected by visiting the case study areas and some planning officials and consultative offices; interviews using questionnaires were also conducted. To obtain even more information, a combination of quantitative and qualitative methods was used to analyse the responses of the interviewees. Additionally, some of the questions were designed to be multiple choice and closed. Open-ended questions were used to obtain more qualitative material in the form of interviews with urban planners and residents, so as to provide me with rich data. According to Saukko (2003:23), studies that are involved in social, cultural and traditional inquiry among others combine different methods, sources and materials in terms of triangulation. The adoption of different sources and methods and integration for analysis strengthens the validity of the data and helps in overcoming bias (Bazeley, 2004).

Based on reliability and validity, Flowerdew and Martin (2005) further stressed that the content of the questionnaire must disclose the research question under investigation. That is why care was taken to make sure that the survey is measuring what was initially intended. Steps were taken to ensure the credibility of the research through following a number of procedures. The pilot questionnaire was designed and distributed to two

separate neighbourhoods in Tripoli. Oppenheim (1992) supports the idea of pilot study so that any weakness in the questionnaire would come to light. Since the questionnaire and interviews were conducted in Libya where Arabic is the native language, translation of the questionnaire from English to Arabic was an issue that was given serious attention. In the first instance, the questionnaire was translated into Arabic by the researcher with the help of two Libyans from the University of Leicester. Secondly, a translator with the School of Education, University of Leicester was used to corroborate the translation of the transcript into English in order to obtain "more response-able/responsible forms of translation" (Hutta, 2009:44). Lastly, section 3.7 contains the limitations of research methodology.

3.4.1 Documentary Sources

According to Yin (1994) documents and records are good sources of data and information, which can provide ideas about significant questions and also give basic information about field activities or subjects such as the one under investigation in this research. In this study, I sought out documents from numerous sources that provided desired information on urban geography, urbanisation in the MENA and the historical and modern contexts of urban growth in Libya. This technique was used to understand how processes of transformation and development have taken place in Tripoli over the last decade. Emphasis was placed on scholarly publications and materials from government documents and records, and municipality materials. These sources provided the research with valuable information on Libya's urban environment, with specific attention to Tripoli and how the city's social and physical organisation is organised.

Table 3-2 Key document sources from Libya

Sources	Document
Former Ministry of Urban Planning and Development	General people committee, UPA
	National Spatial Policy 2006-2030 Report by the UPA.
General People's Committee Libya	Code of legislation 1977-2002
Libyan Remote Sensing Centre (LRSC) Tripoli	Remote sensing data
Ministry of Agriculture, Tripoli Libya	Agriculture data
Ministry of Economy, Tripoli Libya	Economy data
National Bureau of Statistics Tripoli, Libya	Statistical Information
National Population Commission Tripoli, Libya	Population data
National Report for HABITAT in the Socialist People's Libya Arab Jamahiriya	Human Settlements and Housing Development
	Settlement data

The main sources of these documents were the Ministry of Urban Planning and Development, the Urban Planning Agency (UPA), the National Population Commission Tripoli, the National Bureau of Statistics Tripoli and the Libyan Remote Sensing Centre (LRSC) Tripoli top the list, but other departments, individuals and Tripoli University supplied a large amount of information for many aspects of this research. The most important of these data sources are the remote sensing image and the planning documents. Table 3.2 above summarises the major sources of documents from Libya used in the study. Furthermore, case studies of urban geography, maps and city planning documents have provided clear pictures of the current urban transformation of Tripoli.

Census data were an important secondary source of information and were used in this study to harmonise other methods of data collection. For example, population growth is one of the possible factor forces affecting land-use change (Chapter 6.2). Therefore, the use of census data is imperative to track population growth in the two study areas during

the last two decades. The main source of data used to investigate urbanisation processes was the questionnaire, complemented with interviews and analysis of remote sensing images. In addition, census data plays a decisive role as further evidence of the extension of urban areas towards the adjacent areas of Tripoli.

In each instance, access to documents was consented to by the organisation; however there might be some confidential materials that are not made available to the researcher that may unravel or conceal information. While some data were used straightaway, others have to be converted into a format that is suitable for analysis. For example, the researcher had to convert the satellite imagery data into a usable format using ERDAS. The outcome of the documentary analysis not only provided data and information, but also provided an understanding and identified key issues and aspects of urban geography of the region (the MENA) and the country (Libya). The next section is on the questionnaire instrument.

3.4.2 THE QUESTIONNAIRE METHOD

The reasons for using questionnaires are presented in this section. In social sciences and human geography projects there is total agreement amongst the researchers that questionnaires are the most widely used data collection technique, for collecting the data required, and also for gathering the data in a relatively precise way (Brace, 2004; Flowerdew and Martin, 2005; Robson, 2007). A questionnaire is a useful and necessary tool when conducting research of any kind. It consists of a set of questions with the intention of obtaining information relating to the topic. The design and layout of the questionnaire is one of the most delicate yet important tasks of the study. For instance, when seeking the necessary information the questions provided the correct and reliable

information required to reach a decision and put the researcher in a position to examine the theory. A good questionnaire construction is critical to the success of a survey (Peterson, 2000).

Furthermore, there are advantages to the questionnaire method, as has been mentioned. All of these factors motivate me towards using a questionnaire approach, though additional methods are used to cover any potential deficit. According to Lindsay, (1997), the sample needs to draw its responses from a selection of individuals who can be taken to jointly represent the organisation to which they belong, and also to comprise an adequate number of individuals, meaning that the desired outcome of the study can be satisfied. The art of designing a questionnaire consists of thinking about the research issue in terms of what the concepts mean and how the data will be analysed. Furthermore, the mode of questionnaire administration should be evaluated (Cloke *et al*., 2004). The questionnaire sections in this study will deal with the underlying motives behind the urban growth issue and apply suitable analyses such as descriptive and/or statistical analyses in order to obtain the optimum results. I found that handing out questionnaires to participants was the best approach in the Libyan context.

Table 3-3 Questionnaire and Interview instruments used to source data

Instrument	Gender				Total
	Male		Female		
	No	%	No	%	
Questionnaire	150	50	150	50%	100%
Interviews	30	86	5	14	100%

Source: Fieldwork, 2010.

The questionnaire sampling process

This study used a sampling strategy to find a representation of the case study. According to Smith (1990), the choice of sampling technique depends on the cost and the degree of accuracy required in the study. In this study, however, sampling was based on: 1) the local conditions of Libya, 2) avoiding a biased sample and 3) the time available for the study. In this instance, two methods of sampling were adopted: random and snowball sampling methods. The principles of random sampling were used to select respondents that filled the questionnaire survey. In this method, any household in Enjela and Khalt El-Ferjan had an equal chance of being selected for participation. This method was applied for one major reason. The key reason was that to gain a better understanding of urban growth in Tripoli, it was essential to generalise the sample by giving an opportunity for any household or individual to participate in the survey. This is to forestall any chances of being selective in the study because of the ethnic tensions and divisions that exist among Libyans.

The snowball sampling method was used to select individuals for interviews. In this regard, the selection of respondents was based on choosing one respondent as a starting point and then asking him or her to recommend other suitable respondents. This method has proven useful especially when interviewing government officials, decision makers and local planners (see section 3.4.3). Applying this sampling frame enabled me to focus on those who had considerable experience or a close interest in the research topic, as demonstrated by the staff of Tripoli University and UPA. In the random and snowball sample outlined above, a diversity of ages and level of education of the participants was taken into consideration. This plays an important role in ensuring that the aspirations of the study are achieved.

For 25 days starting at the end of December, myself and two assistants distributed around 330 copies of questionnaires to targeted respondents. This was against the initial plan of distributing 500 copies. The research assistants were local people educated to at least college level to assist in the distribution of questionnaire. The second reason was because their familiarity with the local environment helped grant me access in some cases. However, we discovered that due to time constraints we could not distribute all the questionnaires, but the remaining non-administered questionnaires have not affected the outcome (66 per cent response rate is a success in the Libyan environment). During the administration of the questionnaire detailed written information was provided about the nature of the research to participants. This number does not include pilot studies, so 300 copies were returned, thus giving a 90 per cent response rate out of the total sample. About 100 of the questionnaires were distributed to schools, and students took the questionnaire to their parents to fill in. As expected, the questionnaires were returned within a few days. This was considered positive, particularly in a social and cultural context such as Libya where people were resentful and mindful of the consequences of openly criticising the government or any of its agents. It was intended to increase the size of sample in order to increase the response rates, but this was not possible because of time constraints (see section 3.8 for some limitations of the survey). Access to data, time available for the study, background of respondents and the nature of urbanisation in Libya influenced the choice of samples.

The questionnaire administration

The administration of questionnaires was undertaken during slack times – in the mornings and evenings. On the one hand, a face-to-face method was employed to administer the questionnaires, and on the other hand, questionnaires were sent to

respondents and completed in absentia of the researcher. The implication of completing questionnaire in absentia is that some of the questions were not answered as much as those administered face-to-face. This is because some of the respondents are not able to ask questions about the questionnaire. However, some questions were attended to on collection from respondents. Before administering the questionnaires, intensive contacts were made either by physically visiting potential respondents or via telephone. Before the administration of the questionnaire, an introduction was given to communicate between the researcher and the study participants to ensure that it was administered to the targeted person. Adequate information was given about the research task in order to enable the participants to make informed decisions, and to request support from the participants, emphasising the need for honest and candid answers. In cases where I and the two assistants administered the questions, we provided clarification on any unclear questions. There were instances where unclear questions had to be phrased in the local dialect for them even to be properly understood, as the language of communication was Arabic. Those respondents that needed additional time were given sufficient time to respond and collection was conducted at a time suitable to them. In addition, comments and remarks not contained in the questionnaire but relevant to the study were documented in a field notebook.

The general idea of funnel questions (Peterson, 2000) was adopted to guide the questioning process from wide-ranging to specific approaches. This maximises the quantity and quality of information found whilst minimising the possible answer bias. Thus, the questions flow logically from one to the next for optimum results (DeVellis, 2003) using the following formats:

- Open-ended questions (to direct general attitudes and opinions about the subject);

- Closed questions (specific opinions about the phenomenon being investigated);

One of the key features of the questionnaire was using classification to establish the study participants' demographic and socio-economic position. It is placed in the beginning because more effort and thought is required when answering demographic and socioeconomic questions.

The questionnaire was divided into four sections and contains 22 simple questions. The first section contains personal information including socio-economic and cultural background. The second section focused on the economy and finally, the third section of the questionnaire contains open-ended questions about urbanisation and the influence of modernisation on traditional Libyan society. These questions are designed to ensure that a wide range of people will participate in the study. A sample copy of the questionnaire can be found in Appendix (A). The following section (3.4.3) discusses interviews conducted to complement the questionnaires – all aimed at making the research robust.

3.4.3 INTERVIEWS

One of the more prevalent and successful methods for collecting data is the face-to-face interview (Lüders, 2009). Scholars in research contexts such as social sciences have recognized the value of interviews as a data gathering technique in their analysis (Oppenheim, 1992; Singleton *et al*., 1993; Silverman, 2004). While some scholars like Briggs go so far from this to highlight that: "90 per cent of all social science investigations use interview data in one way or another" (Briggs 1986:1). Geographers are also adopting interviews in order to investigate social processes in geographical patterns (Longhurst, 2003). In line with these authors, interviews are another important source of primary

information used to complement both questionnaire and remote sensing data in this study. An interview is able to give relevant data about the subject under investigation by asking interviewees to converse about their lives, experiences and, most importantly, to understand the insights of the respondents. In this regard, some authors have looked at interview as a special form of discussion (Holstein and Gubrium, 1995; Silverman, 2004). Therefore, this part of the study will examine responses from interviews conducted in the study area with local residents, primarily aiming to gain an insight into what the residents think of Tripoli as a growing modern city.

Interviews in this case are semi-structured, designed for flexibility, whereby the researcher asks the questions in the context of a conversation (i.e. the interviewee talks openly but the comments are directed by the interviewer) (Margaret, 2003). Oppenheim (1992) argued that, when conducting interviews as a data collection technique, the most important determinant of both response rate and the quality of the responses is the subject's motivation. For this reason, it is important for the researcher to justify and explain how the respondents came to be chosen for the sample and why they should take part in this particular study. In this regard I sent invitations to more than 50 participants from different backgrounds. Selection of interviewees was carefully planned, particularly those working in government departments. The people were selected on the basis of being experts, local residents, or decision makers. Around 35 consents to conduct interviews were received, 16 of these interviewees are residents of Enjela and Khalt El-Ferjan, randomly selected based on their length of residency.

Respondents were interviewed on the subject through exchange of views between the researcher and the interviewees. This method gauged the opinions of respondents

towards changes in the areas of study, plus their suggestions for alternatives to the proposal if they have a somewhat negative opinion. Discussion with the local residents also centred on whether intensification in Tripoli is likely to be a long-term success or failure and how that could affect their livelihood. Issues surrounding their satisfaction with housing, infrastructure, and the current governance structure, and the state of the environment were also discussed.

In order to seek clarifications and find answers to certain ambiguities set out in the questionnaire, specific respondents were identified in government institutions because of their capability to provide facts about the implementation of urban policy, the problems faced and how those challenges can be resolved. If some of the problems of lack of execution of planning identified in the interviews remained unanswered in the interviews with government officials, this would significantly reduce generalisation of the findings. Thus, the remaining 19 participants interviewed were high-ranking government officials in various ministries such as agriculture, planning and transportation. In essence the aim of interviews with this group of people was to obtain information from certain people and as De Vaus (1996) suggests, to add value to the information already obtained, especially when high quality responses are required to supplement facts about the subject.

The time for interviews was designed to retrieve maximum response, and recording the interview was undesirable in some cases, owing to personal and cultural circumstances. In this instance, field notebooks and summary sheets were prepared prior to the interviews. The interviews were carried out in subjects' offices in order to gain a feel for the individual's environment and to gain access to additional information. It is

important to note at this juncture that responses given by government officials in particular are not only contingent on the specifics of their positions and their organisation, but more importantly on their trust in the researcher not to reveal their identity. It is also true that, for fear of molestation from the Ghaddafi regime, some questions were not answered satisfactorily, or certain information was refused. Also important is the fact that responses can change over time as situations unfold; for example, the recent uprising has brought some structural change in the administration of the city, so some information may have changed with the Transition Government in place.

Before conducting the interviews, participants were fully informed about the nature and purpose of research (detailed verbal information was provided). They were also informed that their participation was voluntary and that they could terminate it at any time. In terms of recording the interview, permission was taken from 30 participants, while five declined. Also, two participants specifically requested anonymity and confidentiality. Generally, in order to achieve the aims of the study via a semi-structured interview and to make the interviews successful, there were many steps taken into consideration in line with Helliar (2009), such as:

- The questions were organised in a logical order and grouped around themes, for example: general, theory, literature and research questions (i.e. to make sure all research questions have been covered). For example, the discussion with most interviewees focused mainly on the role of socio-economic, cultural and political factors that affects their living space and sustainable urban growth.
- Consent was obtained and interviewees were further asked if conversations could be taped. Additionally, notes were taken throughout – just in case.

- The researchers tried to be positive and complementary and made eye contact (not with female respondents), and where permissible shook hands.

- Build on points made by the interviewee and allowed them to expand on things that the researcher had not already thought of.

- All the interviews were conducted in local dialect - Arabic, as a result of the participants speaking Arabic.

Responses from the subjects contained more information, such as their feelings about their experiences of urbanisation and the modernisation process adopted in Tripoli's quest for global recognition. The process indirectly allowed the respondents more scope to elaborate openly and in a relaxed manner, thus complementing information gathered through questionnaire, remote sensing and census data. The key disadvantage of this method confirms Robinson's (1998) argument that interviewers inject their bias, making the process subjective as opposed to scientific. Despite these limitations, the answers received from the respondents have greatly assisted the course of this research. The next section is an explanation of how land use/cover change in Enjela and Khalt El-Ferjan was measured using remote sensing.

3.4.4 SATELLITE IMAGERY TECHNIQUE

Quantitative methods are adopted by geographers to identify the reasons and causes of land use change (Andersen, 1996; Mertens and Lambin, 1997; White *et al*., 1997). It integrates illustrative variables that can be obtained from remote sensing data and then calculated to measure spatial biophysical variables, such as slope or/and distance measures, and sometimes socio-economic variables, like gross domestic product measures (Tomich *et al*., 2004; Reger *et al*., 2007). Then quantitative methods offer the basis for logically

understanding land-use change. However, it is less successful at clarifying the human behaviour that relates the direct causes to the spatial process. In social sciences there is a propensity to investigate land-use change by applying both qualitative and quantitative methods (Shan *et al.*, 2005; Weber *et al.*, 2007). Section 5.4 is entirely dedicated to presenting and discussing the results from imagery analysis.
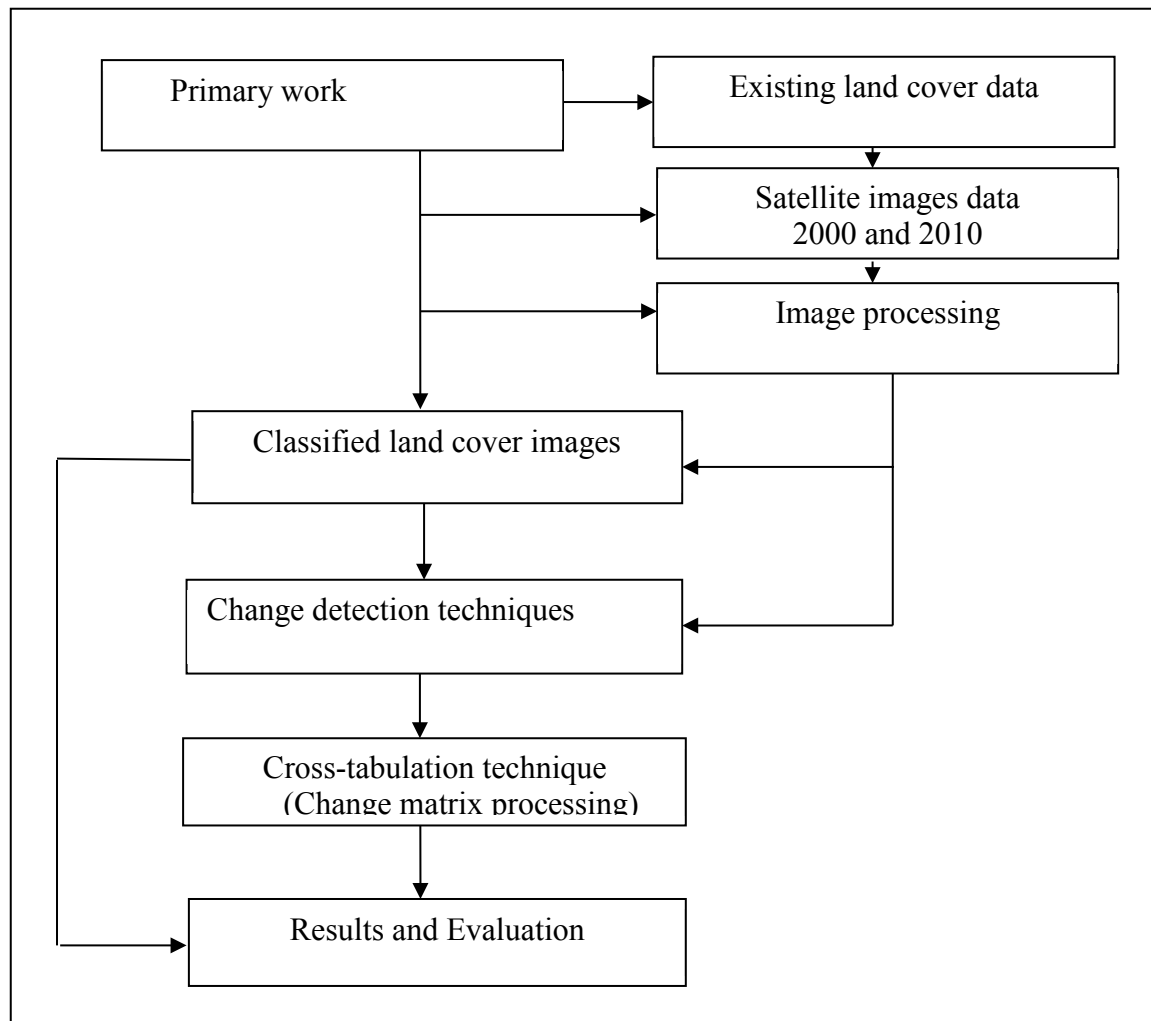
Figure 3-2 The remote sensing methodological framework of the study area

In this stage two satellite imageries (2002 and 2010), were obtained from Al-Bairouni centre for remote sensing in Libya. The two data were used to classify and make a comparison of the study area images, and pictures were collected were modified in the

method approach. The area of study was classified into four classifications: built-up area, street area, vegetation area and another classification including unexploited and cemetery areas. This was done by overlapping satellite images of the two periods 2002 and 2010. The outcome of this approach clearly shows the rate of urban growth and change in land use. Examples can be derived from the images presented in Figures from 5.13-5.16 and 5.21-5.24. Part of the second objective of this thesis, as shown in section 1.5 is to examine, understand and monitor the changing situation in vegetation cover: what it represents and how it affects the outcome of urban growth in western Libya. To achieve this aim, both quantitative and qualitative techniques have been used. But to observe the changes to the urban area, Landsat images from different times were taken into account. The methodology adopted shows that built-up changes in the study area were divided into four stages (Figure 3.2.).

The primary work was divided into four main stages: 1) primary work, 2) derivation of the classified land cover images, 3) change detection techniques and 4) change matrix technique. In each of these stages, there are steps taken in the execution of the exercise that would show change in the urbanisation of the study areas. Appendix (B) explains the technicalities in detail.

3.5 ANALYSIS OF DATA

For this study the questionnaire was the most important method used to gather the quantitative data from the empirical approach. Therefore, in this regard, quantitative analysis will form the basis for analysis and presentation of results. The collected numerical and verbal transcripts were coded and presented using two methods of analysing questionnaire and interviews. This study used SPSS (Statistical Package for

Social Science) and Excel software to process and analyse the data from the questionnaire survey. According to Miller *et al*. (2002), SPSS is statistical software that has received considerable use in performing statistical operations and data analysis. The Chi-square test was used to compare the mean, median and mode of responses from the two areas. The T-Test was also implemented to test the disparity of responses.

Furthermore, these programs were applied to present the responses and opinions of local residents and government officials. For the findings to be tested statistically, analysis of variance (ANOVA) at the five per cent significance level was undertaken to test the findings, identify similarities of opinions and to draw conclusion from the respondents in Enjela and Khalt El-Ferjan. An ANOVA is a statistical test available on SPSS that enables the mean differences between the values of the survey sub-groups to be tested. The data for analysis gathered from different sources was integrated by using common fields and questions in the questionnaire and interviews, so as to easily put the responses together under a common theme. In addition, the documentary analysis and verbal narrations employed complement the findings on the economy and the political turmoil that saw the dethronement of Ghaddafi as the Libyan leader after around 40 years. The qualitative data was analysed by content analysis, which involves collating a number of textual data together to identify emerging issues and generate different issues contained in the dataset. The questionnaires, interviews and documentation allow the findings to be evaluated (Hammell *et al*., 2000). There were three categories of responses received, classified in accordance with statistical standards, which includes:

- Usable questionnaires

- Incomplete questionnaires

- Not responded

Table 3-4 Categories of questionnaires received from respondents

Categories of response	Case study			
	Enjela		Khalt El-Ferjan	
	No.	%	No.	%
Useable questionnaires	140	87.5	160	94
Incomplete questionnaires				
Not responded	20	12.5	10	6
Total	160	100	170	100

Source: Fieldwork, 2010.

The usable questionnaires are those that were answered completely and precisely to the satisfaction of the researcher. Incomplete questionnaires refer to those aspects of the questions that were not responded to (for example, some residents were reluctant to answer questions about their earnings). This arises from a lack of confidence and the uncertainty of the environment. 'Not responded' are those that willingly accept to join the survey but did not return the questionnaire. Such a situation was anticipated prior to the survey due to the political, social and cultural context of the study. See Table 3.4 on the number of responses regarded as useable, incomplete or not responded.

As already indicated, the analysis of interviews and documents that are not quantitative was organised around content analysis. Each interview was first translated, transcribed and then analysed manually. Kohlbacher (2005) have observed that content analysis was one of the earliest approaches to the analysis of archival or documentary materials. Thus, the ideas, opinions, and experiences of the interviewees are extracted from the interview transcript. To achieve this, certain steps were taken:

1. Translating the interviews into English from Arabic. For the sake of validity, a sample of the interview in Arabic was given to a translator, whose translation was consistent with that of the researcher.

2. Preparing a clear text transcription from the translated interviews

3. The analysis of the text transcriptions by which the key words, phrases and paragraphs relevant to the enquiry are marked and highlighted in different colours.

4. Identify the relevant themes and organise ideas, opinions and experiences into themes by coding scheme.

5. Creating coding categories in which the themes are now grouped into subjects under a particular title or heading. Chapter Six of this thesis is a typical example.

6. Choice quotes were also presented to elucidate common positions, divergent ideas, or to articulate individual experiences of urban growth as a resident or a planner.

The above procedures were employed to handle all of the interview data and information. The findings from the interviews, survey and documentation were used to underpin the analysis, argument and discussion presented in the literature chapter. Since the analysis of land use and land cover took a different approach, it is explained in the next section, followed by a reflection on the research methodology. Before the next section that deals with the researchers experience in the field, the following paragraphs briefly outline the benefits drawn from involving the Diaspora and the use of some online tools in the research.

In order to bring the thesis 'up to date' and to 'fill in' gaps in knowledge of the conflict period while I was in the UK, my discussions with the Diaspora have aided the methodology. By virtue of my position as the Co-ordinator of Libyans in Leicestershire, United Kingdom, I was able to obtain as much information as possible from the Libyan

Diaspora (both students that have been sponsored by the Ghaddafi regime and those that came to the UK as refugees for fear of incarceration by Ghaddafi's regime) on how to re-build and develop post-conflict Tripoli. My interaction and discussion with fellow Libyans helped reshape my approach to this research, especially at the beginning of the Libyan civil war. It is important to point that not only have the Libyan Diaspora contributed to the reconstruction process in Libya, they have assisted in the collation of information for this research as the situation unfolds. One striking concern gathered from my interaction with the Libyan Diaspora, mostly postgraduate students, is the general consensus that the HIU principle advocated is timely and could be a sustainable means for governing Libya's urban environment. Information gathered was integrated into the responses gathered on the field.

Madge and O'Connor (n.d.) agreed that the use of internet in a research project "enable[s] the researcher to communicate with a geographically dispersed population ... and can be used to contact groups often difficult to reach". Based on this merit, the methodology also benefitted from the use of social media (Facebook and Twitter) to keep my studies up to date and for the exchange of ideas with Libyans at home during the revolution. However, as Herring (1996) has noted, the contacted persons were predominantly male even as I tried as much as possible to obtain the opinions of women. Some of the problems experienced include lack of connection, unavailability and restricted access. Some of the materials obtained from some internet sources were anonymised throughout the thesis and others are presented in the bibliography.

3.6 ETHICAL ISSUES

This section briefly reflects on certain issues that affected the conduct of the research, ranging from ethical issues, to the position and validity of the research. The researcher has an ethical obligation to consider when to conduct interviews and/or collect questionnaires in the most unobtrusive way, without interfering with or harming subjects and avoiding misrepresentation or bias. Some people may be concerned about the non-confidentiality of the information provided, particularly at the official level. All interviews and questionnaires carefully take ethical issues into consideration in line with Wiles *et al*. (2005). The respondents have the right to decline to participate and to refuse to answer any questions, or to end the interview at any time. All interviews or forms of questionnaire are guaranteed confidentiality and anonymity. Informed consent of research participants was obtained prior to the commencement of any interview or questionnaire administration (see Appendix C). Moreover, the study was subject to review and approval by the departmental research ethics committee.

In the case of researcher-participant relations, my position as a Libyan foreign student left me with the complex issue of 'insider' and 'outsider' perception and subjectivities, like other researchers that chose to carryout field work in their own cultures and localities. I am an insider in that I share certain commonalities with the chosen study area, even though there may be differences in dialect and traditions. I may be considered an outsider because of my privileged personal and professional fronts, and my coming from abroad to conduct research. My coming from a foreign university may even prompt more realistic responses from targeted participants. Therefore, to build relationships, local contact was made with government officials, local elites and residents, and other actors with power, as most often they are critical in facilitating

access and co-operation, especially in the release of documents. My position aligns with Madge's (1993:296) argument that a researcher's perceived position influences or negates the process of data collection for contribution to knowledge.

3.7 LIMITATIONS OF METHODOLOGY

On the whole, both the first and second fieldwork research phases progressed smoothly. The fieldwork carried out in January and July 2010 was a success; all the data required were accessed and acquired within the projected period of ten weeks. Remote sensing data and interviews were conducted within this period. On the course of the study, official records and high-ranking government officials were engaged. Mixing quantitative and qualitative approaches has proven a useful tool in gaining both primary and secondary sources, and also in triangulating the study. This research, however, is not without some limitations, but all possible efforts were made to overcome them in order to avoid their influence on the outcome of the entire study.

 The first limitation of the research was the general shortage of data and information on the fringes of Tripoli. While the research was able to access information about planning in Libya, the statistics available were only for larger administrative units and not including the peri-urban areas of Enjela and Khalt El-Ferjan. Demographic information was even more difficult to gather; as such it became difficult to measure the population dynamics and other characteristics of the peri-urban areas of Tripoli. Where available, the data were fragmented and not classified or presented in appropriate usable formats to be used as a form of secondary information. In addition, no prior attempts had been made to organise the information by relevant government or even academic institutions. It is not surprising that this research happens to be the first attempt in Libya, hence it

was extremely difficult to find documentation which could be useful to inform the same type of study. This constraint was overcome by using the primary data gathered through the fieldwork.

The second limitation of the research is related to socio-cultural and religious factors that constrained empirical data collection. This was overcome by utilising friends and family relationships to encourage individuals to participate in the study. Furthermore, it was not possible for me as a male researcher to interview as many women as possible, due to cultural factors and religion. It is forbidden for an adult Muslim male to be with an adult female Muslim without the presence of her relations. Because the research would be biased without women whose experiences and opinions are just as relevant as those of men, the researcher relied more on working women and elderly women. Therefore, this group of women, without whom information gathering could not have been carried-out, have significantly influenced data collection.

The third limitation concerns those who vehemently refused to participate in the research (mostly women and the elderly) for no reason; the researcher tried hard to encourage those who were not interested in participating in the questionnaires and interviews to change their minds using several techniques, such as an honest introduction of the research and insistence that the researcher was not an undercover agent of Ghaddafi. These are some of the issues that I have contended with in the course of the research during the authoritarian regime of Ghaddafi. My interviewees were unwilling to speak openly due, most commonly, to fear of political repercussions or the arrival of secret police in the course of discussion. This scenario is not different from the experiences of other social scientists conducting research in the MENA (see cases

compiled by Clark, 2006). To avoid any false accusations, the researcher went into the field with a letter of introduction from the Geography Department, University of Leicester. Even with this, because the research was wholly sponsored by the regime, it was inevitable that some potential respondents were worried and not willing to participate in the research. Finally, there is high percentage of people who do not have enough education, which may make them provide vague answers, or ignore some questions. To overcome this issue, the researcher used simple language that they could understand.

3.8 SUMMARY

The research design adopted a mixed-method approach including questionnaire, interviews and remote sensing techniques. While remote sensing, questionnaire and census data are quantitative, documents and interviews are qualitative, each following unique but complementary role in sourcing and analysing data. The research strategy was developed on the basis of HIU, meaning that different methods are required to explore different factors (e.g. socio-cultural, economic and physical change) and must be integrated to make the study holistic. Considerable value was gained from the use of multiple methodologies, where different techniques are deployed at different stages of the research process.

Choosing logical methods for data collection and analysis has not only helped in generating relevant, pertinent and interesting data for the thesis, but has enhanced the reliability and validity of the findings. Holding on to ethical guidelines was essential in the conduct of this research. While my positionality has shaped the process of the research, it helped in overcoming difficulties of identity and the difficulty of conducting

research in an authoritarian regime. Since this research advocates for HIU, the methods employed are based on people's experiences and suggestions on how to govern the city as a 'whole'. The thesis now turns to the results of the research, starting with a discussion on urban growth in Libya. This enables the thesis to be situated in the case study country as well as presenting how modernisation forms the basis for urban development.

4 URBAN GROWTH IN LIBYA

4.1 INTRODUCTION

It is almost three decades now since Kezeiri (1982:355) argued that: "Libya is one of the most urbanised of the developing countries" – a situation that has continued to the present time. Economic growth in Libya has resulted in a situation where some authors categorised it as one of the highly urbanised countries in the MENA, with at least 70 per cent of the population living in urban areas (Al-Farrisee, 2004:6; Cohen, 2004:44), meaning about five million of the over six million population. The rate of urbanisation has resulted in a very dense network of urban centres comparable to those in Egypt, Saudi Arabia, the UAE and Syria. The rapid rate of urban population growth is due to demographic factors such as natural increase and high levels of international migration, which is fuelled by the exploitation of the country's oil wealth. Just before the political unrest, Libyan cities had received migrants from foreign countries; mostly those within the continent of Africa (see sections 5.2-5.3). EBB (2011), describes Libya as a nation of cities:

> For all its recent history, dating back to the end of World War II and the period of independence which followed at the outset of the second half of the 20th-century, the Libyan society has been steadfastly shaped into a flourishing urban system, perhaps reaching a stage of maturity, though by developing countries` standards, at the turn of the 21st century when the great majority of the population lived in urban settlements. (EBB, 2011:1)

There are several cities and towns spread across the four major regions of the country, which are socially, culturally, and functionally interconnected and serve as viable centres for economic activities and the identity of the growing population. For example, when EBB (2011) was commenting on the rebellion against the Ghaddafi regime, he strongly argued that:

"…the traditional urban centers of Tripoli, Benghazi, Misrata, and Derna acted as foci of the economic activities made possible by the petroleum industry. These cities and many others scattered over the vast area of the country, served as genuine melting pots where formerly nomadic peoples and migrants from smaller settlements and farming communities were thoroughly assimilated." (EBB, 2011:1)

Based on the above brief, factors which have led to substantial urban development and population growth in Libya are enumerated in this chapter. The chapter is divided into five sections. After introducing the chapter, I first take a brief look at the demography of Libya, taking into account how the various ethnic groups have interacted and shaped modern Libya. This section also contains the characteristics of natural population growth and migration and how it relates to urbanisation in Libya. This is followed by an examination of economic development of Libya prior to oil and during oil production to current times. The section concludes by looking at alternatives to oil production in diversifying the Libyan economy on more sustainable terms. The socio-political change brought about by Ghaddafi's military coup in the late 1960s and how it has affected urban change is explored in section 4.4. Section 4.4.1-4.4.2 provides an outline of some of the most aggressive reforms in housing and planning since 1969. The last part of this section (4.4.3) outlines the development and retrogression achieved under Ghaddafi's regime, some of which led to the revolution. A detailed analysis of urban growth of Tripoli – the most urbanised area of Libya – is presented in Chapter Five.

4.2 DEMOGRAPHY

The causes of growth in Libyan cities, like anywhere else, are: (1) natural population increase (the difference between birth and death rates), and (2) migration (from rural and semi-rural areas and from other countries). The social composition of Libya also affects the spatial pattern of urban growth and configuration. These factors caused the

shift of people to the main cities and are having a major influence on the country's population distribution, reinforcing the trend towards urbanisation. Natural population increase in Libya has been a part of the total population revolution in North Africa (see Figure 4.5). Unlike European cities, most Arab cities are strongly influenced by Islamic traditions, and have traditionally had no municipal government, with people co-existing without religious segregation (Ibrahim, 1975: 31-32). This situation has changed due to: (1) the influence of modernisation, (2) authoritarian rule, and (3) a deliberate government policy of national integration. For example, Tripoli city exists as a cluster of overlapping ethnic and religious memberships with a somewhat distinct set of perspectives and practices. Other smaller cities, depending on their level of urbanisation, demonstrate the diverse nature of the population to a lesser degree. Figure 4.1 is showing how rapidly the Libyan population has changed since late 1950s when the country began to exploit its oil resources.
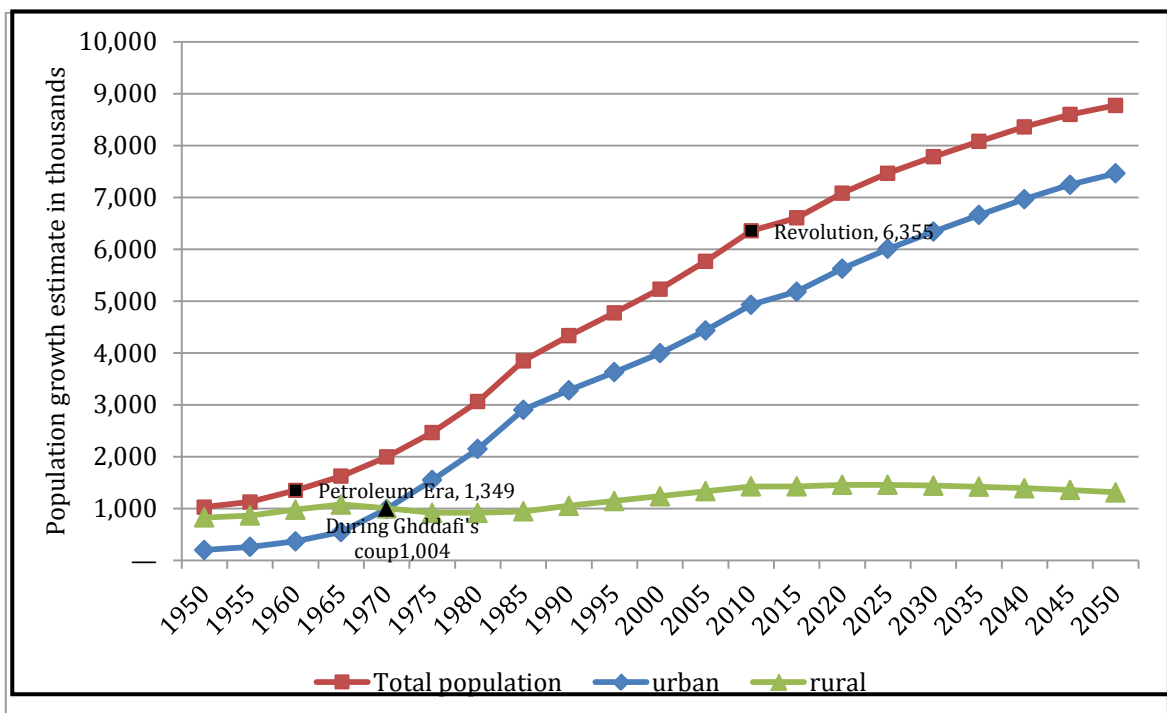
Figure 4-1 Libya's urban-rural population, 1950-2050. Source: UNDES, 2011.

Libya has a low density of population because of the small number of people living in a large land of mountainous, desert and coastal areas. The overall Libyan population density is 2.88 persons per square kilometre – which is one of the lowest in the world in 2000 (National Corporation for Information and Documentation (NCID), 2000). In response to increasing population growth, the population density has increased to 3.58 in 2008 (World Bank, 2011). The population density for Tripolitania and Cyrenaica, for example, is about 50 persons per square kilometre to less than one person per square kilometre in the southern part of the country – Al-Kufra administrative division has a population density of 0.11 (Figure 4.2). The coastal areas of Tripoli, Benghazi, Misrata, Az -Zawiya, Al Bayda, Zliten and Darnah are host to about 90 per cent of the population of Libya. The urban population is about 78 per cent (UNICEF, 2011), out of which about 44 per cent are resident in Tripoli and Benghazi because of trade legacy, urbanisation and national development plans (Elbendak, 2008).
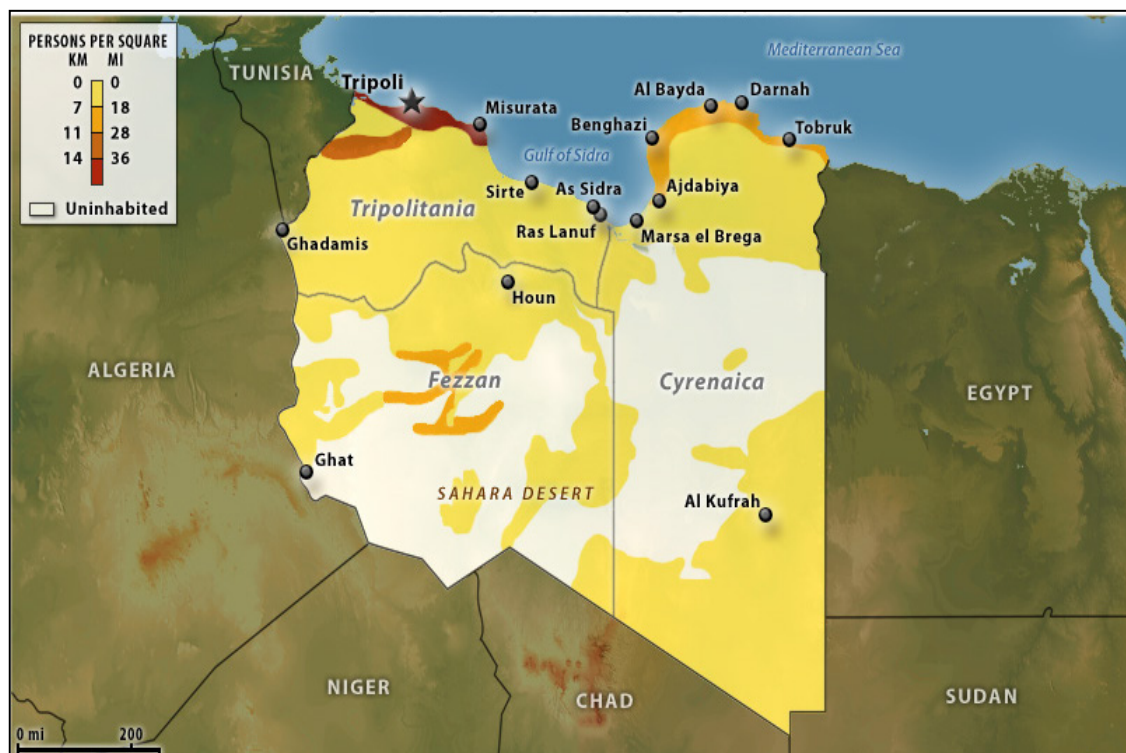
Figure 4-2 Libya's population density. Source: The Market Oracle (2012)

The political history of Libya has been impacted by the social structure of ethnicity, which may be described as the sense of loyalty that people feel towards a particular social group (Elbendak, 2008). As indicated in Figure 4.3, indigenous Libyans are predominantly Berber, Arab or a mixture of both. There are small ethnic groups of Tuareg, Tebu, Bedouins, Banu Hilal, and Banu Sulaym, among others. There are ethnic groups from Northern Africa (Egypt, Algeria and Tunisia) and sub-Saharan Africa (Niger, Chad, Mali and Sudan). Tripoli, for instance, harbours numerous ethnic groups that come from the various parts of the country and even from different countries and nationalities (See Chapters Five and Six). This tribal landscape must be understood along with Libya's recent history: the country has not had political parties or any form of democratisation during the four-decade reign of Ghaddafi. There is no constitution, no nationally accepted rule of law and no practical mechanism to guide the country in the event of a power vacuum at the top. Civil society does not exist, nor does the idea of state loyalty.
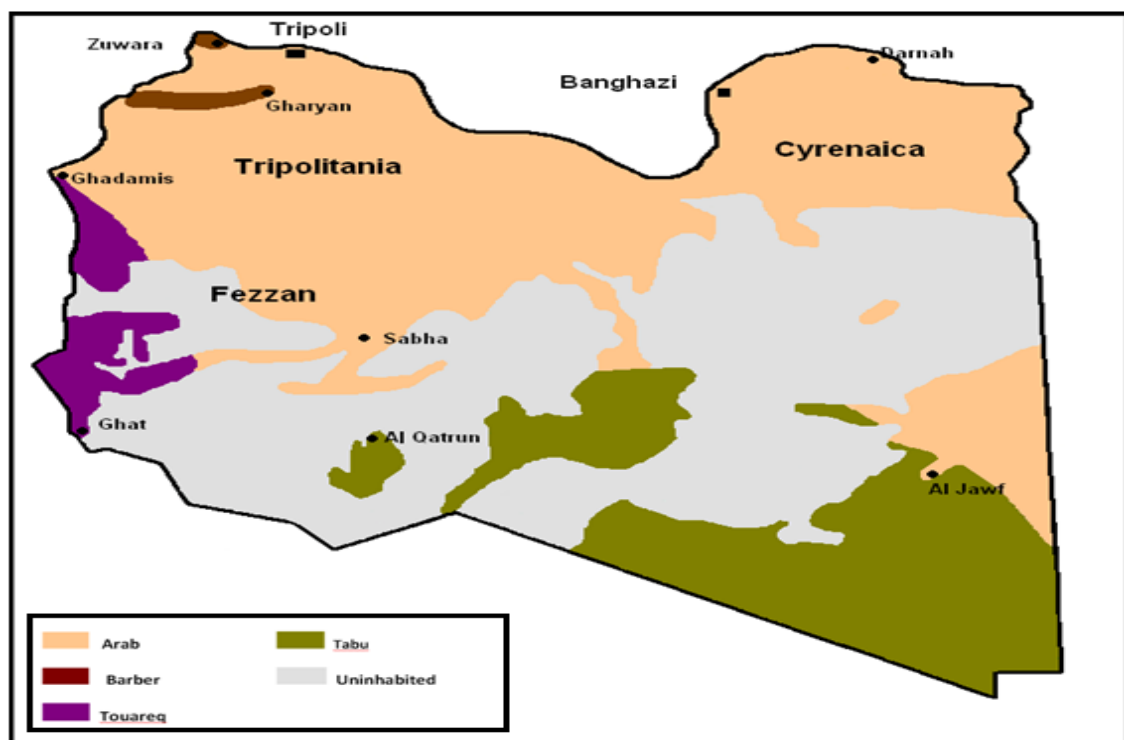
Figure 4-3 Modified from Libyan ethnicity. Source: CIA, (1974)

El-Hawat (1994) categorises the various ethnic groups mentioned above according to their regional/geographical pattern: north and south. The northern ethnic groups, who are primarily from the Berber and Berber-Arab tribes, are considerably the largest, making up around 80 per cent of the population. These groups are located along the coastal areas of the Mediterranean Sea, and are the most populous about 100 kilometres into the hinterland. The southern ethnic groups, mainly Bedouin and Tuareg, make up the remaining 20 per cent of Libya's population. The northern ethnic groups live in urban areas of the Mediterranean. The location has provided different economic activity for the indigenous people and migrants to engage in. Agriculture and fisheries, industry and mining, commercial, public and urban services are some of the sectors that provide employment opportunities to the multi-ethnic groups (UPA, 2005).

The Mediterranean lifestyle of the northern ethnic groups has had an obvious impact on traditional Arabic and Islamic cultures. For example, Tripoli is located on the Mediterranean Sea and thus contains the northern ethnic groups and is host to visiting tourists from different parts of the world. However, the city, like other cities in MENA is encountering the problem of sustaining economic growth based on modern (Western) philosophy, and the need to preserve a traditional (Arabic/Islamic) heritage and style of living of the people (Hassan *et al.*, 2008). As detailed in Chapter Five, Tripoli residents within the traditional setting are found in the Medina; they are employed in predominantly traditional industries, as well as engaging in religious affairs such as mosque rehabilitation and restoration. Those indigenous tribes that are influenced by modern living through Western education are engaged in the building of Libya's modern economy. These kinds of multiple different economic practices co-existing within the city are similar to what Gibson-Graham (2008:615) document as a diverse

economy: "a huge variety of economic transactions, labour practices and economic organizations that contribute to social well-being worldwide". They have occupations in public and private establishments e.g. in government, the hospitality industry, journalism, construction and tourism (El-Hawat, 1994).

It is also important to state here that Libya faces an unemployment crisis estimated to be around 30 per cent at the peak of the recent civil unrest. This high unemployment rate is particularly prevalent among the younger generations between the ages 15-29 years. Even though it is difficult to get reliable data on ethnic dimensions to the distribution of unemployment, I noted (and obviously so) that unemployment is very low among the tribes loyal to Ghaddafi such as the Al Katayb group. Ghaddafi's tribe, which is about 100,000 of the over six million Libyans, controlled power and economic institutions, most significantly, the Air Force was entirely dominated by the Al Katayb group.

The southern tribes are found scattered in the Libyan Desert and oases, extending southwards to the borders of Niger, Chad and Sudan. The southern tribes are nomadic and predominantly desert dwellers. Their occupations are primarily camel raising and trade, but due to economic changes many of the tribes are now engaged in animal husbandry, such as sheep rearing. Some of these communities can be described as semi-urban; however, they have been affected by their geographical conditions. The southern ethnic groups' loyalty is firmly bound by their kinship, from a nuclear family unit to the entire ethnic group. According to Andersen *et al*. (2007), communal interests are pursued and disputes are settled through an ethnic hierarchy of authority. This is because the Libyan social structure is tribal, and tribes were arranged in a pyramidal lineage scheme of sub-tribes. According to Elbendak (2008:136), the Libyan tribes

operated, to a large degree, as autonomous political units. With the discovery of oil, certain policies for national integration were introduced by Ghaddafi. Little did Libyans realise that a holistic approach was not undertaken to unite the country. Instead, a divide-and-rule approach was used by Ghaddafi to hold on to power for four decades.

As part of the integration strategy, opportunities and resources for education were provided, and young people were encouraged to marry outside of their tribe. This policy however, faced problems due to the fact that some tribes do not always relate in harmony or inter-marry. Ghaddafi exacerbated the problem to maintain his power by empowering his tribesmen in the same manner to that of many other tribal and ethnocentric dictators in Africa (e.g. Makelele in Ethiopia). As stated above, Ghaddafi gave preferential treatment to his tribe and those loyal to him by placing them in key positions of government and placing them in control of economic activities. In fact, he made his hometown city of Sirte (a town lying halfway between Tripoli and Benghazi) his political base, while antagonising the rest of the country.

Ethnicity continued to exist in the family unit, in the mosques and on issues that affect members of an ethnic group. Fifty years after the discovery of oil and forty years after Ghaddafi's military coup, the country's tribes still operate, to a large extent, as independent political and social units. In contemporary Libyan society: "tribalism still has an amount of power in life systems especially at some social occasions" (Elbendak, 2008:139). One of the most recent examples of tribal affiliation is from the Arab-Berber tribe of Sirte. Because Sirte was Ghaddafi's hometown, the majority of his ethnic group resisted freedom fighters' advance to take over the city. Sirte served as an administrative centre during the Italian occupation of Libya. It was once described by

Baker (1978) as a shabby little Arab village – but has grown into a prominent town due to nearby oil discovery and being the hometown of Ghaddafi. Since the 1969 military coup, extensive public works have transformed this small village into a city. The city became host to the Libyan parliament and some government agencies after 1988 (Europa World Year Book, 2004). In 2007, a more ambitious plan to build a seaport and an international airport was unveiled (Oxford Business Group, 2008).

Figure 4-4 The city of Sirte before the 2011 revolution. Source: Jimma Times (October 27, 2011).

Figure 4-5 The damaging consequences for the city after the 2011 revolution. Source: News.CN (October 27, 2011).

By the end of 2011, the once amazing city of Sirte (Figure 4.4) was unrecognisable after anti-Ghaddafi forces liberated the city following weeks of siege (Figure 4.5). In these circumstances, a national reconciliation and holistic approach to urban reconstruction including Sirte would be desirable, because it is still a part of the sovereign state of Libya. Indeed, Islamic urbanism encompasses development strategies that treat all humans as equal and does not discriminate against citizens based on their ethnic origin. In spite of the differences between the northern and southern tribes, the two sets of ethnic groups are socially and economically integrated by factors such as modernisation and social integration resulting from marriage and friendship (El-Hawat, 1994). Thus, Libya is gradually becoming a homogeneous society, both culturally and religiously, especially on issues of national interest. This was recently demonstrated by the northern and southern ethnic groups, as summed below:

> "Indeed, in these glorious days of the people`s revolt, national unity is aptly demonstrated by the remarkable solidarity and cohesion felt all over the system of cities. For example, when the first spark of the February Revolution was ignited in the second largest city of Benghazi located on the eastern coast, its echoes immediately reverberated through the small community of Zintan in the far western mountain region. Ultimately, reverberations were felt within a couple of days in almost all other urban communities regardless of size and location." (EBB, 2011:1)

As a result of the arrival of international migrants from Africa and neighbouring Egypt and Algeria, changes have taken place in the Libyan social structure because of inter-tribal marriages (Kikhia, 1973). Rural migrants chose to dwell close to their ethnic kin, thus creating mini-townships within the cities, such as Tarhuna town and the Medina areas of Tripoli which are host to migrants from different parts of the world. Elhimaly (1986) is one of those early scholars to conclude that tribalism is found in urban agglomerations. Elhimaly's (1986) account continues to be relevant, especially in the

peri-urban settlements of Tripoli, where the social structure still maintains some rural characteristics in shape and function (see section 6.3). One of the limitations of the ways in which historical/traditional and contemporary Libyan cities are planned or developed is that it has failed to take into account the varying needs of many of the ethnic groups across the city as a whole. The groups themselves lack the power to bring their interests to prominence, which can affect urban policy and planning decisions.

As mentioned in section 2.6, Holistic Islamic Urbanism is a whole city approach which empowers people to participate in the choice of their leaders and in decisions that affects their lives and their environment. We may be surprised to find that, as HIU is embraced, the excessive weight of ethnic chauvinism reduces as a steady process of urbanisation and sedentarisation are made by subsequent government. In an established system, Muslims should not and must not enslave one another, and persons should be accorded equal rights (see Nyang, 1997). The 40 year rule of Ghaddafi is an instance in the MENA where, out of greed or personal power, leaders have contravened this established Muslim tradition that promotes sustainability.

With the end of Ghaddafi's regime, Libya's interim rulers must start to create and implement a policy that can lead to the creation of a broad-based government, pursue reconciliation of all tribes and ethnic groups, and embrace a new democratic future for political stability. Previous attempts at integrating the society have failed but the arrival of international migrants is playing a role of integration through marriage. Post-conflict employment programmes should provide new opportunities for previously excluded ethnic groups and promote gender equality. Apart from the problem of ethnicity, Libya is experiencing a change in population of the ethnic groups, as can be seen in the following section.

4.2.1 NATURAL POPULATION CHANGE

Key demographic figures for the Libyan population have changed dramatically over the last four decades. Population increase is common in modern Libyan cities. Also common is a significant increase in the number and sizes of buildings to accommodate growing families: a key process of urbanisation. The average annual crude death rate has significantly dropped from 16 per cent in the 1970s to about four per cent in 2009 (UNICEF, 2011). The infant mortality rate (under 1) was 34 per cent, while the under 5' mortality rate was 36 per cent in the 1990s. A remarkable progress had been achieved by 2009 with the less than 1 mortality rate reduced by half to 17 per cent and under 5 mortality reduced to 19 per cent. As infant mortality is decreasing, life expectancy is increasing – from 62.2 years in the 1980s to 74 years currently. The total fertility rate is expected to decline to 3.02 per woman. Figure 4.6 compares Libya's 2009 two per cent growth to that in Egypt (1.5%), UAE (2.5%), Saudi Arabia (2.3%), Algeria (1.5) and Morocco (1.2%).
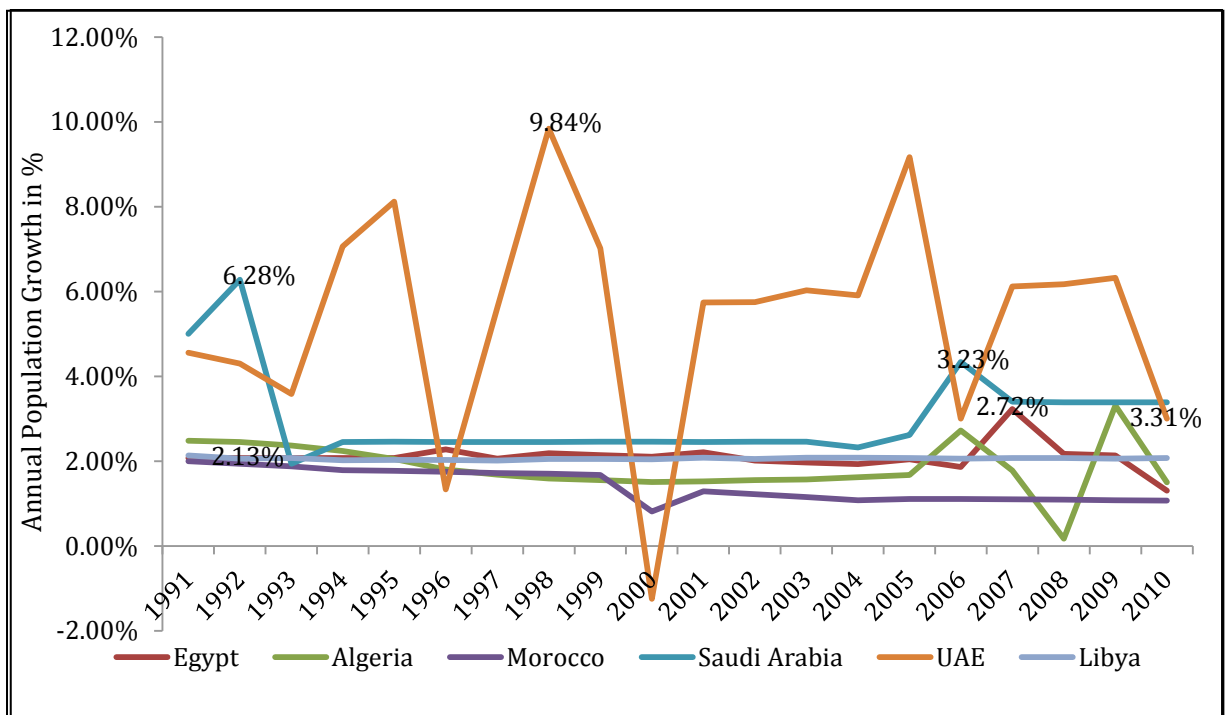
Figure 4-6 Libya's population growth compared to some MENA countries. Source: World Bank, 2011.

The total population is steadily growing, from 5.3 million people in 2006 to the present 6.6 million people. The Libyan population, excluding non-Libyans, has increased from 4.4 million in 1995 to 5.3 million in 2006, with an estimated 6.6 million people by the end of 2011. The 1.1 million resident 'non-Libyans' are a large proportion of the total population; they are migrants required to work in farms and the fast-growing construction and manufacturing industries (see Grifa, 2006 on the growing construction industry and its labour requirements). It is projected that the population may reach 7.7 million by 2030, and more than eight million including non-Libyans. About 90 per cent of this figure will be dwelling in urban areas (Nations Encyclopaedia, 2011).

However, the declining fertility rate may reach a level of negative or zero natural population growth, a situation where the number of deaths is more than births or an equal number of deaths and births, which means a decline in the growing population accompanied by an increase in the number of the elderly (UPA, 2005). Currently, Libya is experiencing large reductions in population due to the civil unrest that evolved into an armed conflict between the pro-Ghaddafi Forces and the rebels of the TNC since February 2011. The International Office of Migration (2011) estimates that 721, 772 non-Libyans have crossed Libyan borders either to seek for refuge or return to their countries of origin.

As a result of increases in the standard of living, improvements in per capita income, increased health awareness and the availability of medical treatment and urbanisation, the crude death rate has declined from 0.9 per cent in 1973 to 0.8 in 1984. The death rate continued to decline to four per thousand in the year 2009 (UN Habitat, 2009; UNICEF, 2011). However, with the increase in the population of old people, the death

rate will gradually increase, whereas the birth rate will decrease. The current state of the Libyan population is taking place without any formal population policy. On the contrary, the government until recently considered that population growth by birth and immigration was necessary in order to produce more sustainable growth of the Libyan economy. A number of factors account for the decline in fertility rate, which could even reach less than 2 per cent by the year 2030 (UN Habitat, 2009):

1. High number of females with a high level of education. The female (15-24) literacy rate reached 100 per cent by the end of 2008. However the role of women was marginalised during Ghaddafi's rule. He relied on his tribal elites who consider and categorise women as part of property owned by men. As such, women were marginalised and excluded from contributing to the development of Libya.

2. Enrolment in education institutions by females (6-24 years) increased from 51 per cent in 1973 to 63 per cent in 1984. In 1988/1989, enrolment in secondary schools by females was 85 per cent and for males 95 per cent, but by the end of 2008 100 per cent enrolment ratio was achieved. As more women are educated, they come to understand the advantages of family planning and issues of child birth and maternal health.

3. Female participation in the work force increased from 5.6 in 1973 to 15.6 in 1995.

4. The mean age of first marriage for Libyan females increased from 19 years to 29 years in 1995. This is high when compared to Yemen average of 21 and the whole of the MENA average of 22 in 1998 (Roudi-Fahimi and Kent 2007). Women are waiting until they are older to marry and in my own view they get married to men closer to their own age group.

Libyan women have taken part in the revolution that saw the fall of Muammar Ghaddafi's regime – and they have seen that as a route towards their emancipation. The participation of women in the revolution is a way to break free from the jobs that they are either reserved for (e.g. nurse, secretary or teacher) or excluded from (e.g. politics, medicine). Libya is a deeply conservative, religious, male-dominated society, but soon after the revolution, women's groups were coming up with proposals to the interim government on how to change the current laws on divorce, women's exclusion from politics, the monopoly of power by men and a broad-based approach to the Shariah rule.

Traditional population movements in Libya have resulted from the ecological relations between people and their environment, particularly the ecological adaptations to vast expanses of arid land. These movements have varied – in space and in time – with regional conditions, but usually they have appeared as seasonal migrations of pastoral nomadic people, or as lesser migrations resulting from contacts between the three main economic groups of the country, i.e. urbanites in old towns, farmers engaged in sedentary, agricultural exploits and Bedouins engaged in pastoral nomadism. Urban migration is not new in Libyan life; it began in the colonial period and since that time, urban migration has continued, but at a slow rate and in limited volume. As a result of petroleum-based prosperity, urban migration has continued to exist, but has been directed towards Tripoli and Benghazi.

4.2.2 MIGRATION

The new urban development, which was in the beginning limited to Tripoli and Benghazi, continues to accelerate, and took effect not only in the other cities and towns, but also in many villages (see Figure 4.7).
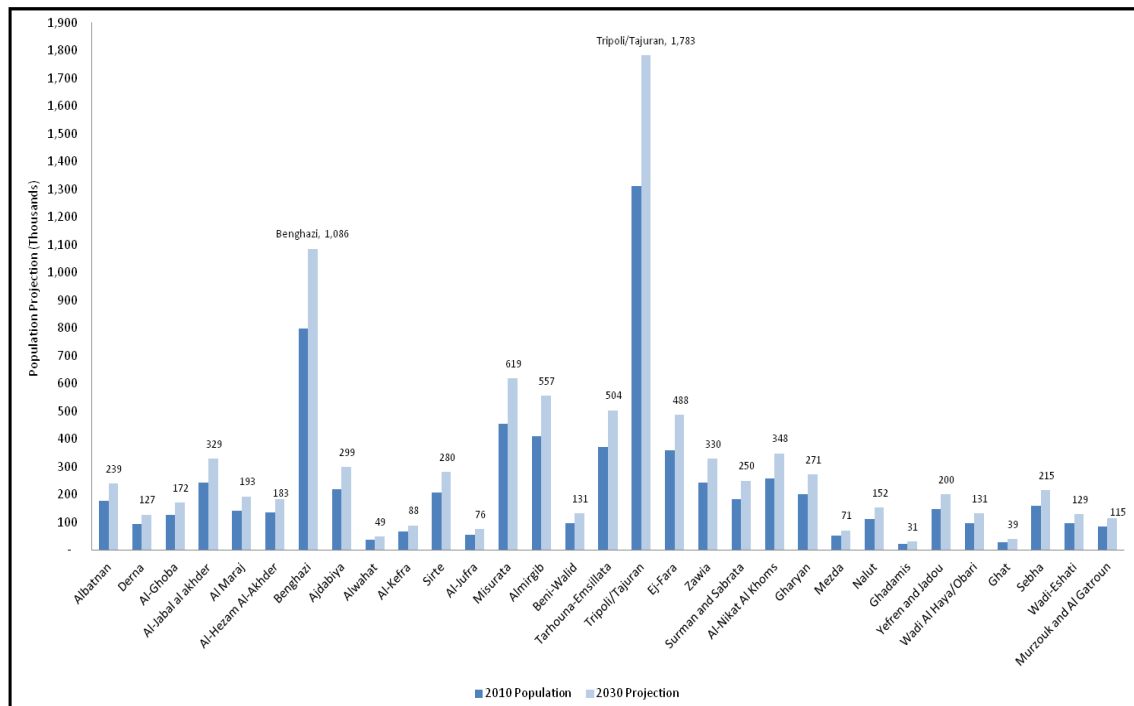
Figure 4-7 Current and projected population of some Libyan cities. Source: Data from Urban Planning Agency (2005)

A growing number of villages and oases developed into towns and cities with the appearance and characteristics of urban life. Similarly, modern economic and social transformation has made profound changes in the social reorganisation and migration pattern. Traditional activities, such as the trade of small shops, the artisan's workhouses and local public administration, gave way to new activities such as a wider range of occupations in public administration, modern-style businesses, mass-production factories, modern construction, and a variety of other jobs in urban services. The growth of urban areas with corresponding demand for workers has increased the number of rural people moving to urban centres. El-Kabir. (1980) and Kikhia (1973) noted that the growing volume of urban migrants upset the equilibrium of both rural and urban life. New problems began to appear – shortages of housing, electricity, water, health care, communications and other services. Some of the many problems of urban life are documented in Chapter Six, which deals with the experiences of urban life. In the rural

areas, the rapid increase in the number of migrants to urban areas has been a decisive factor contributing to the decline in agricultural output and in the depopulation of some rural districts, such as Al-Kufra.

Ghaddafi's 1969 military coup brought about significant changes in Libya's political and administrative systems. These changes involved the creation and abolition of government agencies and municipalities. For instance, in 1975 the country was divided into a larger number of administrative entities called Baladiya. Similarly, in 1980 the number of municipalities was reduced from forty-six to twenty three. These changes in the size and organisation of the administrative system intensified the process of internal migration by providing employment for large number of people, not only in the old cities, but also in the new towns which became local administrative centres in the regions of newly established municipalities and their divisions. To this end, Elshukri (2000:103) argued that the concentration of administration in Tripoli and Benghazi has resulted in the problem of over-urbanisation. The reformation of existing urban centres, such as Tripoli, has attracted rural migrants. The cities became a symbol of modernisation to the people. Thus, the cities generated new institutions, activities, structures and values, markedly different to existing traditional social relations. The way the cities are transforming reflects national transformation as a whole, which is considered as an index of progress and prosperity comparable to some Western cities. Nonetheless, many farmers and nomads, such as Bedouins, have resisted the attractions of city life because they are tied to their homeland by the social bond of kinship and a lifestyle based on mobility. But even these types of rural inhabitants are now gradually being attracted to the nearby towns.

There is a significant foreign population residing in Libya, the volume of which varies greatly year-on-year depending on economic and international developments. It has increased significantly over two decades. This increase in migration had a huge effect on government population policy and has led to several changes in urban morphology. Before the rebellion against Ghaddafi, the foreign population comprised more than 10 per cent of Libya's population (Gurman, 2011). In 2000, there were 570,000 migrants living in Libya and in 2006, the number went above 600,000 even though there are no accurate official figures. Gurman (2011) reported that Libya is the biggest importer of labour with about 2.5 million migrants before the crisis. The migrants mainly come from Tunisia, Egypt, Niger, Chad, Ghana and Nigeria, and are mostly engaged in the oil and construction industries. There are also small numbers from Greece, Malta, Italy, Pakistan, Turkey, China, Bangladesh, India and Philippines – working in formal sectors as such medicine, nursing and tourism. The population of West and Sub-Saharan Africans increased in the 1990s, when Ghaddafi opened Libya's rigid border to sub-Saharan Africans to live and work in an attempt to demonstrate his pan-Africanist and Pan-Arabist pretensions.

The population of immigrants has now drastically reduced due to the civilian crisis: thousands of migrants have returned to their home countries, for fear of persecution, or are seeking refuge in neighbouring Algeria, Egypt and Tunisia. The return of migrants to Egypt, Tunisia and Niger in particular puts added pressure on all segments of their economies. It will however, bring about a shortage of manpower in the economic reconstruction of Libya. In May 2011, Baraou (2011) reported that about 65,000 people had arrived in Niger's city of Agadez from Libya. Accordingly, Agadez is being transformed from a commercial city into a refugee centre.

Throughout their history, Libyans have been strongly influenced by a subsistence economy, a result of their association with the harsh, arid country, and by traditional social relationships which are characteristics of tribal spirit. Libyans have remained attached to their traditional values, towns, villages, oases and tribal lands. Under such conditions, the volume of internal migration must have been – as it was – very limited. It was only in the later period of rapid change that population movement began to develop and take new forms in accordance with the new conditions created by contemporary economic development and the forces of modernisation. The level of rural-urban migration has become increasingly important in volume, space and effects. New forms of migration, which were not previously feasible, have begun to occur consistently, such as the flow of intra-urban migration and the return of many former emigrants to their villages, oases and towns of origin.

4.3   ECONOMIC DEVELOPMENT

Before the discovery of oil, the Libyan economy was characterised by poverty and underdevelopment due to limited financial resources and the dependency of the national economy mainly on foreign aid. The productivity of the agricultural sector was very low because it suffers from poor soil fertility, scarcity of water and harsh climatic conditions. Industrial activity was limited due to the non-availability of raw materials and a severe shortage of manpower. The discovery of oil in the early 1960s resulted in a tremendous change that had a great impact on the economic situation and development process. After the 1969 military coup, a new stage of development was started through the preparation of development plans and transformation budgets aimed at attaining economic, social and cultural development in different fields and locations. All the projects implemented in the 1970s and 1980s were planned during the monarch era.

This section provides a background of Libya's economic development. The historical transformation of the Libyan economy has passed through several phases, which I divide, into three, for the sake of argument. The first phase was prior to 1962, when Libya was classified as one of the world's poorest countries and its economy relied on agriculture and foreign assistance (Ghanem, 1982:141; Higgins, 1957:26). The second phase began with the discovery of oil, a period (1961-1969) when the economy was transferring from a primitive agricultural economy into an oil-based society. The economy moved from capital deficits and low productivity to capital surpluses due to oil wealth (El-Mallakh, 1996:308). In addition, the second phase also included the oil boom period (1970-1983) when the Gross Domestic Product (GDP) and standard of living improved from US$4380 million to US$5787 million in 2010-11 (IMF, 2012). This period also witnessed accelerated social and political change, such as the nationalisation of foreign-owned properties and the adoption of socialist principles in 1978 (Abbas, 1997:112). The third phase consists of the dissolution of private ownership and the public sector expansion of the late 1980s to early 1990s, and the effect of the sanctions period. When the sanctions were lifted in 1999, at a time when oil prices were rising, the Libyan ideology slightly changed to a more relaxed attitude to global capitalism. Certainly, these changes made Libya open its doors to foreign private enterprises yet remain authoritarian. The fourth phase is identifying alternatives to oil as a future strategy of diversifying the Libyan economy especially at this period of economic reconstruction.

4.3.1 LIBYA PRIOR TO INDEPENDENCE AND OIL DISCOVERY

The geographical setting of Libya has greatly influenced the spatial organization of society. In particular, the Sahara desert has in many ways influenced the setting of the

three provinces of Libya – Fezzan in the south, Cyrenaica to the east and Tripolitania, which is sheltered by mountains on the western coast. While the mountainous areas enjoy a favourable climate for agricultural production, the sandy areas by the coast are arid and require artificial irrigation for food production. The oases of Tripoli serve as a source of water for the city's residents. The coastal mountain range of Cyrenaica is made up of high plateaus in the north and desert in the south, each with different combinations of climate for agriculture and pasture. The Gulf of Sirte is suitable for seasonal grazing because its land lies between eastern Tripolitania and the mountains in Cyrenaica. The southern part of the Gulf of Sirte lies between the Sahara Desert and the Fezzan province. The Fezzan province is extremely large, dry and barren. It is characterised by large sand dunes and weathered mountains – making habitation unbearable to humans (See Figures 4.2 and 4.3).

The settlements found in the southern part of Libya (usually hamlets and nomadic encampments) are seasonal depending on the availability of water and pastoral land. The permanent settlement such as Touzougou, Murzuk, Awbari and Sabha, are scattered around depressions where water from deep aquifers is accessible. The water from deep aquifers supports extensive date plantations, fruit production and vegetable crops. The settlements are restricted in their growth, both in natural population and migration, due to a limited water supply for both agricultural and domestic use. Much of the country was organised based on areas that support agriculture and animal husbandry by the Bedouin nomads. Both pastoral and agricultural communities foster economic cooperation with neighbouring towns and villages through trade and commodity exchange. As Bedouins supply meat, wool, hides and clarified butter to the towns, so the towns also provide consumable goods to the population of the desert areas.

It is difficult to describe any development of the Libyan economy prior to independence because of a lack of documentary evidence (El-Fathaly and Palmer, 1980). During this period about 80 per cent of the population was involved in agriculture and the urban centres were still in their traditional setting. The industrial sector in this period was limited, due to a lack of raw materials. Furthermore, the country was suffering from a shortage of housing and a lack of facilities. The housing conditions were very poor, as most of the people lived in tents and huts made of zinc sheets or palm tree leaves and wood (Amer, 2007:29; Maktoff, 1997). The Medina is the typical example of the traditional Libyan society and urban form prior to the discovery of oil. The wealth derived from oil production coupled with the agenda of Ghaddafi's 1969 military coup led to tremendous urban expansion and economic change. Section 5.2.1 has an account of the Medina and its present social and economic roles in the country.

At the time of independence, income per capita was less than US$50; it rose from US$100 per year in 1960 to US$14,884 in 2010 (World Bank, 2011). The 1955 GDP was 15 million Libyan Dinar (LD), by 1958 the figure had increased to LD52 million (Aburroush, 1996). In 2010, the GDP had risen sharply to about US$96.1 billion growing at 10.6 per year. As a result of the unrest, the GDP has decreased by 6.2 per cent (World Bank, 2011). Figure 4.8 compares the GDP of some countries bordering Libya. The GDP is higher in Egypt, Algeria and Morocco because they have more developed, diversified and liberalised economies. For example, Egypt has a developed energy market based on coal, oil, natural gas and hydro power, from which the bulk of government revenues come. In addition to the energy market, its tourism industry attracts over 12.8 million, providing revenues of up to US$11 billion and employing about 12 per cent of the population in 2009 (Reuters Africa, 2009). The uprising

currently experienced in these countries has greatly lowered their GDP. It is worth stating that if the aftermath of the revolution provides stability, Libya can expect to see both a better distribution of its oil wealth within the country (even though it is too early to state what is likely to happen) and significant international investment, particularly from the United States and China.
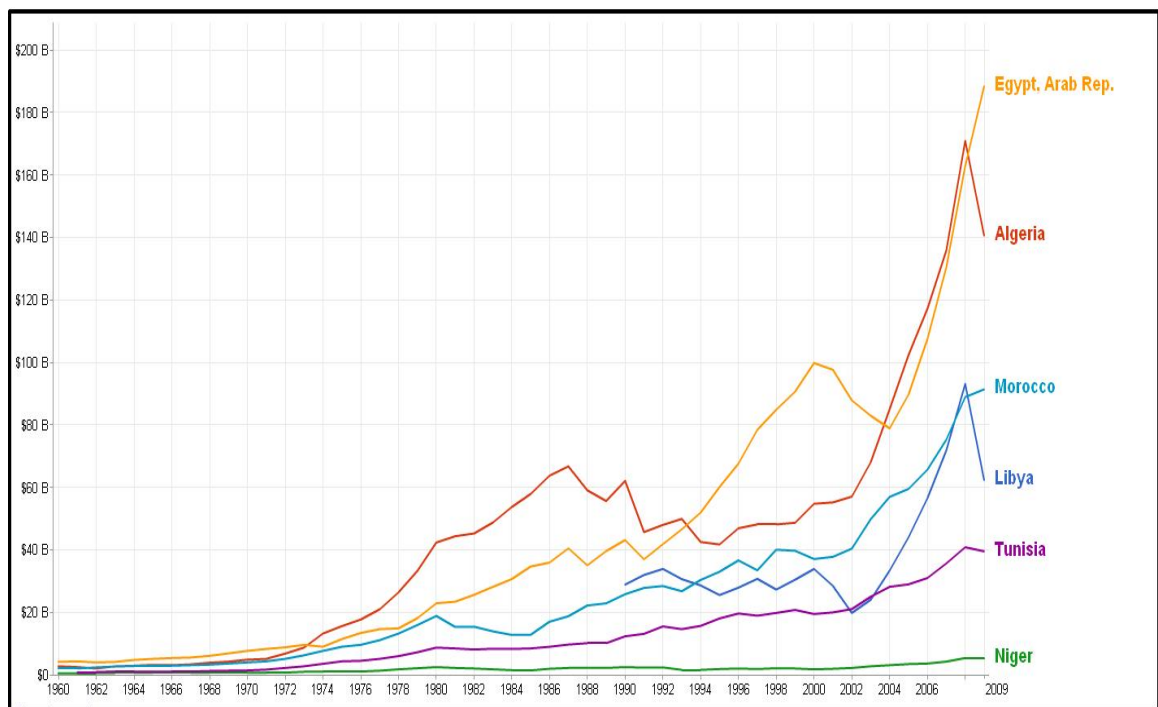
Figure 4-8 The 2009 GDP of countries neighbouring Libya. Source: World Bank (2011).

4.3.2 THE OIL PRODUCTION PHASE

In this period the Libyan economy transformed from a primitive agricultural economy dependent on foreign aid into an oil-based economy. Libyan oil exploration began in 1955, with the first oil well dug in 1956 and the first oil struck in 1957 (Edwik, 2007). The first exploitation of oil in commercial quantity was made by Esso (subsequently Exxon) in 1959. Since the early 1960s, the development of the oil industry was remarkable in terms of its rapid proliferation and dominance of the Libyan economy. By

1969 Libya was the second largest producer of oil in the Middle East (Giurnaz, 1985). The national income witnessed an exponential increase from LYD131 million in 1962 at the point of oil discovery to LYD 798 million in 1968 when production had begun (Fisher, 1990:644).

Similarly, per capita income and the GDP increased (see Figure 4.7) as oil companies paid certain portions of their profits to the government in the form of royalties and taxes. The Libyan revenues from oil climbed to US$32.43 billion in 2010 up from US$20 billion in 2009 (Central Bank of Libya, 2011). The oil revenues made up 92 per cent of the country's 2010 revenues. Libya pumps 2.3 million barrels per day, Africa's third largest oil producer after Nigeria and Angola. This heavy dependence on oil calls for diversifying the economy in more sustainable ways. In addition to national policies to diversify the economy in sustainable ways, there needs to be a programme of developing resilience and some degree of self-sufficiency at a household, neighbourhood and city-wide scale. Incomes coming from oil were invested in infrastructure through the construction of houses, schools, universities, ports, roads and others. For example, Libya is the country with the highest literacy and educational enrolment rates (for both male and female) in North Africa (WHO, 2006). The government also initiated hundreds of agricultural, industrial and electrical projects.

The discovery of oil has been followed by the most energetic and profound changes which are carrying Libya into the modern age. But the immediate influence of petroleum exploitation on internal migration was somewhat limited. On the one hand, the oil exploration companies provided employment in the desert far from populated areas, and only for limited periods of time. On the other hand, the industry was designed

to make use of the most advanced technology and to employ, in most cases, only skilled workers. Thus, relatively few Libyans obtained petroleum jobs during the 1950s and 1960s. In fact, the vast majority of migrants who moved to regions where oil field operations were located were attracted by the economic benefit of petroleum exploitation. For example, until the time when petroleum employment appeared in the region of El-Khalij, where the largest oil operations are situated, outward migration to other regions, especially to Benghazi, was common among the population of this region. A few years later, the situation had changed; El-Khalij began to maintain its own population as well as attracting migrants from other regions. As such, the city began to expand in size and population. Oil fields were initially no more than camps used as temporary residences for a small number of workers and technicians. The four oil-exporting seaports (Ras Lanuf, Assidrah, Al Brayqah and Azzuwaytinah) were also located in the region of El-Khalij and were connected to the oil fields by pipelines. The establishment of a large-scale petrochemical industry in the 1970s changed the growth pattern of these oil communities. The influx of migrant workers has been most prevalent in the villages, towns and oases located near the oil fields and ports (Edwik, 2007).

Various economic development plans have been implemented since 1963. The first was a five year plan for economic and social development based on oil revenue forecast (1963-1968). The objectives were: (1) to improve the standard of living, (2) to revitalise and modernise agriculture, (3) to provide education, health, communication and housing (Omar, 2003). About LD169 million was budgeted to fund the first development plan, but this was increased to LD625 million due to oil revenue that surpassed forecasts (Ghanem, 1985). However, the development policy mainly concentrated on the urban areas. Tripoli and Benghazi benefited from economic developments more than any other

area of the country. Most of the developments were targeted at linking the rest of the cities, villages and towns to Tripoli and Benghazi. These encouraged the countryside population to move to bigger towns and cities.

Mobility across the desert was represented by a relatively small volume of commercial exchanges. The development of a modern transportation system has encouraged social mobility and the growth in towns and urban areas. The north-south road network between the coastal region and the oases of the desert area has opened up remote desert areas that were considered for a long time to be isolated communities which had few contacts with each other or with the coastal regions. The first road stretches from Bugrain (located on the coastal road between Misrata and Sirte) through the oases of Jefra, to Sabha and Fezzan. The second originated on the coast at Al-Barayqah and ran south to the oasis of Maradah and the oil fields. The third extended south from Nalut on the Jabal Naffusah through Darag to Ghadamis. The fourth linked Tubruq with Jaghbub, and the fifth was constructed from Ajdabiya to Awgilah and Jalu. These roads have greatly facilitated commercial activities as well as social mobility between the oases of the desert area and every city and town of the coastal region. Such movement was one of the most important factors contributing to the modern socio-economic development of oases and urbanisation. The roads have served to introduce the materials of technical advancement to small towns and villages that had not previously benefited from modern development.

Vandewalle (1998) reported that about a decade into the oil-based economy, the new government of Ghaddafi nationalised foreign banks and changed the production formula, which was operated by foreign companies. During this time the price of oil

increased from US$2-3 per barrel in 1969 to US$25 per barrel in 1979 (Abbas, 1987:75). The revenue subsequently increased from LD2.4 billion in 1970 to about LD6.5 billion in 1980. This growth in the revenues made the new government abandon the first development plan and initiate a plan (1973-1975) that gave emphasis to housing, agriculture, water and industrial development. The second socio-economic plan covered the period 1976-1980 with priority attention to investment in the industrial sector (21% of national budget), followed by transport and communication sectors with 18 per cent and agriculture as the third priority with 15 per cent. During this period, the state intervened to run all sectors of the economy as a socialist system.

The political change after the 1969 military coup was accompanied by the application of a progressive nationalisation programme within the framework of a new political discipline prohibiting private enterprises in all economic endeavours. In what appears to be state-socialism rather than pure 'socialist' principle, it came without any form of participatory democracy. It was characterised by the appointment of a General People's Committee (GPC) that served as the intermediary between the masses and government leadership. According to Ghaddafi's *Green Book*, no individual had the right to engage in private investment in the new economy. In this economic system, all kinds of services, administrative affairs, commercial activities, and all other similar activities became public – government controlled affairs but largely controlled by privileged few. It was not until the 1990s that the government assumed the role of the private sector in the field of financing and implementation. This led to additional excessive financial and administrative burdens that could have been shared, on one hand, with the private sector (if it were granted the appropriate opportunity and vital role), and on the other, with the establishment of a macro-economic model that combined private and public sectors.

4.3.3 DISSOLUTION OF PRIVATE OWNERSHIP

Ambitious public sector and investment development programmes reached about US$2 billion from 1990-1993. The increase of developmental and current expenditures against petroleum and non-petroleum revenues, in the 1980s, resulted in a deficit budget funded by the state through debt facilities from the Central Bank of Libya, as well as from other commercial banks owned by the government. Khader and El-Wifati (1987) and Bruce St. John (2006) reported that decreasing revenues called for a major revision of the 1981-1985 development plans. In response to the new economic reality, public sector spending on roads, mass housing and water projects faced severe cuts. Accordingly, Ghanem (1985) cited in Abbas (1987:85) states that: "the value of projects signed in Libya as part of the five year plan which was started before the sudden fall in oil resources was US$1.827 billion in 1981, the value of projects signed in 1982 went to US$1.374 billion". The decline in public spending reduced the import of goods essential to improving the standard of living. From 1980 to 1986, GDP also declined from US$35.5 billion to US$24 billion and per capita income fell to US$6.404 in 1986 from over US$10,000 in 1980 (Abbas, 1987:85).

However, the crises in the economy compelled the government to review its public policies due to its inability to fund and manage them, and the failure of the public sector to meet national goals. As a consequence, the public sector went through a gradual process of privatisation after 1988, when private shops were encouraged to reopen. Since that time, many public properties have since been privatised and the Libyan economy witnessed greater openness to the external world both in terms of export and import (Fisher, 1990). After the lifting of the United Nations Libyan Sanctions in 1999, the Libyan economy has been improving rapidly, mainly due to oil exports and the

import of consumable commodities and by-products or raw materials for investment projects. By 2001, Western investments in Libya had more than doubled as compared to less than 50 per cent during the sanction period (National Authority for Information and Documentation, 2003). As more state-controlled enterprises were privatised, housing shortages were being experienced. The General Council for Planning (2002:11) report attributed shortages of housing in Libya to the following:

- The sudden withdrawal of the state from housing and construction provision;

- The dramatic decline in housing allocation in development plans;

- The lack of an efficient national construction industry;

- Inefficient supply systems of financial services and land for the housing sector;

The above factors, coupled with poor administrative and management capabilities, meant that housing shortages increased. This is an indication that, although private sector development was being promoted, the government should provide an enabling investment environment for the housing sector to meet growing demand. The uncertainties surrounding oil economies call for Libya to pay greater attention to diversifying the national economy. This can be achieved by concentrating on sectors that are of competitive advantage in the different geographical regions of the country.

4.3.4   FUTURE ALTERNATIVES TO OIL

As at today, the oil sector is still predominant in the Libyan economy, contributing more than 30 per cent of the GDP, and more than 95 per cent of the gross export commodities (World Bank, 2011). In addition, there is a continuing and excessive dependence on this sector to finance development projects since the self-financing of the sectors as well as the contribution of the national sector is still very moderate. Is the oil industry alone

able to sustain all these development indices in the long-term? Certainly, Libya's overwhelming dependence on oil revenue is dangerous, especially at bust periods. For example, at the onset of the 2008 global recession the oil price reached over US$140 before diving to less than US$40. This kind of volatility affects government fiscal policy in the short to medium term. Libya, therefore, faces the challenge of reducing its overwhelming dependence on oil export and the volatile oil revenues. This is vital in reducing the vulnerability of the economy to oil price shocks, and for sustaining the country's economic future (see Auty, 1993, 2001; Bridge, 2008). Libya also needs the extra income to deal with high unemployment, estimated at 30 per cent in 2011, and a 2.5 per cent inflation rate, coupled with rising demands from all sections of Libyan society. According to the IMF (2005:5), "Libya is implementing reforms and opening its economy since the freezing of the UN Sanctions in 1999"; however, the report concluded that: "Libya is generously endowed with energy resources, but has one of the less diversified economies in the Maghreb (Libya, Tunisia, Algeria and Morocco) region and even among the oil producing countries." Edwik (2007:118) supported that: "Libya's economic diversification has been a constant element in the past development plans for a non-oil future." However, at least until recent years, as confirmed by the IMF (2005), the development plans paid little attention to such objectives.

Libya can enjoy a comparative advantage based on its geographical location, which can help not only in diversifying the economy, but in sectoral development such as in marine services, ship-building and repair. The service sector, including information, telecommunication, transportation, administrative and support services, securities, commodities and other financial investment services, among others, may also be investment-attractive. These sectors may be most appropriate for the absorption of the

local labour force and unemployed youth. First, Libya's rich cultural heritage is an important asset for the tourism industry and an economic resource that would complement oil revenues. Second, intensifying agriculture for food security and to provide employment may not be possible because of geo-physical factors outside the control of government. The land in Libya may not be suitable for rain-fed agriculture because the land is mountainous, Saharan or urban. To meet the growing demand for food, increased agricultural production might be possible with increased availability of irrigation water and the provision of incentives to farmers in particular areas such as Jabal Al Akhadar, the Benghazi plain, the Jefarah plain and Jabal El Garbi (Jabal Naffusah). The amount of water coming as sewage from urban areas can be treated and utilised for irrigation and other industrial production processes. Third is the institutionalisation of a planning paradigm that is consistent with the future growth and development of new Libya such as HIU that is argued for in this thesis. The next section discusses Libya's socio-political changes including Ghaddafi era to date, how it relates to planning, housing and environmental change.

4.4 SOCIO-POLITICAL CHANGE

After seizing power in 1969, Ghaddafi abolished the Libyan Constitution ratified in 1951. Since then, the political system has been based on his political philosophy and personal ideology. Until 2011, the administrative divisions of the Jamahiriya were represented in three key authorities: political, planning and executive authorities (UPA, 2005). The executive authorities comprised two levels of institutions: national and local government. At the national level the GPC (equivalent to parliament in Western systems, or a council of ministers) was the highest political authority in the country, with Ghaddafi as the General Secretary of the GPC and the primary decision maker.

The GPC was responsible for the management, supervision and implementation of national social and economic policies and development plans. In addition, all state legalisations were issued by this authority. The second executive level was local government; this was responsible for the management, implementation and supervision of social and economic development plans and projects at local levels in the Shabiyas (Shabiat) or municipalities. The current hierarchy of urban authorities still looks like the table below. However, this will change due to the on-going political transformation.

The third body of the Libyan state was the planning authority. This was the General Council for Planning (GCP), which was considered the highest national planning authority in the country. It was responsible for conducting national planning studies and the assessment and approval of national social and economic strategies and budgets. Subsequently, local Councils for Planning were established in the municipalities. These were responsible for carrying out local studies and approving local social and economic projects and budgets (UPA, 2005).

A division for planning was maintained for the purpose of settlement planning and urban related issues. For clarity, the UPA is the executing body of the settlements planning sector at the national level. The UPA was mandated to plan urban settlements and plan policies and guidelines for the growth and management of settlements. The division divided Libya into four planning regions (Tripoli region, Benghazi, El-Khalij and Fezzan) which were further subdivided into 18 sub-regions and 22 Shabiyas, for spatial approaches to settlement planning in the country. These changes in the size and organisation of the political system intensified the process of encouraging foreign

migration into Libya, not only in the old cities, but also in the increasing number of new towns and municipalities.

Table 4-1 Shabiyas (municipalities) in Libya

Region	Sub-region	Shabiyas
Tripoli	Tripoli	Tripoli
		Al Jifarah
	Al Khums	Al Margab
		Misrata (Zliten)
	Misrata	Misrata (except Zliten)
	Zuwarah	Al Niquat Al Khams
		Az Zawiya
	Ghyrian	Al-Jabal (Naffusah)
		Nalut
Benghazi	Benghazi	Benghazi
	Al Marj	Al Marj
	Al Jabaal Al Akhdar	Al Jabaal Al Akhdar
	Dernah	Dernah
	Al Butnan	Al Butnan
Sirte	Sirte	Sirte
	Al Jufrah	Al Jufrah
	Al Kufrah	Al Kufrah
	Al Wahat	Al Wahat
Fezzan	Sabha	Sabha
	Wadi Al Hayat	Wadi Al Hayat
		Ghat
	Murzuq	Murzuq
	Wadi Al Shati	Wadi Al Shati

Source: Urban Planning Agency (UPA), 2005:15.

Based on the Shabiyas listed in Table 4.1, there were functional spatial entities at the different levels of administrative responsibility: regional, sub-regional and town scale. By so doing, each of the activities that relate to spatial planning at the different scales were within the boundaries of that particular functional unit. Figure 4.9 is an indication of the different development plans of Tripoli from colonial occupation to the 1980s. Without stable boundaries, urban planning can be cumbersome. All aspects of government responsibilities based on divisional boundaries are an important area for the

incoming transitional council to consider. Stability in, and clarity over, boundaries is also important for activities such as planning for taxation, billing and postage.
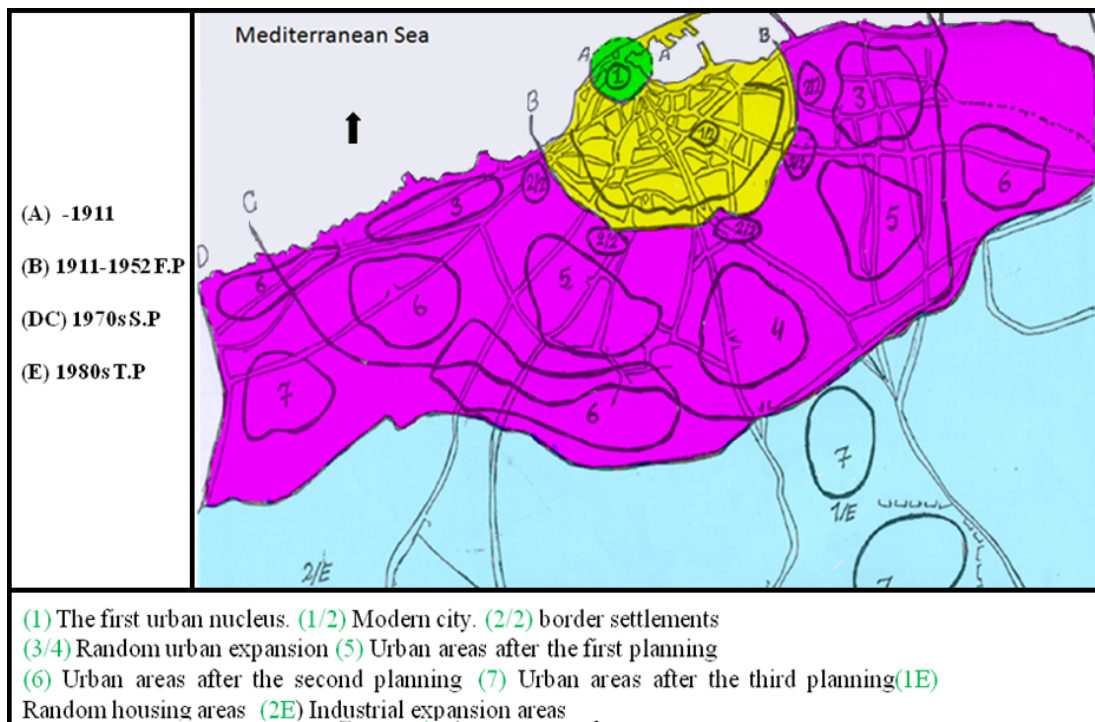
Figure 4-9 Sketch map of the development of the regions. Source: Urban Planning (1988).

As can be noted in the introduction of this section, Libya's system of administration has continuously changed over time. As a result of these changing divisions, statistics and information are difficult to compare and appreciate over short and long periods of time. Stable area boundaries at all level of government responsibilities will support an efficient and effective administration of the country. This can only be achieved in the medium term because of the crisis in the country. With the collapse of the Ghaddafi regime, Libya is currently under a de facto administration of the Transitional National Council (TNC) headed by Mustafa Abdul Jalil. The TNC pledged to conduct elections to complete the transition to democracy (Harding, 2011). An election in Libya has just recently happened with the election of parliamentarians. This system of political reform

will no doubt affect all sectors of the Libyan economy. Libya faces an immediate need to: 1) restructure its economy away from excessive reliance on oil revenues, 2) design an all-inclusive political blueprint that would be acceptable to pro and anti – Ghaddafi factions, all of whom were held together by the so-called dictatorship of Ghaddafi and his government and 3) create a legal system that serves its citizens equally, which is Islam.

In terms of social change, traditional Libyan society is bound by family and tribal loyalties. Traditionally, the social value of this personal relationship has been defined by a combination of two elements: kinship and regional solidarity. Libyan genealogy bears a strong relationship to geographic areas and the bond of local territorial identification is considered as important as familial and tribal bonds. The low level of population movements has been attributed to the perceived value of traditional relationships attached by the individual, not only to his family and his tribe, but also to the territory which he inhabited. Traditional social relationships seem not to have lost all their influence after the Ghaddafi military coup. For instance, when the economic development strategy reached small towns, villages and oases, some of the emigrants were encouraged to return. Newly introduced activities as well as traditional social ties have together served to lure them back to their indigenous communities.

4.4.1 HOUSING AND HOME OWNERSHIP

There are important issues relating to housing and urban growth that can be examined. Libyans have the right to build and own only one house according to the Property Ownership Law No. 4 of 1978 (Ministry of Housing, 1985:416-431). As a result, the government abolished the private property market, and those with two or more houses

were made to surrender all excess houses to the government. This was supported by Law No. 4 of 1984 which gave renters the rights to become home-owners of the houses they rented (Government of Libya, 1984). Before the promulgation of the law, the government viewed traditional rents as exploitative and an expression of control over the basic needs of others, especially those who were unable to afford it. With the initiation of these laws, a number of construction projects commenced to make available at least one house per Libyan citizen. New sites were built and urban areas were expanded, traditional houses were refurbished and modern apartments were constructed. (NCID, 1995:16)

By the start of the 1980s, almost all the squatter settlements had been eradicated from the rural areas. Since the government had abolished private sector development, it commenced massive construction of dwelling units, at an annual rate of 8-9 units per 1,000 people. Furthermore, large-scale settlements and infrastructure development projects were embarked upon for the sustenance of the national settlement system (NCID, 2003). The developments of Ras Lanuf and Braygah, together with the towns of Sirte and the Jeffara area, are examples of regional and new town development, built in accordance with Libya's settlement development policy of 1985-2000. Prior to the discovery of oil, Ras Lanuf and Braygah, which are located on the Mediterranean coast between Tripoli and Benghazi regions, were largely underdeveloped (UPA, 2005). The current developments of these towns had a significant impact on reducing the excessive concentration of population in Tripoli and Benghazi, and the pressure of urban encroachment on the surrounding rain-fed agricultural lands. In the late 1980s and early 1990s, government support for housing dwindled due to a shortage in public funds. Between 1984 and 1995, the annual growth rate of housing production was 4-5 units per

1000 people (General Council for Planning, 2002). As a consequence, the Libyan government is no longer the main provider of housing, thus the private sector once again became involved in securing housing supply.

4.4.2 LIBYAN PLANNING AND ENVIRONMENTAL CHANGE

Socio-economic projections, economic development goals and the quest for supremacy have been the major driving force for Libya's physical development planning. The Libyan environment in particular, is not immune to regional and global climatic change, desertification, ecosystem degradation, groundwater depletion, as well as local development contamination and salination of soils, land pollution in and around built-up areas, air pollution around major factories, and loss of rain-fed agricultural lands due to urban encroachment and the pollution of coastal waters (Chapter Six). Environmental health is an important issue for settlement planning. The urban poor are the most exposed to these environmental hazards. The coming together of a number of factors (such as overcrowding, air pollution, noise, dust, lack of sanitation, difficulties in providing safe drinking water and inappropriate garbage collection) results in unhygienic situations that are favourable to a number of diseases. For the population to enjoy a high quality of life, new policies for a sustainable city, taking into account spatial and environmental aspects as well as health, and social, cultural and economic elements, need to be integrated in urban planning. Safe drinking water, sanitation, garbage collection, proper solid waste management and the reduction of air pollution are an act of faith in Islam, and essential to improve environmental health and sustainable development. Building codes (a set of rules that specify the minimum acceptable level of safety for buildings) should contain stringent directives for among other things ventilation, drainage, sanitation and insulation for both heat and cold.

Judging from the findings of this study (see Chapters Five to Seven), these essentials are yet to be prioritised in the management of Libyan cities.[2]

Rapid population growth in Tripoli, Benghazi, Sirte, and Az-Zawiya has placed tremendous pressure on the collection and disposal of waste. Initially, insufficient attention was given to the environmental consequences of prevailing practices of providing goods and services, especially solid, liquid and air by-products. Recently, it has become increasingly evident that environmental factors are gradually but not comprehensively included in long-term national plans, as well as in sector development strategies and investment programmes. Solid waste is generated in every household; however, it becomes more complicated in the urban centres. As documented from my field survey (Section 6.6), refuse is dumped within the vicinity of the neighbourhood as suitable sanitary disposal sites are not adequately provided by the municipal council. The failure of planners and government to cope with this problem has contributed to water pollution and environmental degradation.

According to UPA (2005), thirty sewage treatment plants had been built by 1993 and 1,870 kilometres of sewage collector pipes had been constructed. However, liquid waste management is still far from satisfactory as most towns, and especially Tripoli, do not have adequate sewage treatment plants. The few existing plants are not working either, due to lack of management or difficulties in their maintenance. Only a proportion of the buildings in towns with sewage plants are properly connected to the facilities. Furthermore, untreated sewage is drained into the sea along the coastline or fields inland – thus creating environmental hazards and pollution.

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[2] This is personal knowledge as literature on Libyan garbage collection is difficult to come by.

The rapid expansion of Libyan cities road networks and improper long-term transport planning has produced significant traffic congestion, especially in Tripoli and Benghazi. This has resulted in financial and time loss for urban residents and commuters due to lengthy travel time to work. In another way it adds to higher distribution costs to businesses that are involved in the movement of goods and services from one location to another, especially to the desert and mountainous areas. This situation, amongst others, has made urban areas unattractive and unfavourable to economic activities, even if one argues that the situation is like any other city in the world.

4.4.3 SYNOPSIS OF LIBYA UNDER GHADDAFI

Oil played a key role in developing the country from a poor aid-dependent nation to a rich surplus country, where poverty is being eliminated and the country's health and educational infrastructure were improved. An Italian journalist, Yvonne de Vito, reporting for Russia Today, believes beyond reasonable doubt that: "Differently from other countries that went through a revolution – Libya is considered to be the Switzerland of the African continent and is very rich and schools are free for the people. Hospitals are free for the people" (Russia Today, 2011:1). Libya is ranked 55th on the 2010 Human Development Index (HDI) after Qatar (38th) and Kuwait (47th). The developments achieved so far are in sharp contrast to what other oil-rich developing world countries like Nigeria (145th) have been able to achieve despite their democratic political arrangement.

The Libyan government under Ghaddafi claimed to have provided to its citizens what is denied to the populations of sub-Saharan Africa and even Americans: free health care

service and education. I strongly argue that the provision of schools and hospitals was only used as a tool for propaganda: in reality the quality of the free services of both education and health was very low when compared to neighbouring countries. For example, most Libyan people (including myself) would go to Tunisia to obtain suitable medical services due to a lack of proper medical diagnosis, and a lack of confidence by ordinary people towards the health sector, as to all other sectors. Nonetheless, areas including Ghaddafi's infrastructural development and agricultural expansion deserve commendation. Most notable of all is the Great Man-Made River (GMMR) – one of the world's largest irrigation projects that supplies water from the Libyan Sahara to the coastal urban areas (Water Technology, 2011).

However, the underground aquifers for the GMMR Project may not be sustainable and could reach depletion earlier than estimated. Topol (2010) quoted Stephen Lonergan as saying: "The Libyan government says reserves will last the country 4,625 years according to current rates of demand. But independent estimates indicate that the aquifer could be depleted in as soon as 60 to 100 years" (Topol, 2010:1). One of the main issues in the long-term is the dependency that it has created and at the cost of tackling the depletion. Similarly, as the project supplies fresh water with which to irrigate agriculture and supply cities and industry, it is also affecting the underground water supply to palm, fruit and olive trees and plantations. Elhassadi (2007:49) warned that the yearly consumption rate must consider: (1) a water level no lower than the allowed economical rate of pumping, (2) a water level no lower than the extent of permitting seawater or polluted water intrusions, and (3) not exceeding the yearly feed rate of the reservoirs.

Prior to the civil conflict, it was widely believed that Libya had no external debt. Libya was a creditor and donor, mostly to poor African countries, who instead of paying showed allegiance and solidarity to Ghaddafi's regime. Libya's total sovereign assets that were frozen at the onset of the war were estimated at around US$160 billion. For example, in 2010, Libya was the 21st largest holder of gold bullion, with a value of US$8.6 billion. About US$100 billion of Libyan funds have been frozen: two-thirds of those sums are held in the United States, Britain and Germany (Defterious, 2011). Paradoxically, Libyan people are one of the poorest in the world.

Among the other peculiarities of Ghaddafi was the control of state resources and women by him and his family members (Rheannon, 2011). This was kleptocracy rather than the socialism his principles proclaimed: "the government – either the Ghaddafi family itself or its close political allies – has a direct stake in anything worth buying, selling or owning" (Lichtblau *et al.*, 2011:1). Ghaddafi's attitude to women was strongly described by Cojean (2012:76): "Ghadddafi was a hooker, and as he presented by age as he surrounds himself with more girls, harassing, cohabiting and assaulting them....and he was subjecting his people (both men and women) to all kinds of oppression to ruthlessly gets what he wants". As a result of poor human rights records, the Freedom of the Press 2011 Index ranked Libya in the last category together with Eritrea, Burma and Uzbekistan. The Revolutionary Committees created in 1973 served to keep tight control over internal dissent. Just before the war, about 20 per cent of Libyans worked as informants for these committees, practising surveillance in government offices, factories, the education and health sectors, as well as diplomatic missions (Eljahmi, 2006). Those considered dissidents were executed without fair trial through public hangings and mutilations (Freedom of the Press, 2011). Dissent was illegal under Law

75 of 1973, and Ghaddafi's effort at silencing opposition by executing anyone guilty of founding a political party paid off, at least before the war.

With Libya's small population in relation to its tremendous oil wealth, responses gathered indicate that corruption and waste in the government-controlled oil sector have prevented that revenue from reaching the people. As such the people are becoming poorer by the day. A government estimate put the poverty rate at 7.2 per cent (see Auty [1993] on oil economies and development). This figure is subject to debate because poverty is widely spreading, as can be seen in the level of income of respondents in Section 6.3. Like other African countries, unemployment rates in the last decade reached an all-time high, believed to be around 25 – 30 per cent. Gurman (2011) reported that the unemployment rate rose as the government embraced neo-liberal economics by increasing privatisation, foreign direct investment and subsidy removal.

The government of Ghaddafi is guilty of financial and administrative corruption. Ghaddafi and his family were recently accused by the TNC of embezzling the country's oil revenues and diverting the sovereign wealth fund for private use. Transparency in Libya's oil revenues will be crucial to post-revolution recovery and development. O'Donnell and Palmer (2011:1) testified that Libyans will "require public disclosure of how Libya manages its oil sector, and disclosure of all revenues associated with it". They further argue that the terms of existing oil contracts should be transparent and accountable – details of agreements made by the TNC with governments and companies involving sovereign funds or the exchange of cash should be made public – and open to scrutiny. They added: "a transparently managed oil sector could prove the catalyst for much-needed development and stability in the country". Social issues and questions

relating to oil explained above played a key role in fuelling the on-going conflicts between Ghaddafi and the people he has ruled for over forty years. However, the demand for democracy and political freedom has been the most visible cause of the Libyan conflict, because most Libyans believe Ghaddafi politically excluded the citizens, while placing his family, ethnic tribesmen and political allies above the rest and gradually empowering them to rule the country forever. It is hoped that the new Libya will create the kind of change that is desirable to different Libyan players – individuals, families, tribes, regions and provinces – to pursue their own interests in a society free from molestation.

4.5 SUMMARY

The main purpose of this chapter was to examine the historical development of Libya in terms of urban areas, demography, economy and political change. Urbanisation in Libya may differ from urbanisation in Western countries in terms of approach. The growth in urban populations can be attributed to both demographic and physical growth: longer life expectancy, migration away from rural areas such as mountainous and desert areas, the increasing number of returning migrants and immigrants from neighbouring African countries. All of this has added to the growth of urban areas, straining the existing infrastructure and creating sprawls such as those examined in section six. Urbanisation in Libya has been supported by investments in structural and social infrastructure such as roads, recreational, cultural and religious facilities, hospitals, schools, communication, housing and water, across the country. The level of urbanisation in Libya is very high in the Tripoli, Benghazi and Fezzan regions compared to other parts of the country. However, harsh physical conditions such as those of the Sahara desert and the mountains are limiting the growth and development of other regions. The

urbanisation process is closely linked to the economic development of Libya. Indeed, urban growth was enhanced because of oil wealth and the country's transformation agenda of modernisation. Thus, Libyan society became highly urbanised but not highly industrialised as the country imports most of what it consumes. This phenomenon, particularly oil production, gave rise to urban growth by people from within and outside the country. At the same time, living standards are falling in particularly neglected areas and ethnic groups in the country. As the population is increasing and urban areas are expanding, the country must find alternative means of supporting infrastructural works and urban services alongside the welfare of its citizens.

Economic and social development goals and the promotion of regionally balanced development have been the major driving force for Libya's physical development planning – even though not fully implemented. The areas that have experienced rapid urban growth have placed tremendous pressure on the local environment and planning. Even as environmental factors are included in long-term national plans as well as in sector development strategies and investment programmes, they are still flawed with deficient management and a lack of enforcement, as witnessed in the peri-urban areas of Tripoli (see next chapter). The inefficiencies and the incoherent manner of executing plans are due to a lack of clear framework (such as Holistic Islamic Urbanism) that is acceptable and easy to implement, yet in line with global trend of modernisation. As indicated in section 2.4, a non-holistic approach to development can never be sustainable. The next chapter explores the expansion of the city of Tripoli in terms of size, population and function in relation to the tenets of Islam and modernisation. The chapter also examine how planners struggle with this expansion and explores ways of making it a liveable and sustainable city.

5 TRIPOLI CITY AND ITS PERI-URBAN AREAS

5.1 INTRODUCTION

An extensive overview of the growth of Libya in terms of demographic and socio-political change and economic development was presented in Chapter Four. This chapter, which is divided into six sections, is a discussion about Tripoli, considered the main hub of Libya's Westernisation and urbanisation issues that may have led to the revolution and the choice for adopting HIU. Following the introduction, section 5.2 presents a portrait of Tripoli, taking into account some of the forces that have influenced the physical and social transformation of the city. To avoid repetition of the historical account, this section starts with the transformation of Tripoli after the discovery of oil, but also includes factors that have been responsible for the expansion of the city to the neighbouring towns. The third section examines plans for re-developing the city in recent times. In section 5.4, the peri-urban areas of Enjela and Khalt El-Ferjan are examined. Section 5.5 analyses the implications of the urbanisation of Enjela and Khalt El-Ferjan in particular and Tripoli as a whole. Before section 5.7 which discusses sustainability issues relating to Tripoli city, section 5.6 presents the current and past political situations in Libya as they relate to the city.

The information presented in this chapter has been derived from documentary sources (both published and unpublished), including some official reports, research fieldwork, and the researcher's experience. A thorough analysis of land-cover change was done to obtain an insight into the changes that have occurred over a 10 year period using remote sensing techniques. This chapter uses the above secondary and empirical sources to present Tripoli and how it has changed over time under the influence of various forces.

This helps establish the context within which to situate the next chapter – an analysis of the outward spread of the city drawing on the experiences of people residing in two selected areas (Enjela and Khalt El Ferjan).

5.2   TRANSFORMATION OF TRIPOLI AFTER OIL DISCOVERY

It is evident from the previous section that the long period of foreign domination has influenced the social and physical environment of Tripoli. The post-independence period (1952 onwards) has also brought some policies and programmes, particularly after the oil discovery. Tripoli has witnessed rapid growth, which also has an impact on the people and the environment. The population has witnessed exponential increase and the rate of urban growth has more than doubled. This began at a time when the world's urbanisation level was steadily growing after the Second World War. Since the economy of Libya began to improve, the population of Tripoli has grown considerably due to migration and natural increase among many factors. Major changes to the built environment did not come until the discovery of oil in 1959. Since the early 1970s, an urbanisation programme commissioned by the former government required major physical alterations and expansions that led to an increasing number of buildings and infrastructure.

Extensive construction works were conducted to provide residential, commercial and industrial accommodation. During the 1980s, urban development projects placed emphasis on building a modern education system, better health services, modern houses, upgrading electrical facilities and the reconstruction of roads and the transportation system, in response to growing demands. For example, a new network of roads was constructed throughout the city to link to neighbouring villages and cities.

These development projects were funded mostly by the Libyan government and undertaken by both public (government-owned) and private sectors (transnational construction companies). Between 1978 and 1985, private construction companies were prohibited or forced to change their organisation and management systems according to a partnership system with the public sector. In addition, some construction companies were amalgamated so as to be owned by the government. Consequently, the construction industry was restructured and reorganised according to a partnership principle (Grifa, 2006). After the UN Sanctions, the Libyan government allowed free and 100 per cent private investment in construction and all other sectors of the economy.
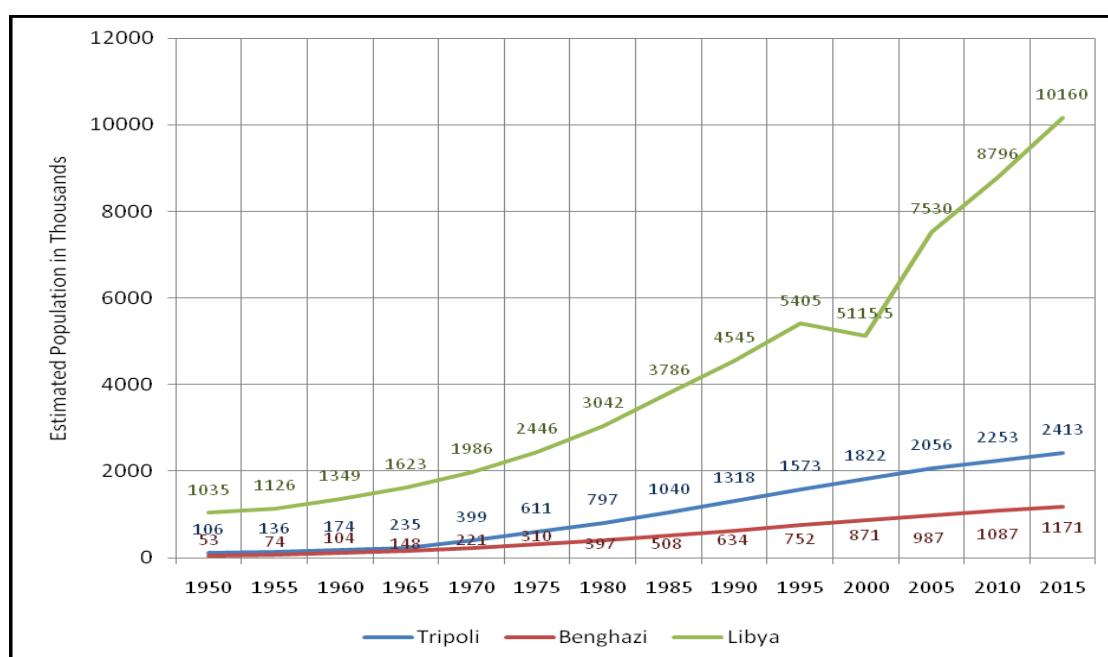
Figure 5-1 Estimated population of Tripoli in relation to Benghazi and Libya's total. Source: Population Statistics (2011).

While the government concentrated on large-scale housing projects (mainly multi-storey dwellings) and public infrastructure developments, the private sector focused on houses (in the form of villas and duplexes) in neighbourhood areas. The newly built

modern infrastructure brought changes in the morphology and character of the city. So too did the large-scale public and private sector developments, which in turn encouraged increasing migration to Tripoli. As Figure 5.1 shows, the population of Tripoli grew by 4.7 per cent from 1931 to 2002. By 2010 the population was approximately 2.25 million, and is estimated to reach about 2.5 million by 2015 (El-Batran, 1995). The rapid growth of the city is a pull factor for migration, with attendant pressure on existing infrastructure and space.

El-Batran (1995:34) notes that the population increase in Tripoli represents the highest rate of urbanisation in the Arab Maghreb, and suggests that by 2030 more than 90 per cent of the Libyan population will be urban. The city, being the capital of Libya, has become an important centre of administration, religion and economic activities. Tripoli has a better infrastructure and services (houses, schools, transport system and hospitals) than other cities in the country. In addition, the rich historical antecedence of the city (a mixture of indigenous tradition, Roman civilisation, Islamic revolution and modernity) has created a unique place that is fast becoming a cosmopolitan city. Sections 5.2.1 – 5.2.3 examine the major transformations that have taken place.

5.2.1 THE MEDINA (OLD CITY)

The old city, which sits 15 metres above sea level, covers an area of about 15 hectares. With people migrating to the new Tripoli, the old city presently accommodates people of low socio-economic status. The Medina is compact, filled with buildings (mostly two-storey quarters) aligned tightly to the street, many of which are too narrow for the passage of the size of a car. At present, most inhabitants of the old city are foreigners. Of the total area of the old city, 12 per cent constitute streets, built-up space is 67 per

cent and open-space including courtyards make up 21 per cent. It has been estimated that about half of the built-up spaces are of low standard and often in a bad shape. Increasing dilapidation has converted the Medina into a strategic place of reception and first settlement for economic migrants from other parts of Africa seeking employment in Libya or elsewhere in North Africa, or as a stepping stone for migration to Europe. The Medina contains both indigenous people and foreigners with no property rights. African migrants tend to be illegally housed and often live in very difficult circumstances (in overcrowded accommodation, sleeping on the roof in the open air, occupying property on the point of collapse, or properties that have partially or mostly collapsed).

As the city expands, one of the most important functions of the old Tripoli city (Medina) is the composition of artisans, shopkeepers and merchants that have survived the various civilisations to present times. The craftsmen and artisans have struggled and are surviving the invasion of imported goods that compete with their local products. The Libyan government, however, encourages and financially support the artisans because the traditional industry that locally produces carpets, leather goods, copper ware, and pottery represents an important tourism destination. The houses are laid out in strips and in an irregular pattern facing very narrow streets called alleyways. This is the sort of housing orientation preferred by some of my respondents as reported in the next chapter. As stated earlier, the Medina (as see in Figure 5.2 and Figure 5.3) is a walled city which up to the present times has preserved mosques, historical schools, traditional neighbourhoods, market places and caravan hotels (Arghei and Nelson, 1994). These play an important socio-cultural role in modern life; they attract people from the city to trade and shop and to socially interact (Elbendak, 2008).

Figure 5-2 The entrance gate to the Medina. Source: Temehu.com, 2011

Figure 5-3 A view of the walled city Medina and the edge of modern Tripoli. Source: pbase.com, 2011.

Regarding the form of the old city, Belgasem, (2005:1) believes that "ethnic enclaves affected house styles, streets' elevations, street life, colour used, and services such as tailors' shops, barber shop and grocery stores." It is often possible, by observation, to

distinguish the presence of different groups in the old city by social and activity differences. The old city was pedestrian-oriented with mixed uses and narrow streets pattern with high population, while the new urban development is car-oriented with low population density; it has multiple and wide-separation of functions (Al Hammad, 1988). Arguably, much of the expansion into peripheral areas is related to the existence of the modern road networks and the increase in the number of vehicular movements. Satellite images elucidate how the road networks have contributed to the expansion of urban areas in Tripoli, which tends to take the form of urban sprawl or ribbon developments (section 5.4.2). The informal pattern of settlements around the road networks illustrates that making plans is one thing, while implementing plans and controlling construction is another.

Tripoli, popularly known as the 'White bride of the Mediterranean' has gone through different forms of civilisation, as attested to by ancient artefacts in the Medina. The Medina has become a tourist destination in North Africa. The weather and local environment is conducive to both foreign and indigenous tourists, with a number of places to visit. However, some of the sites remain unattractive for tourism because of dilapidation. Certain basic facilities can be seen to be either absent or dilapidated. Facilities such as toilets, rest houses, information centres, signage and proper documentation are absent in St. Gilles Citadel, one of the tourist centres in Medina. The St. Gilles Citadel also lacks some basic infrastructure that would enhance visitors experience and comfort such as security, safety, landscaping and appropriate hotel accommodation.

The consequence of this sort of neglect led to the state of affairs before the revolution, where tourist centres, particularly those in the Medina that are sources of employment to the growing young population, have been left without proper conservation, management and promotion. It is possible to opine that a maintenance and repair culture has yet to be entrenched in public buildings. For example, an empirical survey by Grifa (2006) indicates that only a small number of maintenance and repair works forms part of the construction industry in Tripoli. The Medina is known to be the settlement place for mostly foreign workers, African migrants and other undocumented immigrants, particularly those from Sub-Saharan Africans who use Libya as a transit before crossing the Mediterranean and Atlantic to Europe (Bredeloup and Pliez, 2011; Hamood, 2006). Details are provided in the following section (5.2.2).

5.2.2 THE INFLUX OF MIGRANTS

Because of the relatively small population of indigenous or Libyan citizens, the country and indeed the city has relied on a significant migrant labour force to provide manpower for various construction projects and manufacturing. Some 30 per cent of Libya's population are foreigners, of which more than 50 per cent are residing in Tripoli (United Nations Development Programme on Governance on the Arab region, 2006; National Corporation for Information and Documentation – Tripoli, 2002). The so-called socialist laws implemented by Ghaddafi in Libya prohibited the employment of Libyan workers by individual Libyan citizens – Libyans must be partners and not wage earners (GPC, 2002:12).

Based on this provision of the Green Book, Ghaddafi's international policy encouraged the employment of foreign workers in the construction industry and other menial jobs

that are not done by Libyans. Thus, migration in Libya was driven by Ghaddafi's international policy (owing to limited human resources) rather than international economic and political changes. Similarly, Hamood (2006:17) added that: "as in the Gulf States, the concomitant labour demand could not be fulfilled locally, and this triggered substantial migration of mostly temporary migrants, predominantly from Egypt. Egyptians have been the largest nationality present in Libya, and worked predominantly in agriculture and education". While some migrants are permanently resident in the city, others come for sightseeing, business and research/learning. Those of Sub-Saharan African origin are largely unskilled and unemployed.

Significant numbers of skilled migrant or expatriates, not just Europeans, were found in the education and agricultural sector, as well as the petroleum and petrochemical industries. The skilled migrants and expatriates working in the oil industry are mainly Europeans, Americans, Russians and Chinese and some others from a wider range of countries. The unskilled workers are mainly from the neighbouring countries (e.g. Tunisia, Egypt) and sub-Saharan Africa (e.g. Niger, Nigeria, Ghana). Some of the skilled migrants either live in Tripoli or in planned urban fringes. In relation to internal migration, one of the oldest residents of Enjela on the course of our discussion believes:

> Most of the residents in Tripoli were migrating away from inner city to the suburbs; however suburbs seem to be divided based on tribal and regional blocs. For example, Khalt El-Ferjan study area has residents coming from Zliten, Bani-Walied and Tarhowna even though originally they came from the inner city of Tripoli. In many cases they do reverse migration into adjacent areas. In Khalt El-Ferjan more than 60 percent were coming from internal areas of Tripoli and the majority of them were looking for the improvement of their own life and escape from the busy life. Contrary, in Enjela 80 per cent were coming from western Libya such as Al- Rejban, Surman, etc. While, only 20 percent is representing the reverse migration from inner-city to Enjela (FG1K2, 2010)

The indigenous Libyans interact with migrants and often adopt some of their lifestyle, such as clothing, food and house decoration. However, there are cultural practices of the indigenous that are peculiar to Islamic states; for example, the interaction of men and women and sexual relations outside wedlock are not permissible. In relation to women, Libya is perceived to be one of the countries in the Arab world that has a liberal approach to the freedom of interaction of women. For example, the relatively liberal nature of Libya to women has encouraged migrant females from Tunisia, Egypt and Sudan to work in Tripoli as house helps, child minders and to undertake paid domestic chores.

5.2.3   TRIPOLI'S SERVICES SECTOR

One of the principal functions of Tripoli city is to serve as a national centre for the country's accelerated drive for modernisation and development comparable to other cities in the world. This places Tripoli's function as comparable to London in England, Cairo in Egypt, Abuja in Nigeria, Mecca in Saudi Arabia, and Washington in the United States among others – they are all capital cities and drivers of their respective economies. There are public institutions as well as private economic and financial houses, including private accommodations, all located in the centre of the city. Within the central business area are the clusters of public and private institutions such as administrative, commercial and cultural establishments and other services. According to Elbendak (2008), the attractiveness of the city was greatly enhanced by the planned nature of the various service establishments and institutions that are located and operational in the city centre. The city centre has been growing for centuries, notably during the past 20-30 years, together with the growing population. As described later in section 5.4.2, the old city expanded through the rehabilitation of road networks.

The Italians made efforts at developing the infrastructure of Libya after ceding independence in the 1950s, but the development was centred along the coast of Tripoli. The government took over the development of the interior as oil wealth began to come in. The improvements made in urban services can be compared to those in other modern cities. One indication of the progress made in the service sector is that Tripoli's medical centres and hospitals have a modern outlook and infrastructure. Specialised hospitals were built and the old hospitals were reconstructed to meet modern standards of healthcare delivery. The university hospital, which opened about 10 years ago, has close to one and a half thousand beds. In short, the last survey reported that there are now around 200 private and 30 public clinics, 10 hospitals and three general hospitals; altogether there are about 300 pharmacies and dispensaries serving them and the general public (DUPB, 2009). Consequently health services have reached 100 per cent coverage in rural and urban areas, and for men, women and children (DUPB, 2009). Most of these hospitals and clinics are owned by the Libyan government but a few of them are run by private Libyan doctors. The standard of these facilities, especially those that are owned by the government, benefit from infrastructure but the quality of care is appalling and not comparable to those of other cities in MENA, such as Dubai.

In the education sector, schools from primary to tertiary level similar to those in Europe were provided. Libya, like most modern economies, has public and private sector schools and higher education. As a result of the provision of infrastructure, and the promulgation of an education policy that encourages free and compulsory education, the number of school-going children grew from a little above 30,000 in the 1970s to a little below 100,000 by the end of 2003 (Social and Economic Survey, 2002:45).

Figure 5-4 Road networks in Tripoli. Source: Cecil Image (2011).

As can be seen from Figure 5.4 above, there appears to be a planned transportation network in Tripoli. The most important port is at the edge of Tripoli, and is serviced by an extensive road network to the hinterland. The road network links the eastern and western part of Tripoli for the transportation of heavy goods/materials. The road network not only serves the port, but has promoted accessibility for the rural to urban areas, which in the researcher's opinion has resulted in the urbanisation of Tripoli and other cities. The road network supports the expansion of housing and makes it easy for many businesses to operate in remote office parks far from conventional places of work (Behan *et al*., 2008). Gillham (2002) added that it is common for ribbon patterns of growth along street car routes to develop, and these patterns are noticeable through the extension of mixed shops along streets, and the grid patterns of nearby feeder streets.

A good transport infrastructure is a source of change (Elmloshi and Ismail, 2010).

Within the last 20 years, the increasing rate of vehicular ownership without a

corresponding increase in the expansion of road networks and public transportation has

meant that roads are beginning to suffer from traffic problems. A survey of registered

vehicle statistics by Elmloshi and Ismail (2010) indicated about 950,000 registered

vehicles, out of which close to 750,000 vehicles were private (Figure 5.5 below). Taxis

are four per cent of the total. The number of taxis is minimal; however, they play a vital

role in transportation. Taxis offer flexible service and operate at all hours of the day.

There are buses and minibuses providing intra- and inter- regional transport. The

number of private cars has increased yearly as people become richer and the middle

class is reviving. By the end of 2000, the Department of Traffic and Licences (2000)

registered 59,299 private cars and 15,924 commercial vehicles in Tripoli. As of 2008,

there are around 705,025 registered private cars, 43,740 taxis, and around 120,599

lorries that are up to three tonnes. About 90,000 vehicular movements are recorded in

Tripoli daily – a situation that causes traffic congestion on the limited road networks

(Figure 5.6 shows traffic in some parts of Tripoli).

The major environmental cost of a large-scale increase of cars is local air pollution. The

emission of gas can be reduced by improving pedestrianisation, cycling access, and

improvements in the public transport service in Tripoli, which at the moment is not

thought about. The planned rail network could have been powered by electricity. The

social costs could include road crashes, physical inactivity, fuel price increases and time

taken for commuting and in the delivery of goods and services when there is traffic

congestion. Examples of where sustainable policy, planning and operation have worked

can be drawn from the cities of Melbourne, Australia and Curitiba, Brazil; these

concepts are used in the HIU strategy.
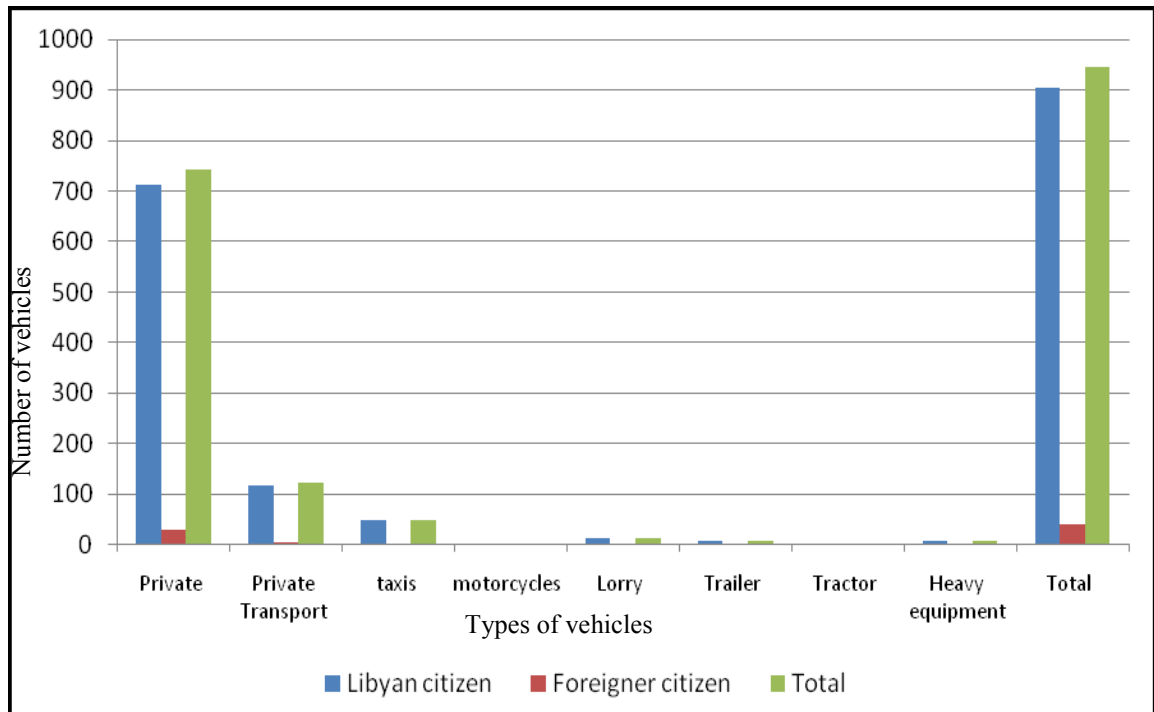
Figure 5-5 Vehicle ownership in Tripoli. Source: compiled from Elmloshi and Ismail, 2010.

Figure 5-6 Traffic congestion at Umar Mukhtar Street, Tripoli. Source: Cecil Images, 2011.

The own-car syndrome is the dominant trend among families and individuals in Tripoli. A number of respondents interviewed by Elmloshi and Ismail (2010) preferred to own a car because of the luxury/comfort, convenience, safety and status, without concern for cost implications. Furthermore, to own a car represents power and status. One of the main causes of congestion is the rapid growth in the number of own-cars. It has also been observed by the researcher that a vast majority of the roads and streets in Tripoli and Libya as a whole, lack road signs, names and numbers. At the moment, public transportation systems (such as train, light rail, metro, and public buses) absolutely critical for mass movement and in reducing carbon emission, are missing. These issues have planning implications that local authorities need to pay attention to in designing and transforming Tripoli into a modern city. In the next chapter, the thesis examines the existence of modern road networks and how they contribute to the expansion of areas surrounding Tripoli.

5.3 TRIPOLI CITY PLANS

The first master plan for the city of Tripoli was issued in 1912, one year into Italian occupation. According to the Tripoli Municipality (1972) records, the city was divided into four. Before the master plan, Dahra, Mysran, Zawit Edhmani and Ibn Al-ass Street were the neighbourhoods outside the old city. It was documented by Shawesh (2000) that two of the neighbourhoods and the western city walls were demolished as the master plan was being developed. The developments which followed the strict compliance of the master plan created foreign-style urban forms completely different from the traditional style (Shawesh, 2000). Multi-storey buildings were built for the Italians, while the indigenous tribes and the rest of the people lived in adjacent areas (camps) outside the Italian walls. Some of the indigenous camps that survived the

Second World War became shanty camps (Abu-Salem) that are still causing planning difficulties to the local authority. By 1969, 26,000 people were living in shanty camps (Ministry of Planning and Development Report, 1969).

Tripoli city had no master plan at the time of Libya's political independence. Buildings erected by members of the public were without planning and were poorly constructed. Streets, green areas, sewages, landscape are all missing in such buildings. El-Hadpah Shargyah is a typical example of a Tripoli neighbourhood that was created without recourse to planning permit. This sort of settlement not only changed the identity of Tripoli, it is still posing challenges to urban planning. In 1958 the first post-independence master plan was produced. Similar to the Italian master plan, this one divided the city into five urban zones: the traditional zone to cover the peripheral areas around the commercial centres; the villa zone (located in Hayy-El-Andalus and Ben Ashor neighbourhoods); a multi-storey zone to cover the central business district; a light industrial zone for industrial purpose (though mixed with business and residential areas); and a heavy industry zone strictly for industrial and manufacturing purposes located on Swath and Gorigi road (Ministry of Planning and Development [1964], in Shawesh, 2000).

Similarly the third master plan of 1988, although excluding the heavy industry zone because of a lack of capacity to execute, divided the city into five zones to reflect the standard of living: the old city zone (comprising Medina and all commercial and handicraft activities); the central area; the villas (located close to the central area for high income earners); the middle and low income zones (located around the periphery of the third zone); and a shanty zone which comprises shanty camps was also

incorporated into the master plan (Tripoli Municipality, Department of Planning [1997], in Shawesh, 2000). This master plan employed Western architecture and urban forms, whose impact on both physical and social contexts is evident throughout the city. Within the master plan public and private houses, schools and hospitals were built, and other projects such as business areas, supermarkets malls, power stations, agricultural and agro-allied factories were developed in line with the master plan and development plan. Figure 5.7 shows one of the many high-rise buildings in Tripoli, Figure 5.8 is a model of planned modern Tripoli under construction. Figure 5.9 is the city master plan containing the map of Tripoli. The next chapter of this thesis is most relevant to the fifth zone of the master plan, as it analyses the general characteristics of life in peri-urban Tripoli, the changes that have occurred, and how they will affect Tripoli's city.

Figure 5-7 Dat El-Emad Towers, Tripoli. Source: http://tiny.cc/1qjat [accessed 2012]

Figure 5-8 Model of skyscrapers under construction in Tripoli. Source: Temehu.com, 2011.

The plan for modern skyscrapers on the seafront in Tripoli is a clear case of the competition for building the tallest architectural edifice ravaging the entire MENA region (Urban Planning Agency, 2005). Dubai is currently leading in the construction of tall buildings, but Saudi Arabia has also signed a contract to build the tallest skyscraper that would on completion break the current record held by Dubai (The Guardian, 2011). While that of Saudi Arabia will be funded by public funds at the cost of US$1.2 billion or £736 million, the tallest building in Tripoli will cost around US$387.84 million or £250 million (Islamic Finance News, 2012), to be funded jointly through public-private partnership. Due to the current political situation, the project has been put on hold. If such projects are to continue, a complete review of the master plan should be made to verify the suitability of the project based on cost, sustainability and climatic conditions.

As can be seen later on in section six, young people have preference for modern housing styles - so a mix of housing styles should be promoted with the above factors.
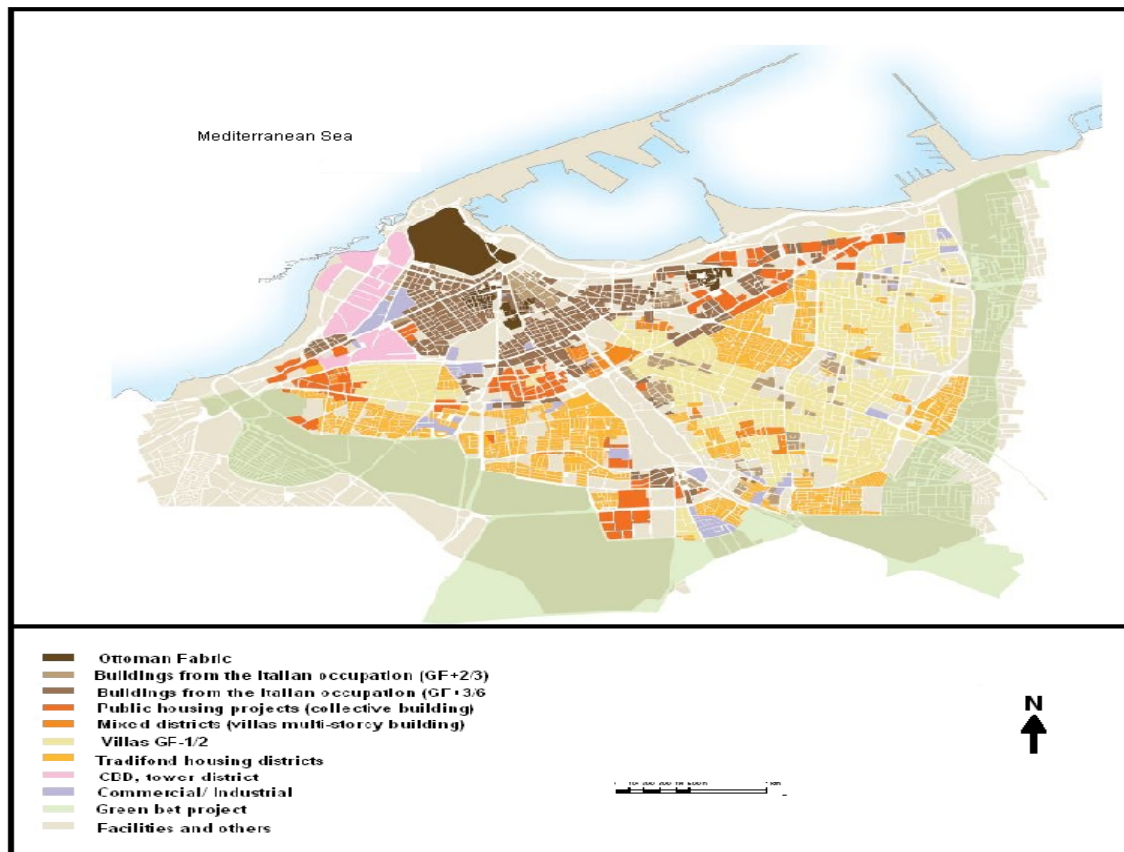
Figure 5-9 Tripoli city master plan. Polservice (1980) Tripoli region development plan, Report NO, TF2, Warsaw

According to Tarr (nd), urban developers redesign the natural environment in an attempt to expand growing cities. On new land, a completely built environment is constructed – malls, houses, factories, offices, markets, roads etcetera. Tarr (nd) strongly argues that urban ecosystems are altered, animal species are killed, indigenous species of flora and fauna are eliminated, and new and foreign species are introduced. Thus, in the context of Tripoli, the post-colonial master plan began to manifest a new style of urban form ignoring the importance of the natural environment. Residential and commercial buildings and other civil works have ignored the importance of the natural environment

in the city. Worse still, unplanned buildings only exacerbate environmental degradation. For instance, rapid urban expansion has encroached into what used to be agricultural areas (e.g. olive and date groves) surrounding the city of Tripoli since the 1980s (see details in Chapter Six). The growing built environment has reduced the space and quality of the green belts which were initially created to reduce the urban heat island phenomenon. Over the years, inadequate attention to the value of the physical environment had led to destruction of vegetation and erection of illegal structures within the green belt areas. According to some of the responses gathered during interviews, a lack of awareness on the shelter belt led to the clearing of vegetation covers in a clandestine approach.

On this note, the thesis supports Azlitni's (2005) suggestion that the urban planning process must be supported by analytical studies to be able to make plans that satisfy the spatial needs of the population, ensuring social and economic equity, and sustainability. Where local experts know the problems of their cities through analytical studies, they can adequately solve the problems through the formulation of appropriate planning policies (Legg *et al.*, 2008) in accordance with the complexity and diversity of their socio-cultural relations and economic activities. One of the strategies to understanding the problem, as evidenced by the research, is to measure the rate of change that has occurred and use it as a tool looking retrospectively at changes that have occurred over the last 10 years. Pathways to sustainable development, as it appears in the study, takes into account what Myllylai and Kuvaja (2005) describes as transparency, decentralisation, interaction and the socio-economic equality of city inhabitants. In this chapter, the study considers the near absence of effective planning control as a major problem in the present and future development of Tripoli city.

Even with the planning agency and the master plan in place, random and uncontrolled development and growth takes place throughout the city without obtaining permits from the local authority. One of the interview participants indicated that:

> Around 70 per cent of the built up areas were constructed without any permission, where farms were divided by the owners themselves using individual planning motives [LE, 2010].

This disorganised and unsystematic transformation has damaged the green areas in and around the city. Hence landowners that build outside the law constantly distort urban growth (Simone, 2004). However, the (former) Planning Secretary denies this, claiming that the "government try at all cost to control illegal structures and incorporate local proposals. In the 1981 planning of Tripoli, there were new projects established by local proposals, and there is new planning which includes all Libyan districts that will be ready by the end of 2011". Complaints by the participants about ineffective planning control were overwhelming, because it has caused traffic congestion, sewage blockages and waste disposal issues that they have to grapple with. They expected the planning authority to either demolish illegal structures or redesign the peri-urban areas so as to accommodate built structures. Monitoring and inspection of buildings is another way participants expected the solution of unorganised buildings to be solved.

Paradoxically, an anonymous city planner expressed fears and doubts about the future of buildings that have been conceived and built in areas without a sound and planned infrastructure. In Shawesh's (2000:250) opinion: "loss of control over the built environment has defined the identity of the city". The current urban expansion based on the submission of the city planner illustrates that, rather than plan and implement urban policies to make an impact on the ground, urban plans have been relegated to mere

maps and paper reports stored on the shelves. It is therefore critical for plans to be realistic, flexible, and participatory, in line with international guidelines. Respondents' opinions about planning implementation and why planning were unsuccessful are documented in Chapter Six.

5.4   ENJELA AND KHALT EL-FERJAN

Enjela and Khalt El-Ferjan are two peri-urban areas of Tripoli that are witnessing larger amounts of transformations than anywhere else in the country. This is because these areas, located in western Tripoli, accommodate the expansion of the city. One of the aims of this study is to examine the changing nature of land use and how it affects the outcome of urban growth in western Libya. The importance of understanding land-use change in urban growth in planning was discussed in the literature review. This section presents an analysis of change in urban growth of western Tripoli into the peri-urban areas of Enjela and Khalt El-Ferjan. This presentation was based on the analysis of remote sensing images to provide important baseline information about the changes that have occurred over a period of ten years, and to provide for the detailed analysis and discussion of urban change in Chapter Six. In addition to remote sensing analysis, questionnaire data, interviews and photographs support my investigation and provide evidence of the growth in peri-urban Tripoli. The combination of these methods determines the shape and structure of urban growth, and allows the evaluation of the roles of socio-economic and cultural factors in the process of growth on the ground. First is the change in growth of the two study areas.

5.4.1 LAND USE CLASSIFICATION

For the purpose of analysis, a detailed classification system was adopted for mapping, using high resolution satellite data in line with the classification schemes adopted in Libya. The study was limited to eight year period (2002-2010) for ease of accessing available image of high resolution. It only focuses on those land classification schemes that are relevant to the research, keeping in mind the objectives of the study. As the study does not intend to take a detailed land use or land cover analysis, a change detection technique applied simplified the changes into seven classes (grass, agriculture, bare soil, urban, unclassified, mix, forest/trees) that are affected by city expansion. The description of each is presented as follows:

Agriculture: Agricultural land is used primarily for food and fibre production. It includes arable lands used for annual crops production of cereals, vegetables, potatoes, and land temporarily allowed to remain fallow. This class also includes land for palm plantations, and areas for livestock grazing.

Forest/Trees: Forest lands are areas with thick vegetation cover that are either man-made shelter belts or natural vegetation. Natural vegetation comprises agricultural plantation and forest plantation.

Grass: These are areas where the vegetation cover is mainly grasses and non-woody plants. There are no trees in the grass land, and they are used for livestock grazing in the peri-urban areas.

Bare soil: This is vacant land that has not been built on, or land without any use or means, not covered by grass, or similar land cover. Bare lands are plain lands that can be found within or outside the urban built-up area. In the case study,

bare lands are those lands that are either non-developed or undergoing development.

Urban: Refers to those buildings and infrastructure which are found mainly is urban areas and the fringes. These buildings may be homogeneous residential units in the city and could be compact dwellings outside the city surrounded by agricultural land.

Mix: This is a combination of different land uses whose scale is too coarse to be captured by the image. It includes restricted area (such as shorelines that have special restrictive measures employed to prevent or minimise interference), recreational parks, fallow land, wet lands, waste lands and some of the land uses mentioned above.

Unclassified: Unclassified land use was added systematically by the software to store the difference between the land uses, those unable to be detected, and those that are not recognised by the image as a result of processing error.

5.4.2 LAND USE AND URBAN CHANGE IN TRIPOLI

The pressures of the continuous increase in population and rapid urbanisation of the city of Tripoli is gradually changing the surrounding environment and neighbourhoods. In order to accommodate the growing number of people and infrastructure, the city is expanding towards the fringes to accommodate the growth, a phenomenon known as sprawl. Usually sprawls take place on the surrounding urban fringe, along major highways or at the edge of an urban area; in this case study Enjela and Khalt-El Ferjan are areas accommodating the rapid expansion of Tripoli to the west. This type of growth

normally comes with the loss of agricultural land, open spaces and natural habitat. The result of this study shows that considerable change has occurred over a relatively short period of time, between 2002 and 2010. The change in the Enjela area seems to be more obvious because the initial area used to be a farmer settlement. One of the farmers resident in Enjela for the last two decades thought: "Our farm was six hectares (10,000 square metres each hectare) and consists of only one house, so we divided the farm into many pieces, each piece around 500m^2, thus the farm now consists of more than a hundred houses" (LRIE [RM], 2010). Figure 5.10 is a graphical representation of the scale of change in Enjela in 2002.
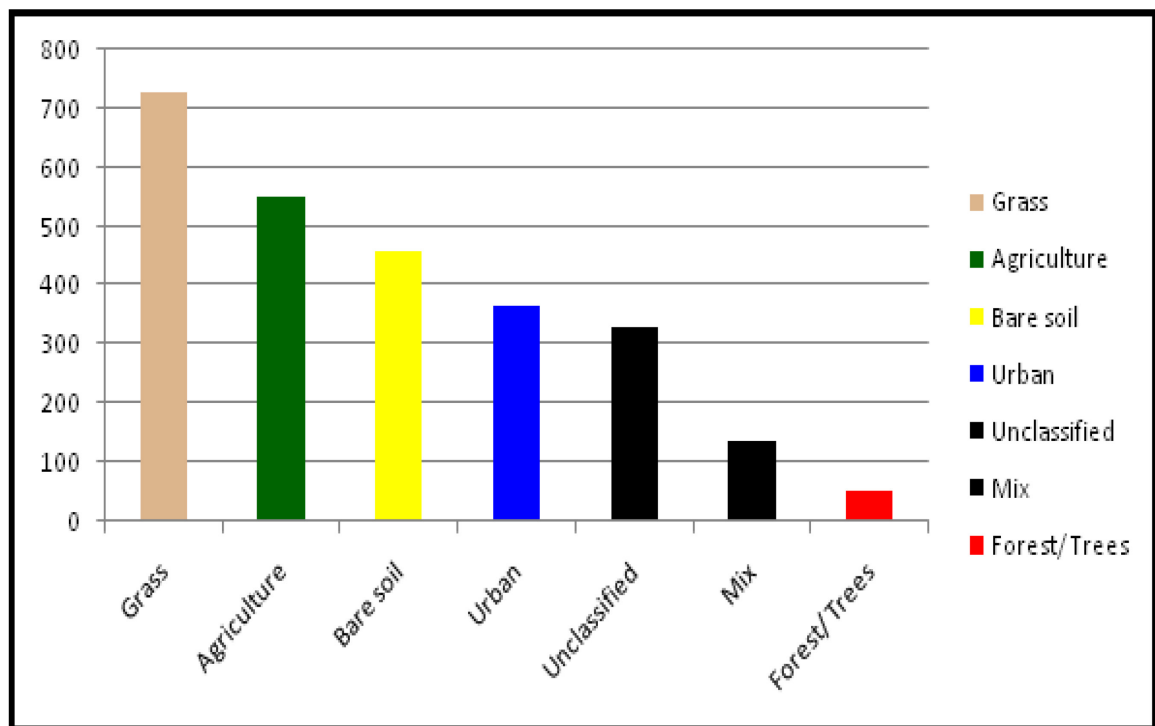
Figure 5-10 The classification of land use (in hectares) in Enjela area in 2002

The classification is similar to that in Khalt El-Ferjan: grass, agriculture and mixed land appear the top land use cover in the area 2002. This is because agriculture was an important sector in the fringes. It provides employment to those that are not able to find

jobs in the city. However, city expansion into this area is imminent due to population pressure already described in previous sections of this thesis. Figure 5.11 below shows the classes of land in Khalt El-Ferjan in 2002.
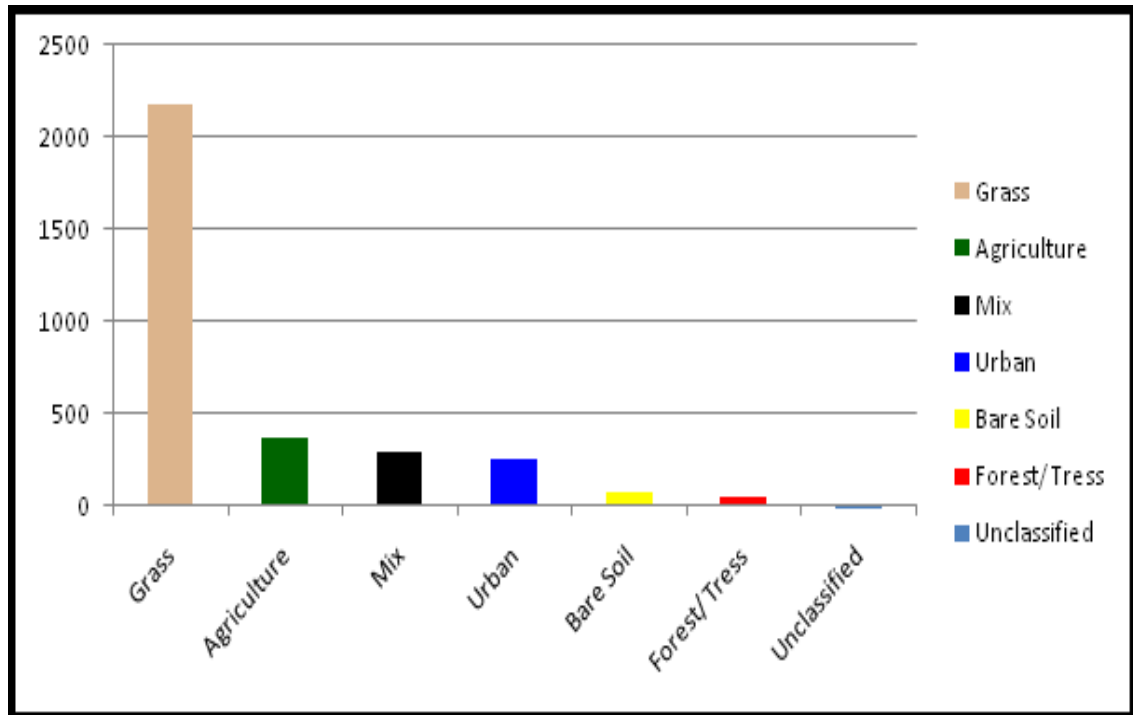
Figure 5-11 The classification of land use (in hectares) in Khalt El-Ferjan area in 2002

When the two areas are calculated using the change matrix, urban land in Enjela is around 53 per cent, while in the Khalt El-Ferjan area it represents 60 per cent change. Table 5.1 below indicates the state of the land use classification in 2002. Grass cover, agriculture and bare soil are the dominant land cover classifications in the two areas.

In less than ten years, the acceleration of urban growth has put tremendous pressure on agricultural land in both areas. In Enjela, Figures 5.13 and 5.14 show that agriculture land use was ranked second in 2002, representing about 21 per cent of total land, but in 2010 it goes down to the fourth rank with around 7 per cent out of the total area, in contrast to urban land use, which was ranked fourth in 2002 and moved up to the second

rank in 2010 with 14 and 30 per cent respectively. The situation of change is similar in Khalt El-Ferjan, where Figures 5.15 and 5.16 explain that the agriculture class was occupying the second rank in 2002 with around 12 per cent out of total, but in 2010 it has taken the fourth rank with five per cent of the total. However by classification, urban was in the fourth rank in 2002, while in 2010 turns out to be third with eight and 20 per cent respectively

Table 5-1 Land use/cover change in Enjela and Khalt el-Ferjan as it stands in 2002

	Enjela (2002)		Khalt El-Ferjan (2002)	
Classification	**Area/Hectares**	**%**	**Area/Hectares**	**%**
Grass	728.6	27.8	2177.6	67.4
Agriculture	551.6	21.0	370.4	11.5
Bare soil	458.2	17.5	78.7	2.4
Urban	366.2	13.9	257.1	8.0
Unclassified	326.9	12.5	1.9	0.1
Mix	137.4	5.2	292.7	9.6
Forest/ Trees	52.61	2.1	50.7	1.6
Total	2621.6	100	3229.0	100

Enjela and Khalt El-ferjan are today the fastest growing urban fringes of Tripoli; the land use pattern of the two areas over a period from 2002-2010 showed rises in the urban form from grassland, bare land and agricultural area. In Figure 5.13, the city was urbanised at the northern and southern part of Enjela, but as shown in Table 5.2, it is still dominated by grass, bare land and agriculture even though the bare land is more visible. The bare land is possibly under construction. Because Enjela used to be an agricultural project area, one of my discussant opined that: there are some services already available such as grid water, electricity and [a] good road network that links all the farms together (LRIE [SB], 2010). This is because some infrastructure was given by the government in order to encourage farmers in their food production chain. Khalt El-

Ferjan lacks some of the basic infrastructure and services because it has no defined function.

Table 5-2 Land use/cover change in Enjela and Khalt el-Ferjan from 2002 to 2010

Classification	Enjela (2010)		Khalt El-Ferjan (2010)	
	Area/Hectares	%	Area/Hectares	%
Grass	1047.6	39.9	1913.9	46.7
Urban	780.1	29.8	802.1	19.6
Unclassified	323.2	12.3	866.9	21.2
Agriculture	177.1	6.8	217.4	5.3
Mix	153.3	5.9	76.9	1.8
Bare soil	133.9	5.1	125.9	3.2
Forest/ Trees	6.2	0.2	125.9	3.2
Total	2621.4	100	4096	100

Based on the above presentation, there are reasons that push people to settle in the adjacent areas of Tripoli. A considerable number of the population that reside in the study area are looking for better places of living with enough living space to suit their life style and traditions, but not necessarily to live a life of luxury. According to one of the discussants:

> Some social factors allow people to live together, and to others the reconstruction projects inside of Tripoli resulted in the destruction of many neighbourhoods (FGIE2, 2010).

This means that the demolition of illegal settlements or construction in areas of illegal settlements forced them to relocate to the peri-urban areas where they could find shelter. Figure 5.12 is an example of one of the apartments in Tripoli that is not suitable for the tradition of the Libyan people (see discussion in Chapter Seven). There is no privacy; it

has limited openings for ventilation, no courtyard, etc. For these reasons, apartments are mostly occupied by immigrants.

Figure 5-12 Apartment building, Rashid Street, Tripoli. Source: Cecil Images (2011)
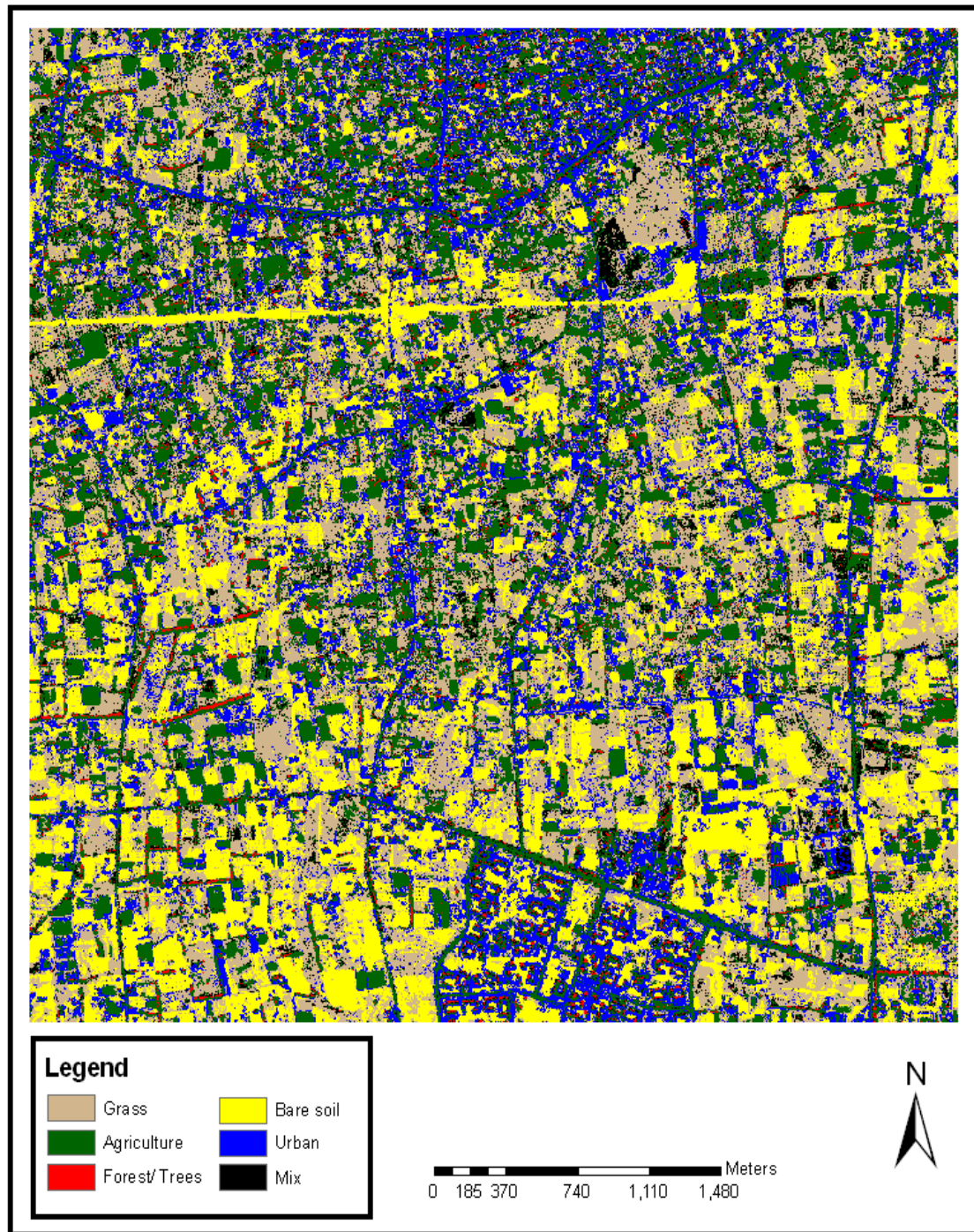
Figure 5-13 Land use change classification of Enjela area in 2002

In Figure 5.15, Khalt El-Ferjan (in 2002) was less urbanised and dominated by grass and agricultural lands. Agricultural land is located on the east and south-eastern part of the fringe. To the south and north-east are where the rate of urban land use is higher. For example, to the south is where the expansion from Tripoli is emerging.
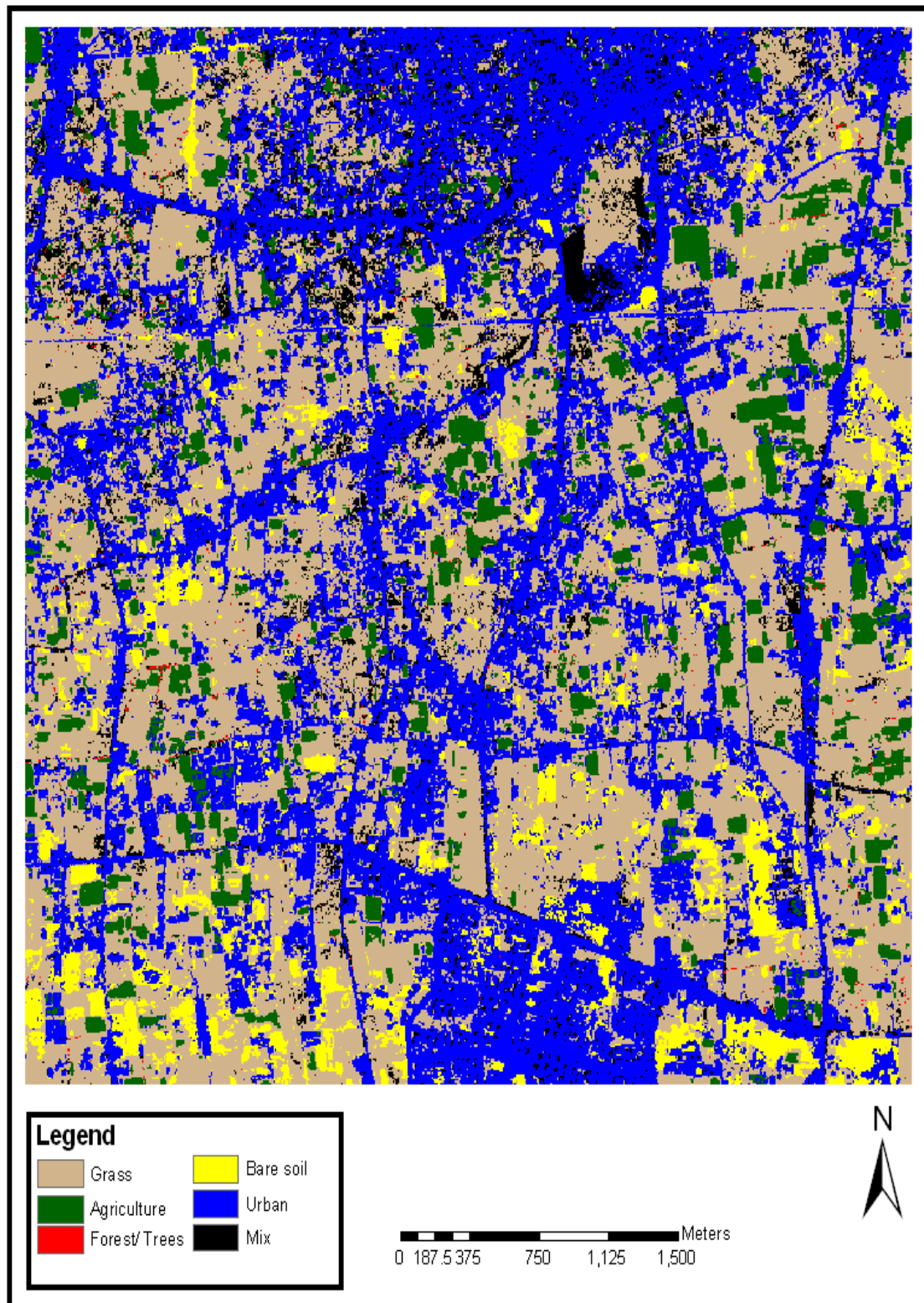
Figure 5-14 Land use change classification of Enjela area in 2010

Legend

Grass		Bare Soil	
Agriculture		Urban	
Forest/Tress		Mix	

Meters
0   275   550   1,100   1,650   2,200

N
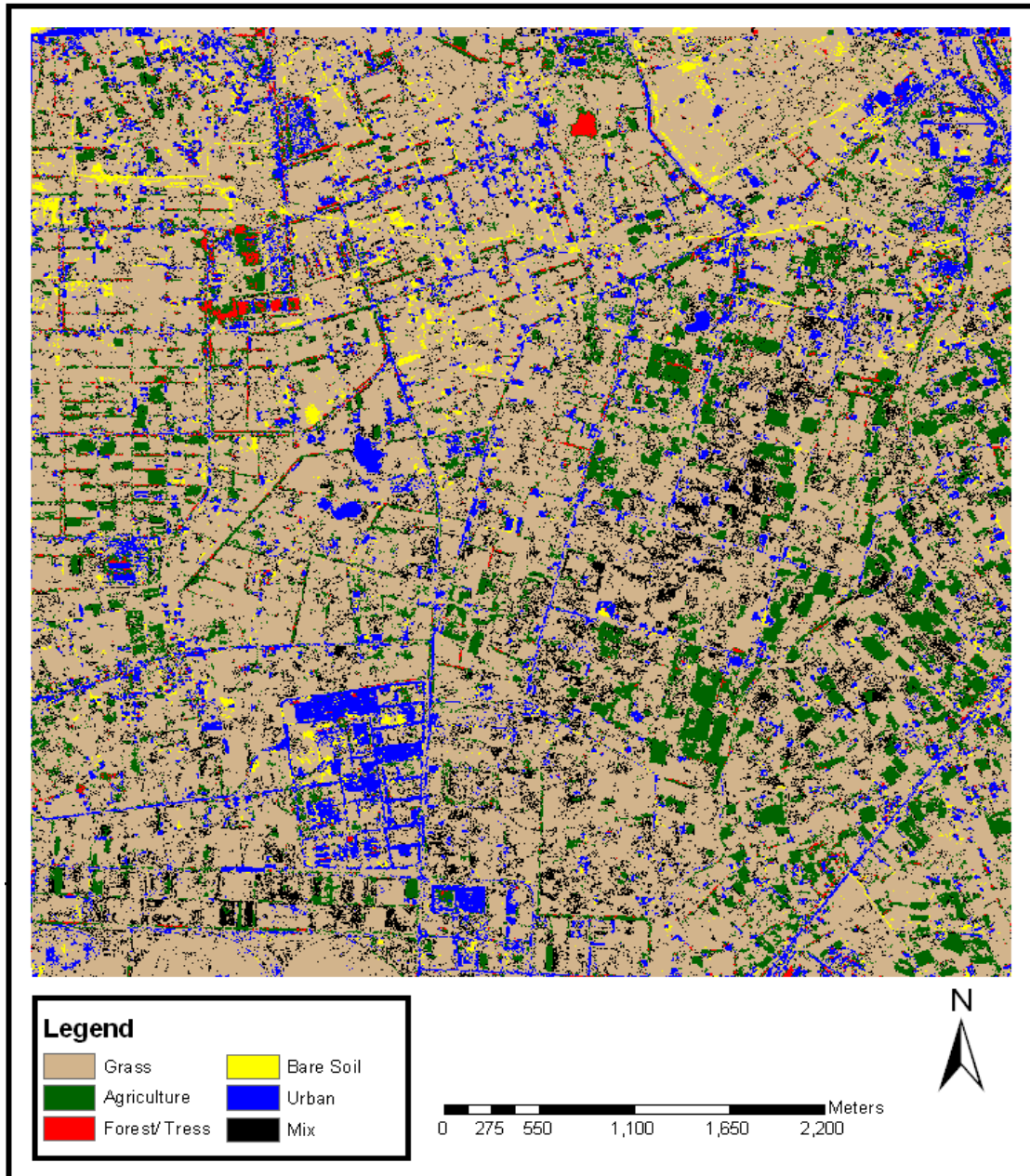
Figure 5-15 Land use change classification of Khalt El-Ferjan area in 2002

In 2010, Enjela is increasingly being urbanised, expanding towards the east and along road networks. While urban land is increasing, bare land is gradually disappearing to make way for dwellings. Agricultural land still remains relevant and mixed land use (possibly recreational area) is now developing but forest cover is disappearing (see Figure 5.14). By 2010, Khalt El-Ferjan had witnessed rapid changes where the built-up environment was competing with agricultural land and forest cover (Figure 5.16).
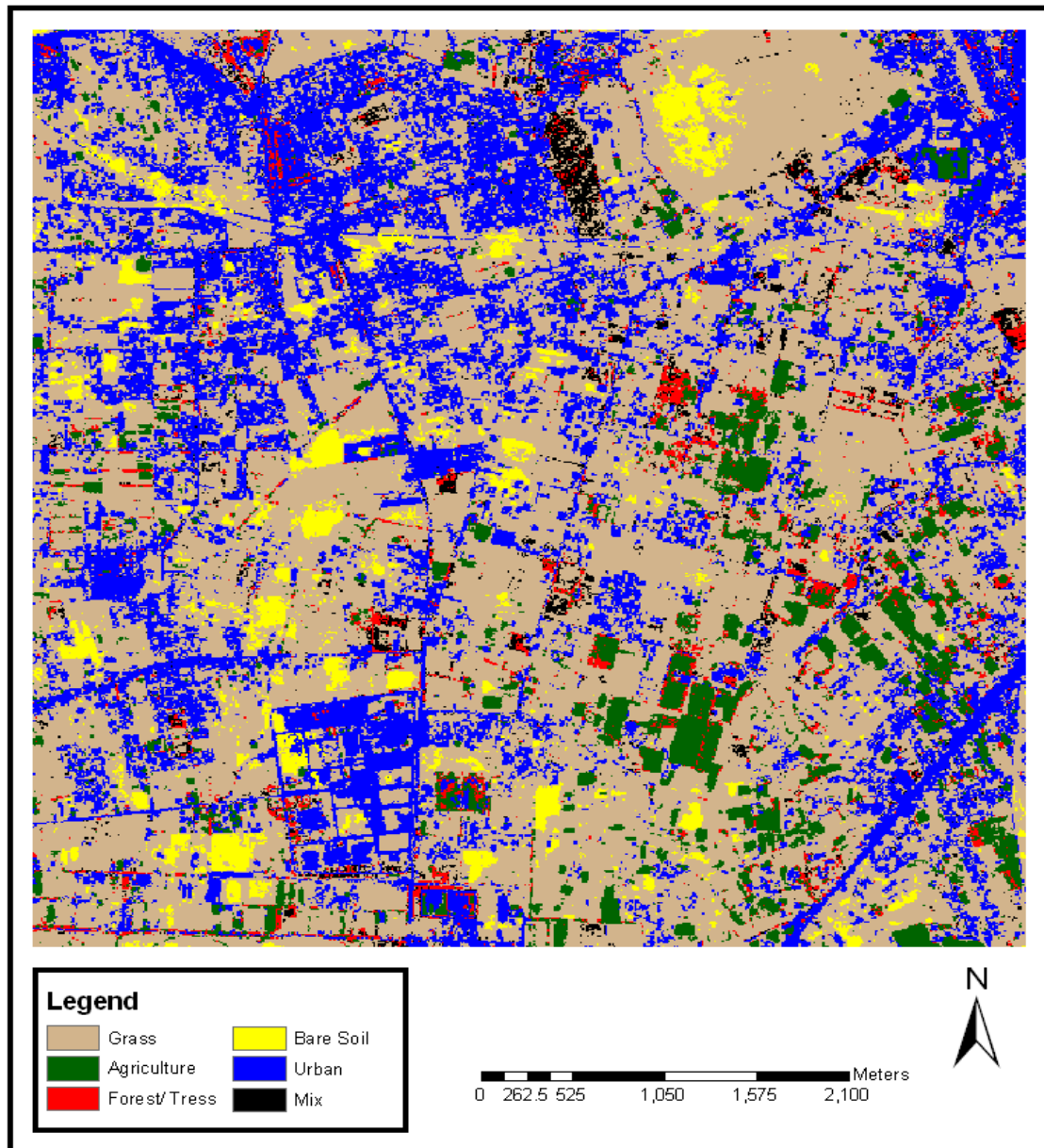
Figure 5-16 Land use change classification of Khalt El-Ferjan area in 2010

The result shows the contribution of road networks and private transportation to urban growth and expansion. However, the road structure of the areas has not evolved to cater for the changing pattern in the city. Notwithstanding the rate of growth in these areas, there is still plenty of agriculture and vegetation land in and around the two areas. Similarly, within this period of time residential and commercial areas are being built, as can be observed in Figures 5.17, 5.18, 5.19 and 5.20.

Figure 5-17 Planned residential houses under construction in western part of Khalt El-Ferjan. Source: Author (January 2010)

Figure 5-18 An example of a commercial area under construction in Khalt El-Ferjan. Source: Author (January 2010)

Figure 5-19 A piece of land divided by local residents for sale in Enjela. Source: Author (January 2010)

Figure 5-20 An example of agricultural land within settlements in Enjela. The areas occupied by houses used to be grape farm land about 2-3 years ago. Source: Author (January 2010)
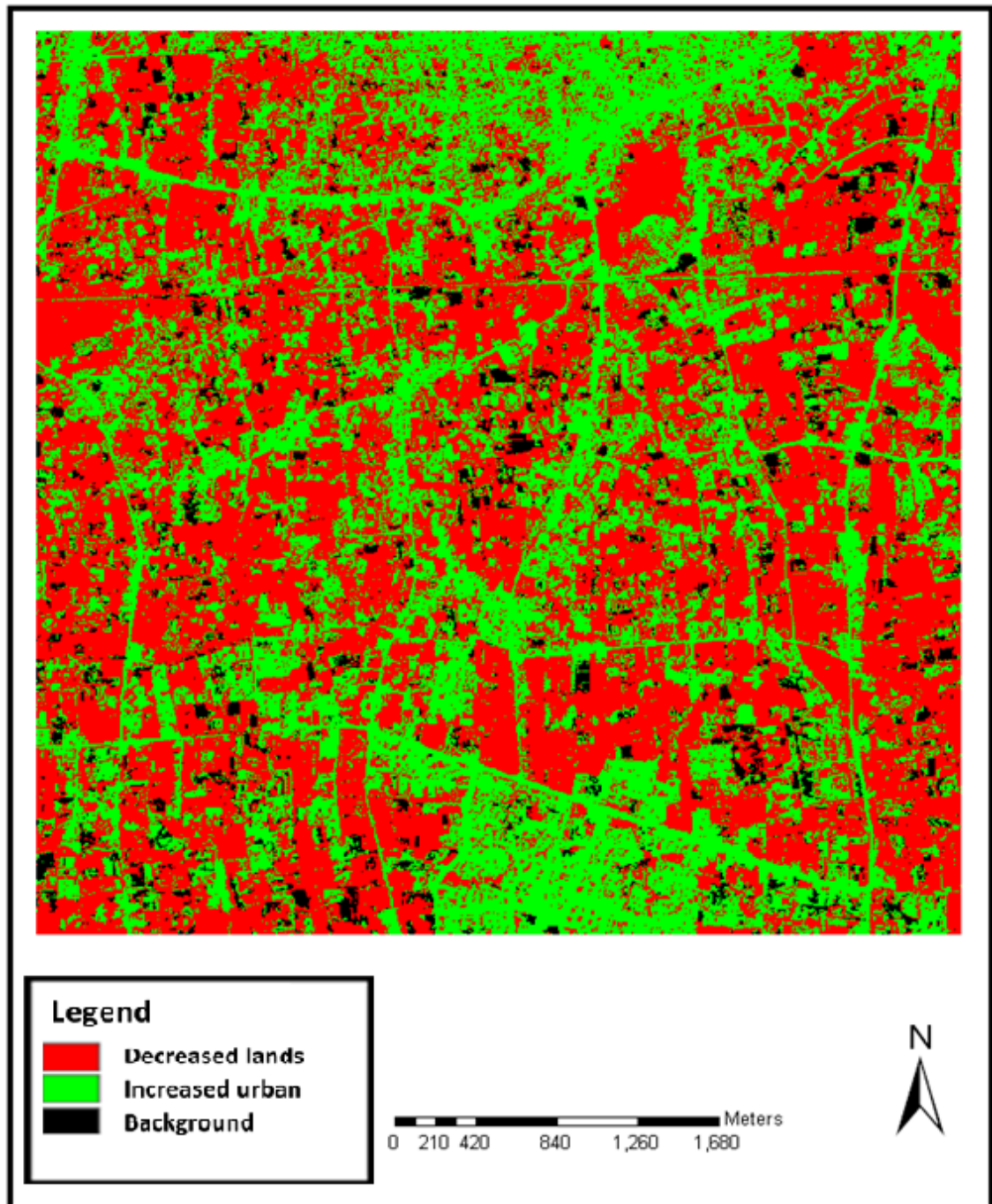
Figure 5-21 Change detection of Enjela area.

The remote sensing change detection techniques show general changes with regard to the geographical distribution of land classes. It can be deduced from the two images in Figure 5.21 and 5.22 that some differences in land use pattern are obvious. Analysis of these images showed that even though there is a multiplicity of land cover and land use

between these periods, the natural environment space tends to decrease, while the built-environment is increasing due to the expansion of Tripoli. The area of each type of land-use change appears rapid within a decade. However, the alterations in Khalt El-Ferjan are not as obvious as in Enjela. The red dot denotes decreasing land use to urbanisation, and the green dot represents increasing urbanisation of the area.
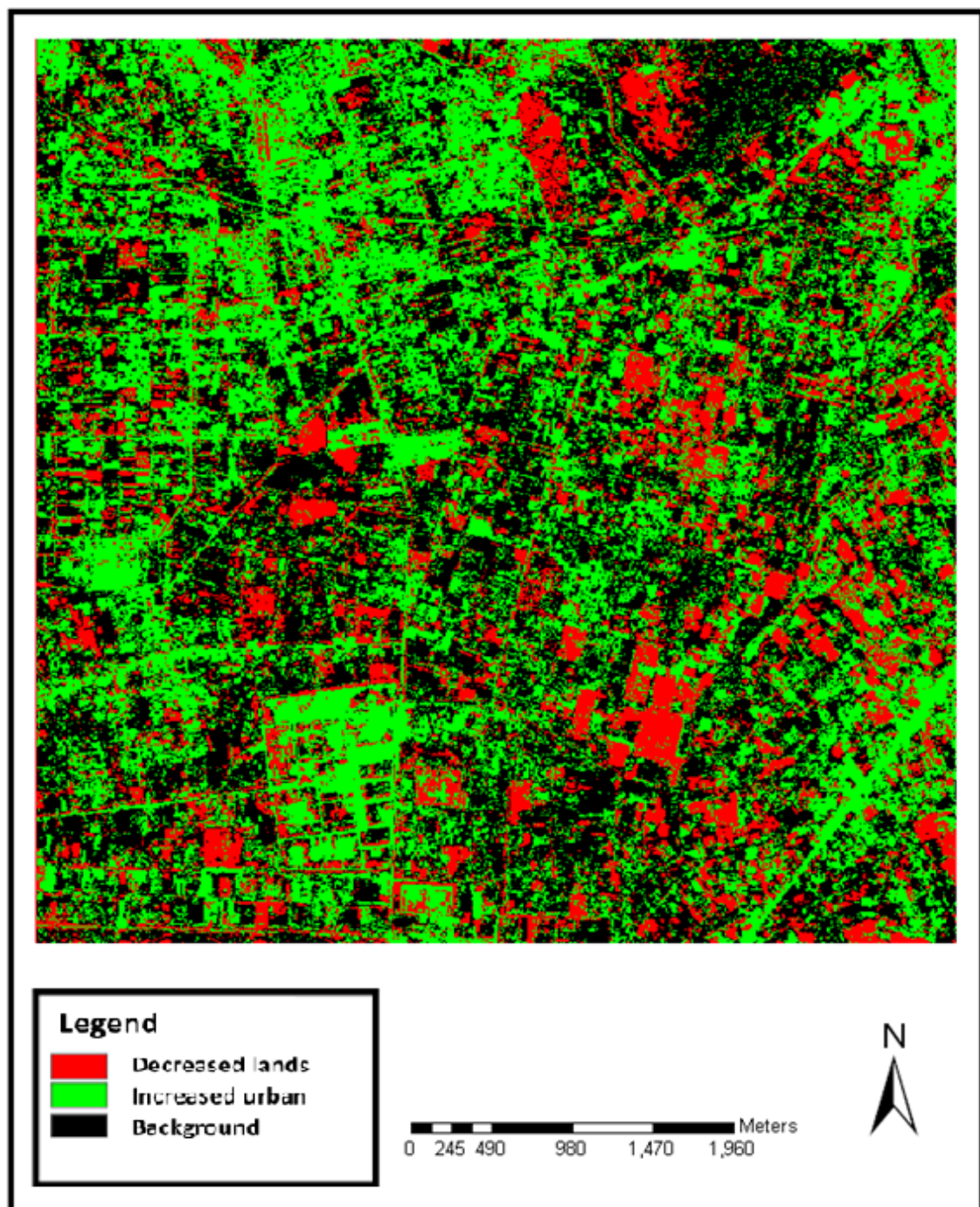
Figure 5-22 Change detection of Khalt El-Ferjan area

Urban settlements (houses, commercial buildings and bare soil/surfaces valuable for future use) have encroached into agricultural land over time (2002 and 2010). The rate of encroachment of urban settlement into the agricultural land is increasing. (Note: the increase into urban area in green colour and the red colour represents a decrease in other land uses). The top right corner of Khalt El-Ferjan, which is a grass land, has not changed since 2002. It is clear that the increase in urban and rural-urban areas has occurred on the fringes and is further extending towards the green space.

In the following images (Figures 5.23 and 5.24) a change matrix operation was used to create an image that contains the overlap between the different classes of land use. Figures 5.23 and 5.24 show the change matrices between Enjela and Khalt El-Ferjan for the period, 2002-2010. It can clearly be seen that there are changes that are taking place. The yellow colour which used to be bare land is now gradually dominated by the green colour, which indicates land use changing from agriculture to urban use. Thus, the increase in land classified as urban comes with varying degrees of differences in grass, agriculture, forest, bare soil and mix classes (Appendices D and E contain the class by class change matrix). This result means that long-term land-use change from one type to another in the two case study areas is closely associated with changes in rates of population growth, urbanisation and the individual quest for a desert accommodation in line with his/her tradition and religion.
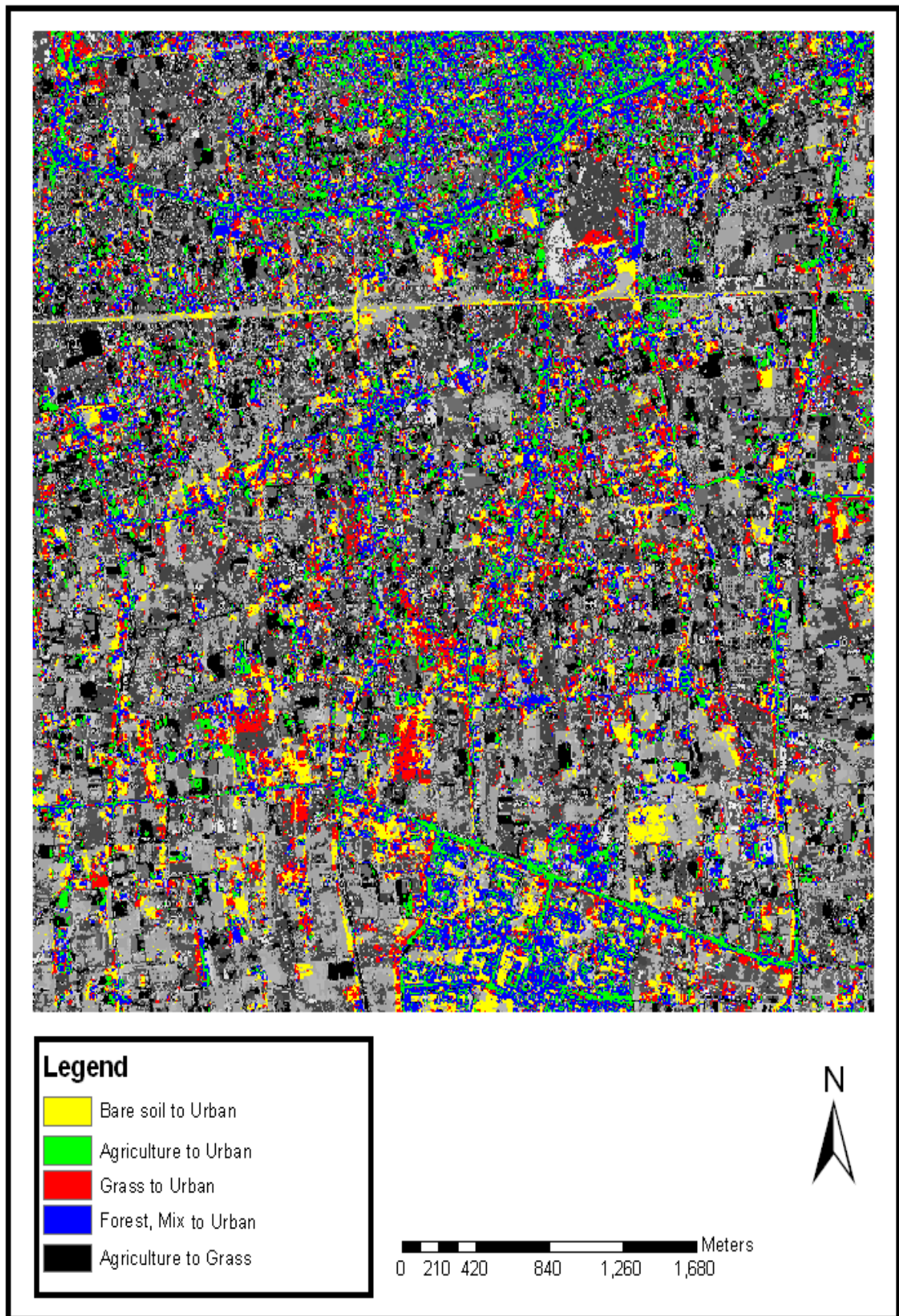
Figure 5-23 Change Matrix of Enjela area
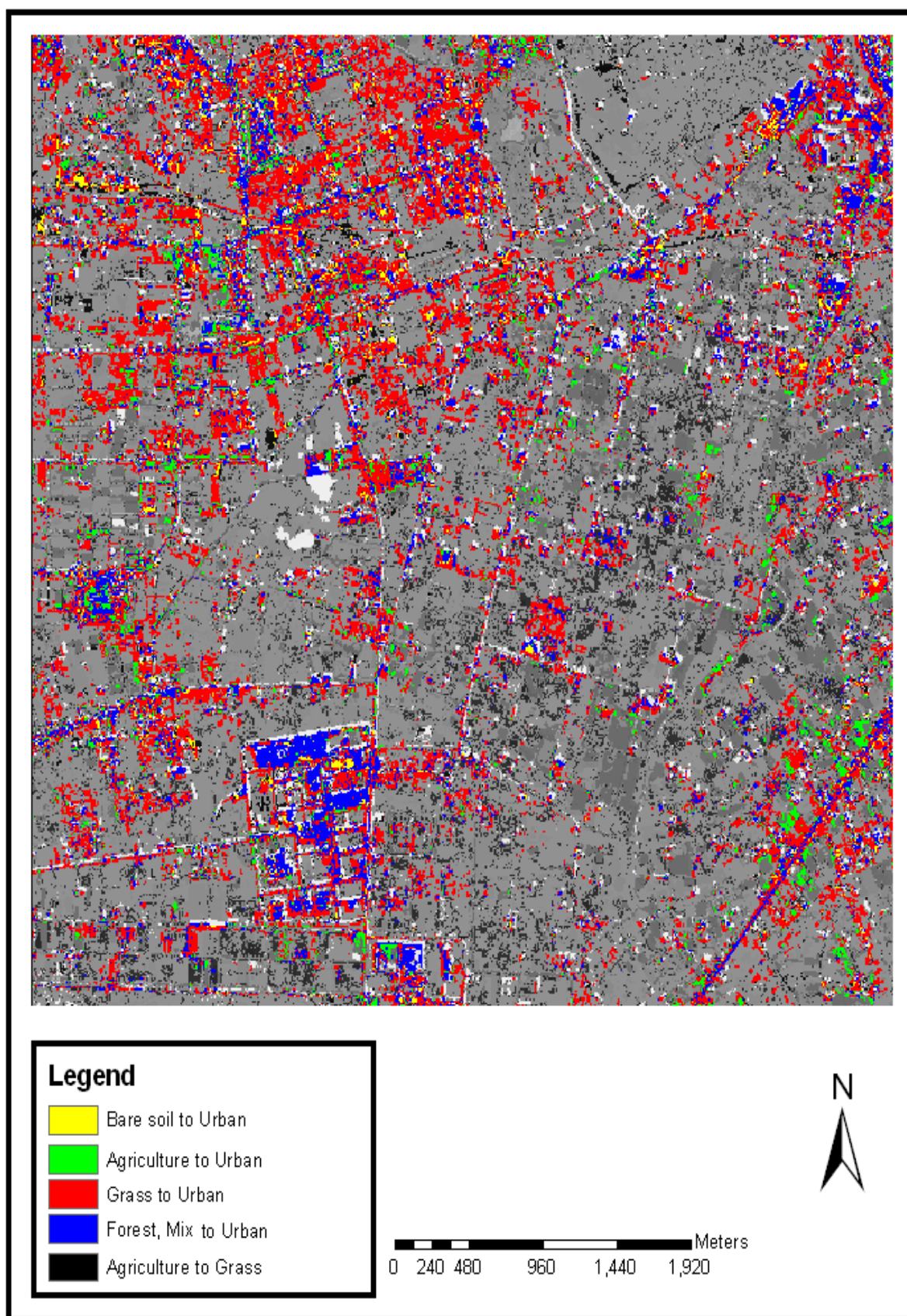
Figure 5-24 Change Matrix of Khalt El-Ferjan area

5.5   PLANNING POLICY IMPLICATIONS

It should be recalled from Chapter Four that, after the military coup of 1969, Tripoli witnessed rapid urban growth similar to many other capital cities in the developing countries. The socialist policies adopted by the government at all levels had a significant impact on the structure and growth of the city. According to the planning policy of that time, the government was responsible for increasing the standard of living in the city through the provision of infrastructure and the establishment of urban services in the fringes, yet other areas of the country were being neglected. As a result, new neighbourhoods like Enjela and Khalt El-Ferjani became firmly established settlements at the fringes of western and southern Tripoli. According to Shawesh (2000), some of the neighbourhoods benefited from a number of public and private housing projects and social services. Similarly, it can be argued that the urban planning policies and institutions of most Libyan cities are deeply influenced by external ideologies and planning methods from foreign countries, such as Italy, but Mukhtar (1997) believe that urban planning carried out since the 1970s tends to be Western in ethos. This trend has continued up to the present times: the Tripoli master plan presented in Figure 5.9 was designed by a Polish company.

When Libya gained independence, there was a lack of adequate manpower and expertise in the design and construction industry. As such, the authorities of that time looked to foreign specialists. As such foreign engineers and technicians, particularly Italians, imported their technology and method, they designed the architecture and the urban form as similar to those in their country. This is because they were not aware of the customs and traditions of the Libyans, resulting in a construction pattern that was not suitable to the Libyan setting. Consequently, indigenous construction activities

began to decrease. After the discovery of oil, the increased standard of living led to land grabs in the cities and the construction of new residential buildings. According to Amer (2007:156), "the majority of these projects did not undergo a formal planning process, causing the appearance of random constructions, which have not observed the simplest of utilities and services". It was during this time that the city went through a period of interior re-construction and morphological change from Italian style dominance to that of a transnational fashion. Similarly, since the 1980s urban planning tended to be western (given the influence of Soviet-style planning through the Polservice report in the 1980s). The city may yet witness planners and developers from different parts of the world, notably America, France and Great Britain, as the country is on re-construction phase. In this instance, there must be a holistic approach in Libya's post-conflict reconstruction, so that planning and urban renewal will be suitable and acceptable to local life and local climate.

The houses that were built by foreign companies from Europe and Russia using modern architecture styles and techniques did not attend to the socio-cultural and climatic condition of Libya as a whole. In Libyan society, the composite family lives together in one compound (house). This consists of the parents, their children, as well as their married male children with their wives and children, and the grandparents, who traditionally spend their old age in the care of their children and grand-children (Amer, 2007). Typically, the house is an enclosure within the residential sector (mahallah), which to a large extent forms an enclosure within the Islamic city. As a result of the policy of the Libyan government, urbanisation was considered by Amer (2007) as a significant factor influencing housing design. Figure 5.25 shows an example of modern living in Enjela. One of the middle-aged interviewees, LRIK (AS), believes that as the

size of their family grew they needed to live in the same house with separate rooms because of the need for social cohesion mentioned above. As modernity and Islamic tradition intertwine in the architecture and design of the city, planners must take into account the principle of Islamic culture, such as the separation between genders, and the expansion of horizontal buildings rather than vertical, family systems and architecture, in future planning and reconstruction. The architectural design took into account the need for space and privacy and yet appears from the outside to be a model of modern building (see also Figure 6.9).

Figure 5-25 Modern houses that are springing up in Enjela. Source: Author (January 2010)

Local planners confirmed that Libyans prefer to live in traditional courtyards as opposed to villas, multi-storey flats and bungalows. An interview with the Planning Secretary of Tripoli revealed that, "In the not too distant past people in Libya did not like to live in flats so as to maintain traditions and uphold customs. Therefore people who were living

in flats were either foreigners or rural migrants from the lowest class in the society"
(RPST [AF], 2010).

It must be noted that the development of the fringes throughout the period observed
(2002-2010) has been unstructured, un-controlled and haphazard. Considering the
current pace of development, the Tripoli master plan is becoming ineffective in guiding
developments within and outside the city. Thus, urban fringes are constantly
experiencing unauthorised changes in land uses, which are officially supposed to follow
a planning scheme that is weak in content and implementation. This lack of planning
aggravated the sale of land for housing and the appearance of highly informal ad-hoc
settlements. Figures 5.26 and 5.27 are examples of such sporadic and uncontrolled
developments that are occurring in the slum.

Figure 5-26 Residential areas owned by rich individuals developed without planning in
Enjela. Source: Author (January 2010)

One of the strategies for understanding the problem, as evidenced by the research, is to measure the rate of changes that have occurred and use it as a tool to predict the growth of the city, even when not much old land use data is available. The United Nations sanctions, which lasted for over a decade (1990 – 2002), resulted in the suspension of many vital projects, especially those related to services and infrastructure (such as electrical power and railway projects). Findings from the interviews indicate a positive relationship between the lack of sufficient planning and the sanction period – resulting to in haphazard urban growth.

Figure 5-27 Advert for selling plots of land for residential and commercial purposes in Enjela. The Arabic inscription means "divided land for sale". Source: Author (January 2010)

Similarly, the current Libyan revolution (17 February 2011) has had a tremendous impact on the city of Tripoli and its environs. In the event of relative calm and peace, an enormous task awaits the planners and policy makers embarking on the reconstruction of the city of Tripoli and other areas destroyed during the confrontation. This process

will not only be costly, but will require full implementation of planning and control policies. Therefore, a business-as-usual attitude with a lack of implemented planning policies will not work.

5.6 PRE-AND-POST REVOLUTION TRIPOLI

It is certainly not logical or rational to proclaim that the Middle-East/North Africa revolution occurred because El-Bouazizi immolated himself. It is clear that deteriorating economic conditions, social inequality and political injustice perpetrated by the ruling class were the main reasons behind the unrest and revolutions in the MENA region (Arabic states). Although the revolutions started in Tunisia, they soon spread to Egypt, Libya, and then Yemen and Syria, among other nations. The media, particularly the satellite channels such as Aljazeera and also the internet (Facebook and Twitter) have played a pivotal role in spreading the news of the revolution – networked urbanism has worked on mobiles in Africa and some countries in the Middle East.

Apart from the dictatorial leadership of Ghaddafi, his allocation of state resources has been geographically concentrated in his hometown, his tribal group and allies at the expense of the rest of the country – this exacerbated the armed conflict. Several attempts were made in the past decades to transfer political and economic power from Tripoli to other parts of Libya. Ghaddafi had been trying since the late 1980s to transfer the capital city of Libya to his hometown of Sirte. However, there was silent opposition to prevent this attempt in view of the historical antecedence of Tripoli. It is like a case of transferring the functions of the city of London to Milton Keynes. Since the start of the current Libyan Revolution, Ghaddafi regime seemed to focus on Tripoli regardless of the fall of most Libyan areas, especially in the east in the hands of the

revolutionaries. In the south of Tripoli is the headquarters of Ghaddafi's regime called Bab Al- Azizia, which is the most heavily guarded military base, and the house of Ghaddafi and a number of military barracks and security agencies. With the end of the revolution, peace and security is now being restored in these areas.

The protests against the Libyan government arrived at the capital Tripoli (19 February. 2011), after having been concentrated in the north-eastern part of Libya. The protests against Ghaddafi's regime also spread to some of the districts near the capital Tripoli such as, Az-Zawiya, Zintan, and Misrata and then pervaded all areas of The Naffusah Mountain. A few days on, after 17th February 2011, the city (Tripoli) appeared completely deserted: security and traffic police on the street had disappeared, police stations were closed, and most shops, bakeries and pharmacies shut. In fact, all aspects of civilian life had disappeared. At this time, the atmosphere in Tripoli was dominated by panic and the spread of rumours that made residents cower in their homes in a state of confusion for fear of the unknown, in what seemed like an undeclared state of civil disobedience and anarchy. However, worthy of note is that reports from the media suggested that there was no incident of a rise in crime in such cases. The rhythm of life in the Libyan capital Tripoli has changed almost completely from what it was before the 2011 revolution.

The sustainability of the city in the light of the current crisis of February 2011 remains a challenge, Tripoli looks like a ghost town, where all aspects of human endeavour have been paralysed. The economic and commercial function of the city is virtually dead. Banks are unable to pay monthly salaries. There is a fear of molestation by the government army, snipers and at check points of Ghaddafi's forces and mercenaries are

all over the city. The city is emptying of people every hour, with many neighbourhoods becoming semi-free of residents because they are migrating back to their places of origin by road. Migrant workers have fled back to their country of origin for fear of assault from Libyans because of the perception that African migrants were hired as war mercenaries to kill Libyan people opposed to Ghaddafi. Schools are shut and the few private schools that open face a severe shortage of teachers and low student attendance: most, if not all, teachers are foreigners from Africa, Asia and Middle East and have fled the country. On the other hand, many official buildings and most military barracks and security stations have seen destroyed by NATO airstrikes. Civilians have been killed by Ghaddafi's forces and also caught in the middle of NATO airstrikes. The war finally ended with the capture and death of Ghaddafi and some of his children and loyalists in October 2011 (Global Post).

Before the 2011 conflict, a top Libyan Planning Authority official claimed that, "Libya has suffered during the period of international sanctions [from the 1981- 2004] which has negatively affected the internal affairs of Libya. Particularly the implementation of schemes, it is resulted into the emergence of squatter settlements and the chaotic expansion of Tripoli" (RP [DS], 2010). Furthermore, the Regional Planning Inspector, (RP [SMI], 2010) claimed that "the reason we are not adopting new schemes is because of the sanctions imposed by the western world". This shows that the Ghaddafi's government used sanction as an excuse for inaction long after they were lifted. Now that the revolution is over, with a number of structures that house military and political power being destroyed, the future of the city starts now.

When conflict broke out, Libya's economic activities did not stop, but rather changed completely. These changes were from a formal economy to an informal economy, thereby reshaping the pattern of exchange and distribution. The Ghaddafi-controlled power base became weak and driven by his political allies, military and militia commanders and fighters, who are interested in protecting power and fear being persecuted. As the war in Libya is over, economic issues are gaining attention. This is because of Libya's role in international oil markets and the need for reconstruction of the economy. But first, building and sustaining peace should be top on the agenda. Thus, any development agenda of the transitional and subsequent governments has to be conflict-sensitive and, at the least, not aggravate the risk of relapse into violent conflict by replicating the non-holistic approach to development that got Libya into conflict in the first instance.

Secondly, implementing sustainable development strategies in a post-conflict situation requires identification and understanding of the political context upon which reforms and reconstruction can be built (UNDP, 2008). This is because of the huge uncertainties surrounding the lack of government based on wide consensus, and the tribal and regional tensions that may impede speedy reconstruction (Rivlin, 2011). This means that Libya must identify an acceptable political system as opposed to borrowing foreign political system or urban paradigms that might not suite the peculiarities of Libya. It is my strong opinion that the TNC need to develop a holistic Islamic model of planning for acceptance, justice and equitable distribution of wealth among the different geographic regions and ethnic groups. Thirdly, continued liberalisation of the economy without the need to maintain the interests of Ghaddafi will inevitably encourage foreign investment and the local private sector. Lastly and importantly, it is not only the

transition or the economic future of Libya that is at stake in present circumstance, it is also about bringing back women and family rights and integrating them into the governance process: Libyan women are educated (section 4.2.1) and are half of the population. Women still took part in various aspects of society and in the revolution.

5.7 SUSTAINABILITY ISSUES IN TRIPOLI

The efforts made by local, regional and national planners in modernising and expanding the city of Tripoli is commendable, given the complex transformational processes the city of Tripoli has undergone over the centuries. Certain issues are worth considering in managing Tripoli in the future. It has been suggested by Angotti (1993) that the problem of developing countries cities is not urban growth, but the lack of political and administrative will or the adoption of inappropriate or obsolete planning techniques in managing the growth. Evidence presented here indicates the ineffectiveness and/ or non-implementation of planning strategies in the Libyan capital. For the sustainability of the city to be achieved, planning solutions must be principle-based beyond the usual improvised solutions. Such strategies for future growth must take into account 'urban essentials' (Hall and Pfeiffer, 2000), and 'infrastructural priorities' (George, 2010). Carmona, (2001) and Carmona *et al*., (2003) reported that the advantages of cities are enhanced by integrating urban essentials in planning. However, these strategies should be in line with participatory planning. Successful urban planning solutions in accordance with Azlitni (2005:6) should be "... well adapted to the existing conditions in order to encourage people to settle in the various regions throughout the country". In this case the integration of modernity with Arabic/Islamic tradition in urban design and management is needed to satisfy the hopes and the needs of the people, who are by nature religious and are attached to their culture.

Urban essentials are multi-dimensional attributes and concerns that illustrate what it takes to make a sustainable city. These attributes include, amongst others, the provision of jobs and livelihood, providing access to infrastructure and decent, affordable housing and living environment to all. In this context, Robinson (2008) stressed that sustainable urban development consists of an economic diversity, and political, cultural and social relations that are able to assist in bringing the whole city back into view. A sustainable urban economy provides a situation for people to work and where wealth is created, as opposed to the prevalence of poverty and unemployment. While Libya is a wealthy country based on the revenue it earns from oil, the poverty level among the indigenous may present a threat to building the fabric of the city. Further, the way to achieving sustainable development, as it appears in the study, takes into account transparency, decentralisation, interaction and the socioeconomic equality of city inhabitants' (Myllylä and Kuvaja, 2005). The lack of infrastructure and job opportunities may affect the social fabric of the city.

A sustainable economic strategy would therefore integrate and expand the economic activities (both formal and informal) that support and sustain families. For example, the support given to indigenous artisans in the Medina should be sustained to keep them employed. A sustainable urban society is one where social coherence is entrenched as against social exclusion and marginalisation. The idea of social coherence is to incorporate and provide services to all the citizens and migrants of a city. For example, the inclusion of women in public policy and political activities ameliorates gender polarisation, especially when half of the Libyan population is women.

The rapid urban growth of Tripoli comes with changes in the physical environment, and residents have different views about the housing type: traditional versus modern (Belgasem, 2005:2). The initial views were that traditional houses represent poverty and modern houses represent affluence. Thus, by the time the government started building modern houses in the forms of villa and storey buildings, many Medina residents moved into the new Tripoli. Residents who realised that it does not really fit into their tradition and religion started building a sprawl of squatted, informal buildings and structures. The provision of housing, however, does not necessarily lie in the hands of government alone; other private developers can be developed to increase affordability of houses.

Another major concern of the sustainable urban environment is having a stable ecosystem. Major areas of concern are the Medina and the peri-urban areas that are occupied by low-income earners. These areas lack adequate infrastructure and some of the structures are dilapidated and constitute a hazard to human life. The erosion of green belts is also worrying in the city. The city has three varying geographical conditions, namely: coastal, mountainous and desert areas (refer back to Chapter Four). Therefore, any physical planning must take into account and fit the peculiar local environmental conditions and geographical characteristics inherent in the different areas of Tripoli (Azlitni, 2005). Therefore, "to create any successful project (e.g. housing, commerce) many conditions such as choosing non-arable land, planning the chosen area and creating the necessary infrastructure must be taken into consideration" (LE [MS], Local Expert, 2010).

Abiodun's (1997: NP) study of Lagos city concludes that "adequate infrastructural facilities with appropriate supporting social services are a prerequisite for any

meaningful programme of sustained industrial and commercial development." Therefore, physical provision of infrastructure does not equate to urban planning and development, as there is evidence suggesting that social problems of the city are not answered above.

Perhaps eco-authoritarianism option is most relevant to the current political development in Libya. Sustainable urban democracy is about empowering and engaging citizens in the planning decision-making and governance processes. Using a participatory approach, citizens contribute to shaping and structuring a city they can be proud of. The emerging democratic culture since the lifting of the UN sanctions has not encouraged the emergence of urban 'citizens' who have stakes in issues affecting them as citizens of their city. An important challenge for Tripoli as a growing metropolitan city in the MENA region is to articulate the multiplicity and complexity of the different people coming together to share one urban space.

5.8   SUMMARY

This chapter has examined the transformation of Tripoli from the discovery of oil in the 1960s to the present. One of the most important factors that led to an unprecedented growth of Tripoli was the deliberate government policy of making Tripoli the capital of Libya. A part of the wealth derived from oil was used in fuelling massive construction works for residential, commercial and industrial accommodation. Thus, by natural increase and immigration the population increased from about 200,000 to above two million in 2010. How the social services are coping with the growth was also discussed. The old city of Medina was also examined in terms of its current and past functions. The old city is now host to immigrants and tourists. The new city is built using planning

knowledge and designs from other countries that have a different social orientation to the Libyan people. As a result, some of the houses were deserted by the Libyan who wanted to have access to a decent and culturally appropriate accommodation. The urban policy does not take into account the peculiar tradition, religion and physical characteristics of Tripoli.

The chapter also described the residential land use change in Tripoli, with focus on two peri-urban settlements – Enjela and Khalt El-Ferjan. To sum up, the increasing need for new residential and commercial areas has led to the urbanisation of these two districts. However, it has been shown that these areas are not properly planned and are subject to arbitrary construction of houses and commercial structures. As such, the land cover in the areas studied is constantly changing, from agricultural or grass land to urban land use. Furthermore the implications of urban growth for planners, the current situation in Libya and issues of sustainability were identified. The missing point is that the concept of sustainable cities is missing in the current planning regime that is not only vague but not suitable for the local environment. In view of the above shortcomings, the study proposed a planning method that incorporates tradition, religion and climatic factors in the design and reconstruction of Tripoli and the rest of the country. Buildings acceptable to the people can be designed using the Medina as a model that can be modernised. The following chapter discusses the experiences of residents in Enjela and Khalt El-Ferjan, and look at how the people deal with the social, environmental and cultural factors they face as a result of urban expansion and living in urban sprawls.

6 THE VIEW FROM THE GROUND: ENJELA AND KHALT EL-FERJAN

6.1 INTRODUCTION

This chapter brings together the key findings about residents' experience of urbanisation in Enjela and Khalt El-Ferjan. The chapter considers some factors that are related to the sustainability of these two peri-urban areas of Tripoli, Libya. The data gathered about households and the reasons why people reside in these areas was investigated using questionnaires and interviews (Chapter Three). Additionally, the consequences of urbanisation, migrants' experiences and feelings about urban life were documented. The field survey for the gathering of data took place from 1 January to 28 February 2010.

This chapter begins by presenting the general demographic characteristics of the residents of the study areas with particular emphasis on their family size, age groups, and the size of family accommodation and length of residency. This basic information provides an understanding of what kind of people the residents are in order to provide insight into the trends and social consequences of urbanisation. This is followed by an account of a typical daily life in Enjela and Khalt El-Ferjan. Economic factors such as employment and level of income are also presented. The section on housing looks at the size, types and ownership. For example, a number of the houses visited were made and fitted with modern materials – an indication of the influence of modernity on the character of houses. The state of the infrastructure, mainly roads, schools and water was reviewed. There is a discussion of the environmental consequences of urban growth. The planning and policy dimension of urban growth as it relates to the study areas and how it affects the lives of the people was already discussed in Chapter Five.

6.2 REASONS FOR MIGRATION TO PERI-URBAN AREAS

Peri-urban development is usually driven by the economic forces of an urban area, and they are socially dynamic: migrants from various parts of a region or country or, in many cases, from other countries often set up homes in peri-urban areas like Enjela and Khalt El-Ferjan. Social contrasts are often obvious in the study areas: there are poor people who end up concentrated in the areas as well as rich individuals who are seeking space. People escaping the overcrowding and high cost of living in Tripoli also move into peri-urban areas. The size of a family is also a compelling factor for moving into the peri-urban areas, as one respondent noted:

> as a result of the increase of my family, which was only two people living in 120 metre square but now have grown to 12 members and we wish to live in the same area with separate houses because of the need for social cohesion and upholding Islamic principle of living together as one family (LRIK(AS), 2010).

Apart from the above factors, the two study areas have been affected by urban growth as a result of the reasons stated in Figure 6.1. However, the critical challenge is sustaining growth by basing planning approaches to the wider urban and peri-urban areas so as to develop sustainable neighbourhoods that can cope with the influx of settlers. Increase in population and migration was recognised as the primary reason for urbanisation. About 54 per cent of those who responded to my questionnaire believed that the number of people being born and improvements in health that prevent child mortality are the main reasons why both Enjela and Khalt El-Ferjan are increasing in population and expanding in size. Informal interviews indicated that there are a lot of people coming to reside either temporarily or permanently in these areas. In fact, there is an incidence of high migration into the two study areas. The increasing number of people has further placed an enormous pressure on arable land in Tripoli. The second significant reason is

insufficient and ineffective planning and enforcement of planning rules, which allows the proliferation of illegal settlements.
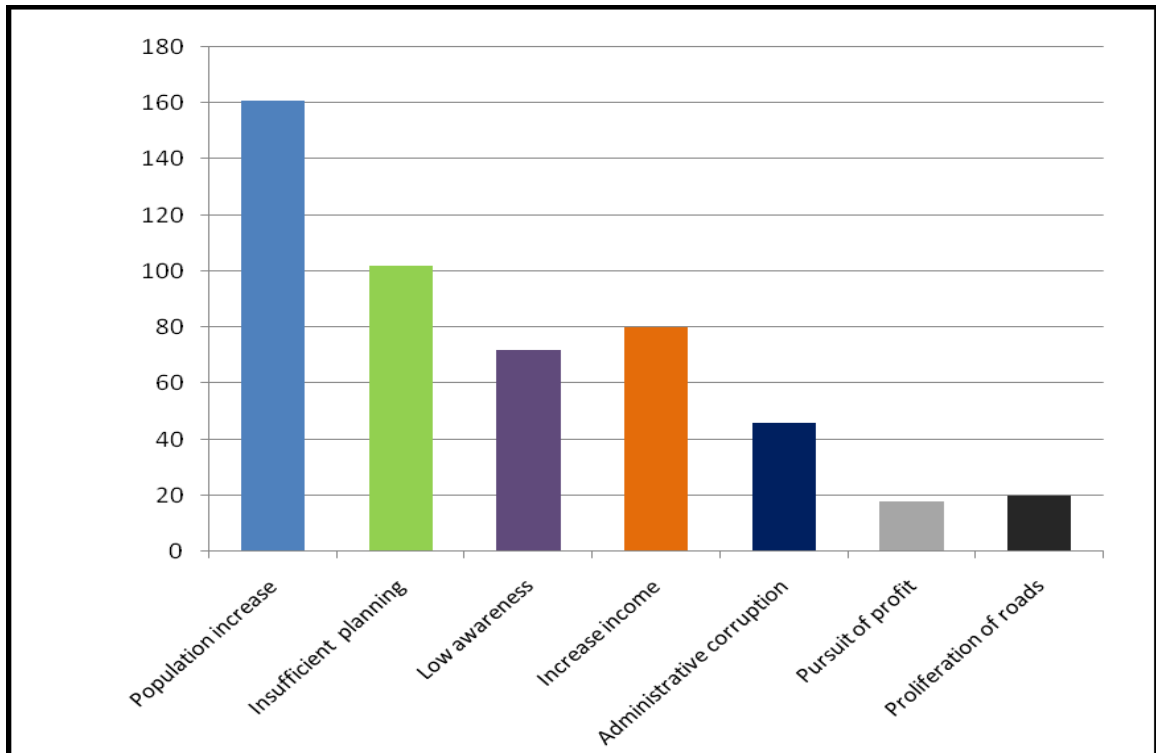
Figure 6-1 Factors which cause urban growth in the study areas according to respondents. Source: Author's survey (2010).

Meanwhile, some respondents highlighted that politicians have played a decisive role in the unorganised urban growth in some parts of the study areas. Emphasis was placed on administrative failure, which creates instability, and in turn corruption in the entire system. A conversation with planning officials, transport workers and academic professionals revealed the lack of adequate compensation and provision of alternative accommodation to people whose houses have being sequestered by the government for re-development and were forced to live outside Tripoli. The majority, who cannot afford urban land, have resorted to settling in Enjela and Khalt El-Ferjan.

6.3   DEMOGRAPHIC CHARACTERISTICS

The age distribution of the respondents appears to be young, a distribution that agreed with Population Resource Centre (2010) and The World Factbook (2010) estimates that Libya's population is exceptionally young (an average of 23 years) but growing at a rapid pace. Figure 6.2 shows the distribution of the respondents according to age group. It indicates that young people, comprising those aged between 20 and 40 years, were the largest group, accounting for about 50 per cent of respondents to the questionnaires, with 33 per cent aged between 40 and 60 years. Those aged 60 and over are the smallest group with above eight per cent. The average age of the residents in the study areas was 32 years, with a minimum age of 19 and 70 years the maximum. This finding is a product of the age-selective nature of migration, which is dominated by young people and partly reflects changes in the natural increase of population. It is also an indication of the general trend in the Libyan population.

As noted by UNICEF (2011), life expectancy has increased from 62.2 years in the 1980s to 74 years. However, the fact that a large percentage of the population is made up of young people (20-39 years) means that the peri-urban population will continue to grow fast in the coming years. This distribution of the population points out that to achieve sustainable development in urban areas, the provision of urban services should be solved by establishing a long-term plan that would cater for the growing population. In such a plan, the areas of development have to be identified and their relationships with neighbouring settlements need to be considered. The plan should also propose the establishment of or merging of settlements and services centres in the peri-urban areas to ensure the functional compatibility among them as well as access to public services.
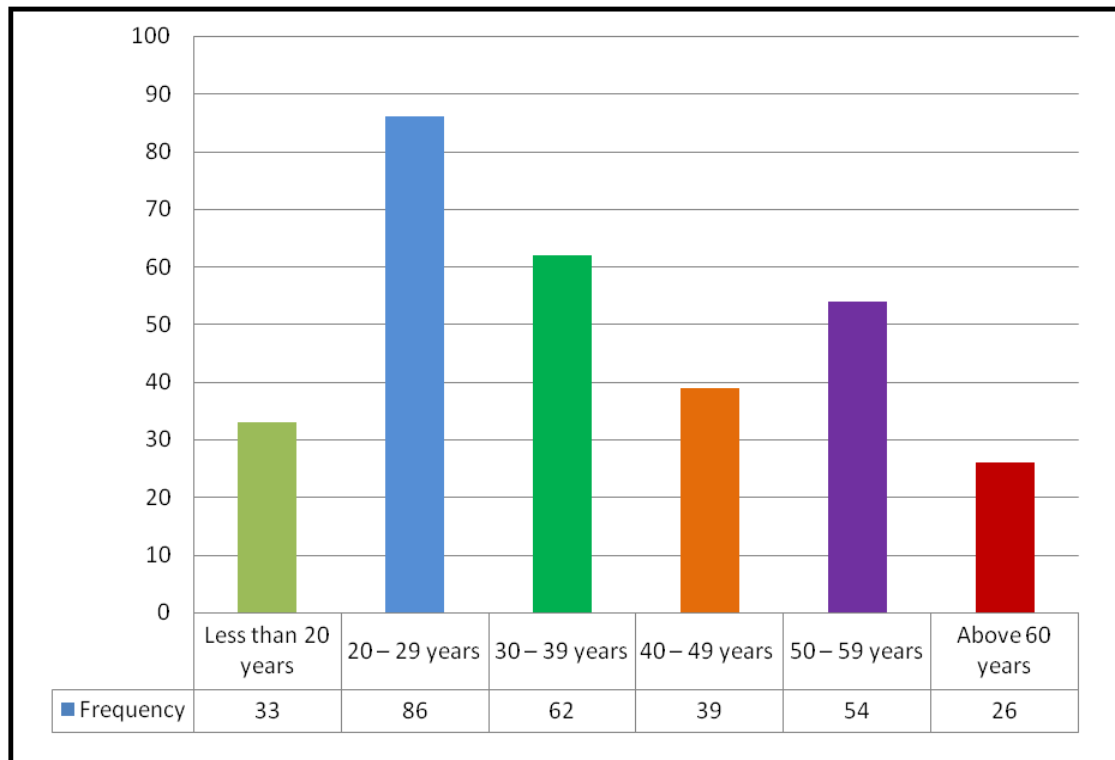
Figure 6-2 Respondents' age distribution in the study areas. Source: Author's survey (2010).

In the interviews, the largest age group in Enjela and Khalt El-Ferjan was those between 20 and 40 years. The young population are between 19 and 49 years, accounting for 75 per cent of the total interviewees. Even though the largest group of the questionnaire respondents were between the ages 20 and 29 years, the greatest number of interviewees was aged between 30 and 39 years. While Figure 6.2 shows the age distribution in the two areas, Figure 6.3 shows the age distribution between Enjela and Khalt El-Ferjan, indicating a slight difference between the two areas. There are younger people (over 60 per cent) in Enjela and Khalt El-Ferjan (23 per cent). Conversely, close to half of the respondents in Enjela were aged 40-59, and 15 per cent were aged above 60, probably as a result of the area's origin as an agrarian society. Enjela is basically an agricultural settlement, and consequently many of the families are aged farmers, while the younger age group may have migrated to the cities in search of high paying jobs and other

opportunities. Khalt EL-Ferjan appears to be a fairly modern settlement which is still under construction. The area relies on its migrant workforce as a source of labour, with the majority of them belonging to younger age groups.
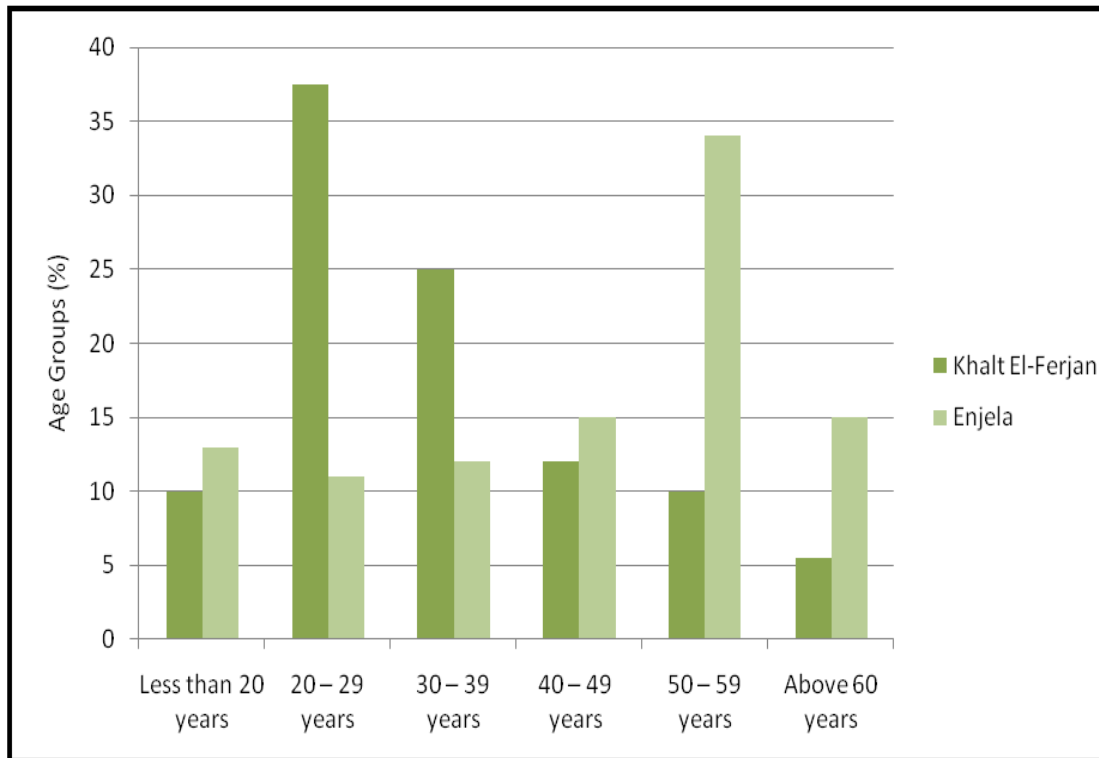
Figure 6-3 Age of households of the study area. Source: Author's survey (2010).

Using a student t-test to assess whether the average ages of the two areas are significantly different from each other reveals that there was no significant difference between the mean ages of respondents from Enjela and Khalt El-Ferjan. Additionally, there was no difference of statistical significance between the mean age group of Enjela and Khalt El-Ferjan. It should be noted that as there are no studies available in Libya that present the individual mean age of Enjela and Khalt El-Ferjan, this result now establishes the fact that the mean age groups between the diverse peri-urban areas of Libya have similar characteristics.

When comparing the two areas above to the 6.5 million estimated population of Libya, 63 per cent are between 15-64 years, those under 15 years are about 13 per cent and only 4 per cent are over 65 years (The World Factbook, 2010). This estimate indicates that respondents' age distribution is a reflection of national population characteristics. It is also an indication that the peri-urban areas are dominated by youthful populations. In fact, many developing countries have a high percentage of young population aged between 15 and 29 years, a phenomenon referred to as the youth bulge (Population Resource Centre, 2010). In the midst of urbanisation, Enjela and Khalt El-Ferjan still bear some features of traditional Islamic societies with a prevalence of more than two children per family. Moreover, peri-urban Tripoli attracts young migrants from the rural areas and international migrants who came in search of education or work.

Table 6.1 shows the length of residency of the respondents. About one-quarter of the respondents moved to the peri-urban areas less than five years ago. More than half of them have been residing there for more than 10 years. About five per cent of these populations have lived in the area(s) for more than 25 years. The average length of residency of the respondents was 10 years. In terms of birthplace, the respondents were migrants from outside Tripoli and came from other cities and rural areas in Libya. About 29 per cent of the overall proportions of immigrants are from the neighbouring countries of Tunisia, Egypt and Niger. This distribution indicates that these peri-urban areas have been harbouring people for a long time even before the current sporadic expansion of Tripoli City.

Khalt El-Ferjan is a new construction and so most of the respondents have not lived there for more than 10 years. This is because the majority of the residents moved in

after Ghadhafi's new urban transformation policy, which commenced in 2000. As a result a number of public housing projects were constructed along the various peri-urban areas of Tripoli. The government aimed to build these houses so as to cater for the rapid population growth of the city and to cater for those who live in slums. Thus the policy has over the years encouraged urban migration to Tripoli and its suburbs. Among them, Khalt El-Ferjan is undergoing rapid expansion in a modernised form.

Table 6-1 Length of residency

	Study areas	
Duration (years)	**No.**	**%**
1 – 4	77	26
5 – 8	62	21
9 – 12	50	17
13 – 16	39	13
17 – 20	36	12
21 – 24	22	7
More than 25	14	5
Total	300	100

Source: Author's survey (2010).

Respondents lived together based on their socio-cultural and ethnic similarities, as opposed to the inner city and the new peri-urban areas where people live together irrespective of their socio-cultural identity and ethnicity. The congregation of similar socio-cultural and ethnic groups reduces the chances of internal conflict, but might also reduce the chances of inter-ethnic integration. Similarly, people reside in these areas for different reasons – in order to work together or reunite with families. Such permanent places of congregation increase in size over time. With reference to section 6.2, these residents have different motives for moving to the areas to reside on a permanent basis.

It should be noted that in total 330 questionnaires were distributed and 300 responded to the questionnaire. Thirty five interviews were made: 30 males and 5 females. It was my intention to have an even-gender division so as to adequately represent peri-urban life and prevent sample bias. However, due to cultural and religious barriers it was almost impossible for me (as a male researcher) to have a direct conversation with female respondents. In Libyan culture, as across the entire Middle East, men are not allowed to speak to females that they are not related to. However, the few females interviewed were either single or single mothers with no male guardian. Other women agreed to be interviewed through their guardians. I accept that this sharp gender division of the respondents is not a true reflection of the gender division of the study areas as a whole. These are some of the challenges to be confronted in the HIU.

It is true that population growth produces some of the most startling urban effects (Masek *et al*., 2000); however, it is not only population growth that has created urban growth, but the type and size of households are other important contributing factors to growth stimuli (Thorns, 2002). There are many families that moved to the peri-urban areas from Libya City. An interview with the Civil Register Secretary confirms that "many of the big families shifted to peri-urban areas because the majority of the houses in the city are small in size and without garden or play area for the children". As family size grows, they desire to live in peripheral areas like Khalt El-Ferjan and Enjela. The main reason for their choice of these areas is because of its closeness in pattern to their old residences (in this case, their villages whose houses contain courtyards).

As indicated in Figure 6.3 above, the lower number of children in a family could be a result of the relatively younger population (20 – 40 year olds) in the sample, but it will

grow with time because of their reproductive potential. However, modernisation is impacting on family size through the embracing of Western-style family planning. The family size is becoming nuclear as witnessed in other urban areas of oil-producing MENA countries. Over 60 per cent of the migrant households in this study had three children or fewer. This is a reflection of the declining fertility rates in Libya: in 2003 the rate was 3.49 (children born per woman), 3.34 in 2005, 3.15 in 2008 and 3.01 in 2010 (World Factbook, 2010). In recent times, Jones (2003) believes that there has been a declining rate of child birth per woman in the Middle East and the Muslim countries in general due to acceptance of modern family planning methods.

Elbendak's (2007:183) study of social transformation in Tripoli observed that urbanisation, modernisation and industrialisation have recently impacted on family size in Tripoli and its surrounding peri-urban areas. He also argues that a nuclear family is preferred by those in the upper- and middle socio-economic strata, the educated, and the young. The remaining respondents are still influenced by and remain far more attached to Islamic principles and their culture than to the Western family patterns, thus belonging to a family size with more than five children and even more than one wife. Apart from the religious point of view, a high level of income and the desire for multiple children are the major explanation for having more than one wife.

6.4   AN ACCOUNT OF PEOPLE'S DAILY LIFE IN ENJELA AND KHALT EL-FERJAN

This section describes a day in the life of residents from Enjela and Khalt El-Ferjan. Instead of presenting each narration, I try to summarise the two together, but bring out differences where necessary and reflect upon them. The presentation was based on my

interaction with the respondents in the course of administrating the questionnaire or conducting interviews.

In Enjela, the majority of people are farmers, so the lifestyle is a bit different to Khalt El Ferjan, where the people are mostly businessmen, government workers, labourers and commuters. Foremost, the religion of Islam is considered an essential component of social lives of all the people in these areas. The day usually starts with prayers and throughout the day the life of the people is punctuated by prayer (Salat). A person in both areas usually starts the day with a pre-dawn prayer called Fajr, which is usually performed around 5:00am. This is in line with the teachings of Islam that compels Muslims to perform five daily obligatory prayers: "When ye pass (congregational) prayers, celebrate Allah's praises, standing, sitting down, or lying down on your sides; but when ye are free from danger, set up regular prayers: For such prayers are enjoined on Believers at stated times" (Quran 4:103). Regular performance of prayers seems to be commonplace regardless of gender, ethnicity, affluence, social status and age. There is, however, one important gender difference in the place of worship – in this case the mosque. Women pray at home but earn the same reward as men. Prayers connect men with the community because they go to the mosque and meet with non-family members (Elbendak, 208:244). I have noted that the mosques get filled up at the times of prayers; probably due to the devout nature of the Muslims. Where there is no mosque in proximity, family members pray together in the house in a preserved area.

Historically, the mosque emerged to be the focal points of the community, and the layout of settlements is usually arranged around it. Shawesh (2000:4) describes the mosque as follows: "the mosque is the spiritual, cultural, mental and intellectual

landmark of the Islamic city. It is that building that reflects the most important features of Muslim identity: unity and faith. It is also a place for religious ceremonies and a centre for social activities such as association, education and it is also a place for political activities". The mosque therefore signifies cultural and religious identity, and establishes and fosters relationships between people, dwellings and space. Modern day Tripoli is not built around the mosque, but based on areas of economic value like the central business areas shown in Figure 5.7 and 5.8. Since both Enjela and Khalt El-Ferjan are unregulated, the design of developments, even though taking modern fashion, tends to be built in similar fashion to the Medina: there is a mosque at the centre surrounded by neighbourhood settlements in each district. I have also observed adherence to Islam by migrants and indigenous people, as well as rural and urban people, thus debunking a popular assumption that rural people are more religious than urban people.

Women usually prepare the children for school and breakfast. The family then take breakfast together, but since I am not related to them by blood, there was separation between us (men) and any woman in the house. At about 8am, people in Khalt El-Ferjan commute to Tripoli for their daily jobs, and majority farmers in Enjela leave for their farms as soon as they come out of the mosque, without having breakfast. During this time, there is hustle and bustle in the two peri-urban areas – children going to school, farmers walking to their farms, shop owners and vendors opening, but the unemployed ones can be seen sitting idly in front of their houses. Khalt El-Ferjan suddenly becomes quiet with fewer people on the street. However, women are seen going shopping for consumables. Women also go to work, to shops, to visit relations and to other places of interest unaccompanied by a male relative. This means that urbanisation is accompanied

by a shift from a conservative social role for women to a more liberal one. Nonetheless, they are still burdened by excessive household chores in a manner similar to those in rural Libyan societies. In general, women are allowed more individual freedom: for example, women have adopted European style of dressing while maintaining the Libyan custom of covering their hair with a scarf.

At about the time for the afternoon prayers, the number of people on the street increases near the mosques for afternoon prayers (Zuhr). After the prayers, people use the remaining time to have their lunch either at home or in the few neighbourhood restaurants. The migrants in construction work in both areas patronise restaurants more than Libyans. Just before Zuhr, women organise the house and prepare lunch as in a short time children will return from school. Preparing lunch can take up to two hours as most men and children are not around to help. It is important to note that most Libyan men do not help with the cooking once they are married. By the time of late-afternoon prayer (Asr), school children are back and some offices are closing for the day. The rush hour in Tripoli starts after Asr. Most people in Khalt El-Ferjan are on their way home while those working on the farms in Enjela return a bit later, from 5-6pm, but before sunset prayer (Maghrib). Some men are seen having traditional coffee (Al Haddba) before going to mosque; others spend the time with their family till Maghrib.

By sunset (just before 7pm), most of the people are back home and converge in the mosque for prayer. After prayers, some people use the time to relax, associate and talk about their daily life with friends and family members. During this period migrants assemble and talk about their experiences and meet new arrivals. Similarly, issues bordering the community are announced or discussed in the mosque. It is important to

mention here that the Islamic community is formed on the basis of a shared belief in God, the universe and nature (Quran 10:19). In such a community, the question of race, nationality and ethnicity have little significance. In this instance, strong bonds with neighbours and relatives who often live close by are enhanced. Dinners are taken either after Maghrib prayer or shortly after Ishah.

The evening prayer (Ishah) is the last compulsory prayer for the day. Because of the short time difference between Maghrib and Ishah, a few people would prefer to remain in the mosque and read the Quran or make supplications. Others would, if not close to the mosque, socialise with friends around a table for coffee, or use the time to visit relations. The families that I have visited for interviews during my fieldwork preferred their slack period, the time after Ishah. All of my respondents watch TV either before or after Ishah. Family members gather in the sitting room to watch television or reflect things affecting their lives over Arabic tea and snack. While this is ongoing, the children go through their schoolwork, sometimes interrupting their parents for clarification. There is still a lot of work left for the women to do: washing the dishes and preparing for the morning. The streets are quiet at this time since pubs are prohibited in these areas; there is no alcohol consumption. However, parties are allowed in designated public places or in individual homes. By midnight most doors are shut and individual families are asleep because they have to wake up for the Fajr prayer.

I noted that since there are no nightclubs as there are in Western cities, people use the time to relax with their families and watch TV. The advent of satellite televisions has exposed Libyans to the reality of modern life. Most people watch Arabic channels, however, the impact of international media can be clearly observed through people's

appearance in public space, as well as in their style of dress, food, and music. Even so, Mowlana (1994) contests that modernity has not led to the erosion of Islamic teachings. Indeed, the social media mentioned in section 3.4 and 5.6 was used as a communication platform to propagate the opposition. At the beginning of the uprising, a new independent satellite TV channel called 'Libya Free People TV' was set-up by Libyan expatriates in Qatar, as the voice of the Libyan revolution, thus counteracting state-owned television.

As explained and illustrated in Chapter Six, houses built by individuals display strong Islamic influence even though the designs may appear deceptively modern from the outside. There is a clear gender divide in the house with areas of separation between the sexes and guests. The design and structure of houses have changed to keep with modern trends and to preserve Libyan tradition, especially with an increase in family size and/or income. The houses also serve as social venues for ceremonies such as weddings and hosting parties.

The above narration shows that life in peri-urban Tripoli revolves around religion, work and family. This includes having a mosque for prayers, a large family, working in private and public places by both men and women, even though women spend most of their time on household chores, eating at home as opposed to restaurants, watching TV and relaxing with family members, keeping in touch with modernisation, and a lifestyle changing towards a Western European style. The peri-urban areas tend to be quiet during working hours, which is an indication of the low economic function of the areas, especially Enjela. Even those who categorise themselves as poor because of a lack of

jobs make good-faith attempts at self-sufficiency – hence coping strategies through policy intervention are crucial to better serve this group of people.

6.5 ECONOMIC FACTORS

The activities that the respondents engaged in to earn their incomes were diverse; they included construction work, factory labour, civil service business activities, professional employment, artisan businesses and farm wage labour on the nearby agricultural farm in Enjela. The amount of income varied widely among respondents on the basis of the type of employment they were engaged in. For example, income from agriculture is the lowest; as such it is becoming unattractive. The results are shown in Table 6.2. Table 6.2 shows that of those who responded to the questionnaire and interview 66 per cent earned a monthly salary of less than £200, which may be low for a family of four.

Table 6-2 Monthly income of respondents in the study sample

Categories of income	Respondents		Total
	Frequency	**% category**	**Total**
Less than £200	84	66	128
£401-500	36	56	64
More than £501	84	78	108
Total	204	68	300

Source: Author's survey (2010).

About 56 per cent of respondents earned between £400 and £500 (LYD 791.83 – LYD 989.79) per month. The rest of the respondents earn more than £500 (LYD 989.79) per month. The respondents who get part of their income from business activities and professional jobs belong to this category of those earning more than £500 per calendar month. In Libya, the minimum wage for a single person was LYD 130 (£ 65.67), a

couple without a child receives LYD 180 (£90.93), and a family receive about LYD 220 (£111.14). Out of this, an additional LYD130 (£65.67) was paid as basic food staples allowance, and the government heavily subsidises rent and utilities. However, at the time of writing the TNC is increasing salary allowances to those that were already benefiting from it under the previous government. Those who are unemployed and are not benefitting from the monthly allowance are being listed and are given a small amount pending the stabilisation of the polity.

In fact, it is difficult to see how these families survive on such meagre income that some of the respondents consider too low in the present economic reality of high inflation. Since there are no official recent figures available about what constitutes the poverty line in Libya, a comparison to the UNDP US$ 2 per day benchmark indicates that Libya's minimum wage is a 'living wage' – enough to lift thousands out of poverty. It is obvious from the interviews that only the people employed in the public sector enjoy the minimum wage and food allowance. Those employed in the private sector earn the same minimum, although the rate paid varies with the type of organisation. Some other people employed in the public sector look for a second job with the private sector, so as to earn just enough to cover family needs.

The unemployment rate in the Enjela area is around 30 per cent. In Khalt El-Ferjan unemployment is as high as 40 per cent, probably one of the highest in Libya. As a result of high unemployment in these areas, the rebellion was supported overwhelmingly without resistance, and changing the government is perceived to be the only option that would bring prosperity. The Libyan government's latest census figures reported that the national unemployment rate for 2009 was 20.7 per cent (Reuters,

2009). The unemployment rate among women is 18.71 per cent, while that of men is higher with 21.55 per cent. These rates are higher than the unemployment rate of 11.8 per cent for the Middle East and 10.9 per cent for North Africa in 2008 (Sullivan and Nadgrodkiewicz, 2008). The 2011 estimate by the CIA shows that unemployment figures have risen by another 10 per cent. As presented in Table 6.3, Libya is the only country with a higher unemployment rate than the rest of North African countries with similar population size. The soaring unemployment, along with inflation, corruption and the dictatorship led to protests and rebellion in Libya, similar to those protests in Tunisia, Algeria, and Egypt. Even as unemployment spurred resistance to Ghaddafi in the studied areas, the Khalt El-Ferjan neighbourhood had a more decisive role in the participation of rebellion than the Enjela neighbourhood, probably because there are more young people there and it is closer to the centre of Tripoli.

Table 6-3 Comparing Libyan population, labour force and unemployment

Countries	Population (millions)	Labour force (millions)	Unemployment rate (%)
Libya	6.5	1.7	30
Tunisia	10.6	3.8	14
Syria	22.2	5.5	8.3
Morocco	31.6	11.6	9.8
Algeria	34.6	9.9	9.9
Egypt	80.5	26.1	9.7

Source: CIA, (2011)

The high rate of unemployment for the two study areas may be due to unequal distribution of wealth. Even among the employed, there is a wide variation in monthly income, which could suggest that there is a corresponding wide variation in education, skill levels, and car and home ownership. It was found that there was a strong

relationship between income level and house size and ownership. Upon examination of the occupations of the residents, the majority simply stated that they were employed and did not provide further details about what they actually did for a living. Many of the respondents that are unemployed had a tale to share about their unemployment status, but were also unwilling to speak out. "Unemployment reached a high level last year in Enjela because most people that lived in the area work in the agricultural sector, and migrants come from other places to look for the few available jobs" (FGIE2, 2010). The government is not supportive of agriculture, which used to be the mainstay of the Libyan economy before the exploitation of oil. According to the former Director at the Ministry of Agriculture: "around 95 per cent of the population were working in the agricultural sector in the 1970s while right now it is only five per cent of the population" (LE [MH], 2010).

The Libyan government under Ghaddafi made plans for major spending on infrastructure until the year 2020. For example, in 2007, the Libyan government planned to spend 150 billion Libyan dinars (LYD) (approximately US $123.4 billion) on infrastructure and housing within the span of five years, 2008-2013 (Global Observer, 2012). These large projects were intended to create jobs and increase economic prosperity; nonetheless these can only be achieved in a stable polity. The armed conflict created instability and increased the unemployment rate in the country. Therefore, one of the short-term post-conflict strategies is to address socio-economic problems, especially in the areas of equitable distribution of wealth and solving unemployment.

6.6 HOUSING

With reference to section 4.4.1, the country is now facing a severe shortage of housing again (UPA, 2005). As Amer (2007:29) observed, the country was suffering from a shortage of housing and a lack of facilities before the 17 February 2011 revolution. My research investigated the size of houses (Table 6.4) in relation to the number of occupants because the size of residential houses needs to be of sufficient size to allow the occupants the space to relate, to be apart and to have privacy. This view ascertained whether families were living in a conducive or an overcrowded environment.

Table 6-4 House size in the study areas

House Size (Square meter)	No.	%
Less than 100	42	14
101 – 150	100	33.3
151 – 200	50	16.7
201 – 250	46	15.3
251 – 300	38	12.7
More than 300	24	8
Total	300	100

Source: Author's survey (2010).

The above table shows that a third of my respondents live in residences sized between 100 and 150 square metres. Around 14 per cent of the houses measured less than 100 square metres, and tend to consist of migrants sharing rooms in private rented houses. Eight per cent reside in a living space of more than 300 square metres. Some of the houses above 300 square metres were owned by some of the wealthy individuals who live in Enjela and Khalt El-Ferjan. Only 36 per cent of the houses had an adequate number of rooms to accommodate all household members. It should be noted that

Libyan urban planning has not included the minimum space standards for housing, thus findings cannot be compared to a national standard. Since there is an absence of a transparent housing space standard in Libya, it becomes important to focus on the 60 per cent of houses that are overcrowded. One of the ways of reducing overcrowding is by providing legislation that limits the number of occupants in a household as practiced in the United Kingdom and other developed countries. The findings for household size and dwelling size highlights the need for the Libyan authorities to create a balance between housing planning policy and peoples' housing space aspirations and expectations, which is essential in ensuring the sustainability of these communities and a living space which satisfies their needs in life. The pattern of living in Libya maintains stronger relations between families.

Although about two-third of respondents had four or fewer people living in their house, it is interesting to note that the remaining 25 per cent had between five and nine people, and no house had more than 10 people as a nuclear family. The fact that the two sample areas (Enjela and Khalt El-Ferjan) are convenient commuting towns for migrants who come to Libya to work may explain why some households had more adults, because they migrate alone, leaving behind their wife and children. Analysis of the questionnaire reveals a strong correlation between large family size and children less than 19 years of age. This points to the fact that sizes of the houses are relatively large because of families' desire to have large houses commensurate with their size of family. Results from the group discussion in Enjela indicated that people prefer to move out of the city to the neighbouring areas as the size of their family increases. This is especially the case with families in rented accommodation. Apart from natural increase, respondents indicate that accommodating family members and relations from rural areas are the

causes for the increase in family size. This is because of the important link between family members, as grandparents, married children, and grandchildren desire to live as an extended family in the same household.

6.6.1   TYPE OF HOUSING

The type of housing in which the residents of Enjela and Khalt El-Ferjan live could be considered part of their urban experience. While Table 6.5 indicates the types of housing occupied by respondents, Figures 6.4-9 shows the different types of houses in the study area. The most popular type of housing was found to be the villa, with over 50 per cent preferring this type of accommodation. Villas are made up of smaller rooms suitable for smaller families. The popularity or acceptance of the villa as the preferred option for these residents is not out of choice, but because they are provided by the government through soft loans that offer lenient terms for repayment. Similar to the principles of soft loan offered to countries by the IMF, they are meant to provide concessions to borrowers, such as long repayment periods or interest holidays.

In Libya's case, soft loans are offered to individuals at a great concessionary term. For example, a Libyan can borrow up to £100,000 equivalent to be paid in 30 years with an interest rate of 2-3 per cent charged only on the principal amount. The soft loans are usually provided by governments through Specialised Credit Institutions set up to disburse more risky lending than the commercial banks. Even though the institution has aggressively expanded soft loans in the previous years, the primary beneficiaries have been the minority tribe of Ghaddafi and his allies (see 7.3). Other Libyans hardly have access to the loans. Another option for home finance is through a mortgage which has a

higher interest rate, a shorter repayment period and stringent conditions such as collateral.

Table 6-5 Types of housing in the study area

Type of housing	Khalt El-Ferjan		Enjela	
	No.	%	No.	%
Bungalow	32	15	6	7
Duplex	38	17	12	14
Apartment	39	18	0	23
Villa	112	51	48	56
Total	221	100	86	100

Source: Author's survey (2010). Although statistically valid, the above table does not include some types of houses, which are not within the required standard, used mostly for temporary housing or used for foreign labour in Tripoli.

As the size of family increases: "many of the big families shifted to the peri-urban areas because the majority of the houses in the urban areas are small size and without gardens" (CRST [SH], 2010). Apartments are next in popularity to villas. These are mostly associated with large families because villas may not be suited to their needs. The heights of this type of houses range from 2 up to 12 storeys (see example in Figure 6.4). The apartment shown in Figure 6.4 was designed for large families, and there are others that are typically constructed for small families. The main advantage of multi-storey buildings is to achieve high-density accommodation, by reducing the use of limited land available within the centre and suburbs of Tripoli city. One of the focus group discussants opined that: "I prefer to live in large houses with enough space as a result of family size" (FGIE2, 2010).

Although the survey results showed that villas were the most popular type of housing, I observed a number of modern bungalows and multi-storey buildings; while some are under construction, others are completed and occupied. According to the Planning Secretary:

> In the not too distant past, people in Libya did not like to live in flats in order to uphold their traditions and customs of family life [Pers. Comm., 2010].

Another disadvantage of multi-storey buildings in Libyan society is the tendency to separate extended family members and relations. Living in apartments secludes families from their relations when compared with traditional houses or areas where families live within a close distance of each other. However, most of the multi-storey buildings in the study area were designed to accommodate small families; hence they do not allow room for many guests or extended family members.

Figure 6-4 An example of multi-storey building containing apartments in Enjela. Source: Author's survey (2010).

Many aspects of life, such as the choice of housing by young educated Libyans, are changing due to the new systems of modernisation (Amer, 2007). Recently, the younger generation of home owners has a greater preference for apartment blocks (irrespective of their background). In addition, the high cost of limited land and the impact of modernisation are two of the reasons why multi-storey building is becoming more popular in Tripoli and its environs. By attaining a certain level of education, Libyans can make a choice concerning both traditional and modern housing. The preference for old Libyan traditional houses can be either due to a preference for traditional Libyan architecture, to large family size or to a low level of income. The mud houses are considered cheaper to rent and were often used as temporary homes for settlers before they could afford more permanent housing. For instance, traditional houses offer privacy to the household members, from streets, neighbours and those in the house as guests, unlike apartments that have no such provisions.

The internal courtyard provides ventilation and lighting, it is also a space for family relaxation and gathering of the extended family whilst allowing for gender separation. The children can also use the courtyard as a playground. Traditional houses are prevalent in the study area, but these traditional mud houses lack modern facilities, have poor sanitation and are unsafe for habitation. One of the local residents believes that the situation may be different in Khalt El-Ferjan: "it is close to the service centre areas, so it benefits from some services such as electricity, many kinds of private transportation and telephones" (LRIK [MG], 2010). In short, traditional Libyan styles of housing are now becoming less popular as people, especially the younger population, prefer to live in modern multi-storey buildings.

Whatever the choice of housing, it should take into account climate and local identity and socio-cultural aspects of society, such as ventilation, green areas, and private spaces for women, the safety and security of children, and infrastructure and services. It is also important to consider combining the advantages of modern and traditional houses in the design of future houses that would be acceptable and sustainable to the physical and socio-cultural peculiarities of Libya.

Figure 6-5 A typical bungalow in Enjela. While the building is of modern design, the wall around the house is to allow for privacy in accordance with Islamic teaching and to prevent any tendency for crime. Source: Author's survey (2010).Type of Housing and Level of Income

There was a significant relationship between respondents' level of income, type of housing and housing size. Although this is a common phenomenon, it is interesting to note that there was higher ownership of houses amongst both the higher and lower income groups. Based on the focus group discussions with local residents, my findings indicate that most of them built or bought their houses either by selling a house they owned in their place of origin or through obtaining a mortgage or a loan from the commercial banks. The questionnaires confirmed that 68 per cent of respondents were

home owners, while the remaining 32 per cent did not have houses of their own. Out of the proportion of home owners, 22 per cent were buying with a mortgage. Figure 6.6 demonstrates that 65 per cent of low-income earners (earning £100 – £250 per month) have their own house. About half of them own traditional houses. Meanwhile, the middle and high-income group (those on more than £500 per month) represent 10 per cent of home owners (Figure 6.7-6.8). By using the Chi-Square test for independence, the p-value of 0.7 is an indication of a strong relationship between the type of housing and the monthly income.

Figure 6-6 Duplex under construction in Khalt El-Ferjan. Bungalows are the preference of high income earners because they prefer to isolate themselves. Source: Author's survey (2010).

It was not the intention of those who did not own their own house to do so because they were only in Tripoli City for work purposes. Interestingly, these different social groups are socially and spatially clustered within the neighbourhood (Chapter Five). The distinction between the poor and the rich is only apparent from the kind of house in the area. The size of houses, however, was determined by individual level of income and

affordability. What tends to happen is that the larger the size of the house the more expensive it becomes. One of the ways of noticing social class distinctions in the study areas and indeed in Tripoli as a whole is by the type of housing. However, these findings are normal in modern societies; the researcher noted that recent development plans for mass housing will lead to major physical and social transformation of the peri-urban areas.

Figure 6-7 An example of a high value duplex that is only affordable to those earning a monthly income of more than £500 in Libya.

Figure 6-8 Another example of an upper class house on the edge of Tripoli city. Source: Author's survey (2010).

It appears that irrespective of the topographical features, such as plains, mountains and deserts that vary throughout the country, apartments are the preferred housing type among the middle-income class, i.e. those earning from £400 – £500 per month (Table 6.6). A typical example of this type of building elsewhere in the country is presented in Figure 6.9 (Author's house). A closer look at the figure shows a mixture of tradition and modernity in the design of the building. In the researcher's view, the middle-income earners are able to obtain mortgages or soft loans to build a house of their choice.

Table 6-6 Type of housing and income

Type of house Monthly Income	Villa	Bungalow	Duplex	Apartments	Total
Less than £200	0	4	0	65	69
401-500	0	3	10	80	93
More than 501	59	31	40	15	145
Total	59	38	50	160	300

Source: Author's survey (2010).

Figure 6-9 An example of Bungalow elsewhere in Zliten Source: Author (2010).

Table 6.7 indicates that 40 per cent of houses of 300 square metres cost from £120, 000 – £250, 000. The smaller size is less expensive and could cost from as little as £5, 000. The prices are cheaper for traditional houses. People who are fully employed, however, stand the chance of benefiting from a housing loan of up to £20, 000. An interview with the officer in charge of housing loans at the Central Bank of Libya highlighted that a number of Libyan citizens are empowered to own houses through low-interest loans. This is pursuant to the May 1978 law, which grants each Libyan citizen the right to own at least a house.

Table 6-7 The relationship between housing size and level of income

| Income Categories (£) | House sizes (Square metre) | | | | | | Total |
| | Less than 150 | | 151-250 | | More than 251 | | |
	No.	%	No.	%	No.	%	
Less than 200	73	57	41	32	14	11	128
401-500	26	41	22	34	16	25	64
More than 501	43	40	33	31	32	30	108
Total	142	47	96	32	62	21	300

Source: Author's survey (2010).

If governed by Islamic Laws, the Libyan government would automatically implement a welfare state. In the Islamic context, the state is responsible for "administering social services and a helper of social welfare activities. The social welfare programmes generally provide family allowances, marriage grants, food rebates, school meals, grants or soft loans for purchasing houses, cars and household goods, medical aid, holiday allowances, free vacation, recreational allowances, special welfare schemes for women and children, etc" (Chaudhry, 1999: np). Soft loans and other forms of financial assistance can be given to the needy and the poor, and those unable to work. In terms of payment, it can be paid in small instalments spread over a long period of time without interest in accordance with Islamic principle. Soft loans in Islam can also be paid by

work in kind or unpaid work, such as through teaching, or community or humanitarian service. Still, this finance system does not stop growth machine.

According to Abdul Gafoor (1999) and Pollard and Sammers (2007), the salient features of Islamic finance that provide some contrast with the Western financial system are: 1) there is the prohibition of fixed or floating interest rates on deposits to rule out unearned profit, but capital is guaranteed; 2) the issues of lending and investing are treated differently: loans are interest-free but carry administrative charge, while investment is on a profit-and-loss-sharing (mudaraba) formula; and 3) the depreciation of capital due to rising inflation is compensated in the tenure of the loan. Detailed discussions about Islamic finance and its rising significance can be seen in Pollard and Sammers (2007). Therefore, an Islamic approach to finance, social services and welfare is all-inclusive and participatory, regardless of tribe, region or any social group; unlike the way in which Ghaddafi's regime sectionalised its welfare packages.

Table 6-8 Monthly income and value of the house

Monthly income (LYD)	House Value in Libyan Dinar						Total
	Less than 50,000 (LYD)		51,000 – 150,000 (LYD)		More than 150,000 (LYD)		
	No.	%	No.	%	No.	%	
Less than 400	72	56	36	28	20	16	128
401 – 500	28	44	28	44	8	13	64
More than 501	21	19	57	53	30	28	108
Total	121	40	121	40	58	19	300

Source: Author's survey (2010)

In 2006, a new state-owned real estate company was established to partner with foreign firms to invest in real estate with the goal of achieving housing sufficiency in response to the increase in population. My study found that, so far, 25 per cent of respondents have obtained loans to purchase with a mortgage or build their own house. As part of the commitment to provide housing, a number of suburban building plots are sold at an affordable rate. A real estate agent also confirmed that "urban land in the city is very expensive, ranging from £500 – £5000 for a one metre square of land in Tripoli, while in peri-urban it is very cheap" (LRIK [RA], 2010). Consequently buildings are erected without planning permits or recourse to master plans, a situation similar to the pre-independence period when master plans did not exist.

The findings of this study are similar to reported trends in other peri-urban areas in developing countries, where residents are poor, new arrivals to the city, or searching for more space. People's primary motivations for settling in Enjela and Khalt El-Ferjan are greater space and affordability. It is interesting to note that more than half of the respondents owned their first home regardless of the size and sanitary conditions. An explanation for high ownership rates can be associated with the loans provided by the Central bank for people to buy houses. Table 6.8 above shows that some respondents bought houses of up to LYD150, 000 (£75, 774) because of their income level. A significant number (19per cent) were able to buy houses costing more than LYD150, 000 (£75, 774). The majority of those who bought houses of less than LYD50, 000 (£25, 258) earn less than LYD400 (£202) per month. This finding indicates that people earning low income can own a house in Libya. Furthermore, as the younger population continues to grow, the demand for housing will definitely increase.

6.7 AVAILABILITY OF INFRASTRUCTURE

As explained in Chapter Five, Tripoli, like other cities in the MENA region, has undergone rapid urbanisation over the last five decades. This rate of urbanisation has been driven by migration, industrialisation, and natural population increase at the city's periphery similar to those of other developing countries (Williamson *et al*., 2010; Davis, 2004). These fast-growing peripheral settlements are at risk of a short supply of adequate infrastructure and social services. Findings from the field survey reveal otherwise: the two study areas show that 97 per cent are connected to electricity, 7.5 per cent have telephone services and about 70 per cent have stable water supplies. This means that the rate of urbanisation is moving at par with infrastructure, but in most cases is provided by individuals themselves, often haphazardly. Houses with access to the internet and gas supply are 4.1 and 4.0 per cent respectively.

During the interviews, local residents stated that electricity is available to all houses, except those under construction. One of the interviewees maintained that: "as a result of Khalt El-Ferjan area being close to the service centre areas, it benefits from some services such as electricity and many kinds of private transportation and telephones" (LRIK [MG], 2010). Likewise in Enjela: "...there are some services already available such as grid water, electricity and good road network that links all the farms together" (LRIE [SB], 2010). However, internet and telephone services are only owned by those in the high-income class. Conversely, a member of the planning agency believes that "the study areas lack the basic infrastructure and service except that they are depending on illegal means" (GPCUPA [DS], 2010). Since most of the buildings were built without proper planning permission, services such as electricity are installed through illegal means. There are two ways in which people get the services of electricity, for

instance. One of the options is through kinship with any member of the electricity company, who will then organise his friends and pay them a token amount to install power. The second option is to go through syndicates, are agents that work overtime to install and connect power to those that have paid them. None of these activities are documented, and fees collected are not remitted to the government. This means that the Libyann UPA is reluctant to enforce rules that would normally govern infrastructural development of peri-urban areas. Most services and infrastructure normally available to Tripoli city are not available in other peri-urban areas.

Table 6-9 Available public facilities

Public facilities	Yes		Confidence interval	
	No	%	95%	
			Min	Max
Primary schools	285	95	93	98
Secondary schools	252	84	80	88
Banks	152	51	45	56
Central shops	202	67	62	73
Health care centres	176	59	53	64

Source: Author's survey (2010)

As a consequence, informal systems grow to meet growing essential needs, such as electricity and water, and the informal nature of peri-urban areas makes it possible for fraudsters to provide services illegally. Aside from institutional failure, this is indicative of a failure of urban infrastructure to expand at a pace that is commensurate with population growth in the peri-urban settlements such as in the study areas. The provision of infrastructure to the peri-urban areas through illegal means was further confirmed by DSandNM.II (2010): "the availability of services and utilities is easy to obtain...despite that services do not match rapid population growth".

In general, the financing of development projects such as modern transportation, health care, electricity and education infrastructure by the Libyan government may have accounted for the respondents' satisfaction with the availability of infrastructure and services. In terms of public facilities, Table 6.9 indicates the presence of schools, banks, shopping centres and health care services in Khalt El-Ferjan. Residents in this area feel a high sense of satisfaction about public facilities. Those interviewed rate the services as either 'good' or 'excellent'. As these services are easily obtainable, it makes it a pull factor to the study area. In contrast to this, those interviewed were dissatisfied with the availability of services and also the quality of those services rendered by government owned utility companies. These services, such as electricity and water, are provided by the General Company of Libya, a government-owned company. Furthermore, the explosion of Enjela and Khalt El-Ferjan in recent years has stretched the capacities of a number of public and customary institutions to meet infrastructural and services needs. The results of this lack of proactive urban planning have been poor public health, poor road access, a shortage of water and an unstable electricity supply.

In Libya, the local councils are responsible for solid waste collection to maintain good public health. Historically, waste collection in the study area was inadequate for the growing population. Individual families are responsible for constructing their sewer, which in most cases ends up as pool of gutter in the neighbours' vicinity. Liquid waste accumulates on streets, in open spaces between houses, in stagnant ponds of water, and on wasteland. This has been a challenge that has gone without a solution by the planning office. In fact, some planners are of the opinion that all planning permits should be reconsidered to include sewage plans in the study areas. Since some of the houses were erected without prior planning approval, planners are still unsure whether

to either demolish or redesign such houses. It should be noted that the issue of building informality without approval is not surprising, as sprawls are characterised by developing outside of government regulation, and do not follow urban planning and development processes and permitting.

The dense road network of Tripoli city has promoted accessibility between the city and its peri-urban areas. As a consequence, this has added to increased urbanisation in the study areas. Responses from interviews and questionnaires show that private and commercial transportation are considered to be the main forms of transportation in the study areas. The number of private cars increases every year. This could be due to an increase in the number of cars per family as the size and age of the family increases. As the children get older they need their own car to travel to work or their place of higher education. The good road infrastructure in and around Tripoli is fostering urbanisation in the peri-urban areas. It should be noted that even as the road infrastructure is being improved, public transport (such as buses) in the study areas is highly inefficient, and faces problems due to a lack of strategic transport planning. A lack of planning is currently resulting in severe traffic congestion, especially from the suburbs at peak times (Elmloshi and Ismail, 2010).

It appears that commercial activities are tied to road infrastructure in the study areas. There is also a significant link between roads and commercial activities. This is consistent with the Tripoli Economic Secretary's assertion that linear settlements in Tripoli are engaged in commerce. The Economic Secretary described the growth of Enjela and Khalt El-Ferjan as being like an urban sprawl because of the relationship between buildings, commercial activities and roads.

6.8 ENVIRONMENTAL DIMENSION

There is a general consensus that urbanisation has led to the devastation of the natural environment, and the loss of many plant and animal species in the short to long term (Gillham, 2002). There is an acute scarcity of land as owners abandon cultivation of primary products in favour of building properties. Environmental degradation in peri-urban areas threatens the sustainability of cities through both direct and indirect impacts on health and essential life support systems (especially in cities with ineffective environmental management). The limited availability of water to 30 per cent of the respondents in my study areas leads to major sanitation problems that compromise public health; for example, they are not able to purchase or access water to properly dispose of human waste (collection, disposal and treatment systems for toilet contents). Second, even though comprehensive population data is lacking for the study areas, it is not out of context to posit that high population growth without corresponding improvement of infrastructure would create more significant health, safety and environmental risks than those found in a typical rural setting.

Respondents are, however, committed to preserving the natural environment, despite the environmental problems they face, such as waste collection. The residents are conscious of the need to preserve vegetation and green space in their neighbourhoods so as to prevent the encroachment of desert, and to maintain the beauty of the environment. The lack of green space in the study areas may result in a shortage of vegetation that would normally purify the air and water locally, and provide habitation for birds and other animals. Local authorities, therefore, need to improve the available infrastructure and utilities, such as refuse collection, road maintenance, service right-of-ways, and keeping the built environment clean.

For example, indiscriminate disposal of solid waste in open spaces has potential risks to human health and the environment. Houses near or around undesignated waste disposal sites may be infected with gastrointestinal parasites and other related micro-organisms. These sites are known to be breeding grounds for pathogenic organisms such as houseflies, rats and mosquitoes. There is also the tendency for water, land, and air quality to be polluted. Pollution can transfer to the groundwater table, thereby contaminating it. Improper burning of waste causes air pollution; continuous inhalation can lead to respiratory infections. One of the most obvious instances of environmental damage caused by solid waste is the smell that comes from litter and its defacing of an area. Certain wastes, if not disposed of properly, can generate greenhouse gases that contribute to global climate change. Improper waste management will affect the study areas because they do not have the resources to reduce the negative effects of a degraded environment. In this instance, achieving environmental sustainability by means of maintaining the quality of the environment in the long-term will be a dream.

More than three quarter of respondents, however, confirmed the need for equilibrium between sustainable urban growth and sustainable natural environments. This may seem difficult to maintain as the rising cost of living and the increasing price of urban land may result in the natural environment being tampered with to satisfy housing needs. As these areas depend directly on their immediate natural resource base, any construction activity to cater for an expansion of the city will cause the loss of agricultural land and habitats. Arguably, considerable environmental impact is caused by people who are not aware of the significance of the environment to human wellbeing. Respondents also refer to the lack of law enforcement for bad environmental practice as the reason why people indiscriminately endanger the environment. A local expert believes that: "to

create any successful project (e.g. housing, or commerce) many conditions such as choosing non-arable land, planning the chosen area and creating the necessary infrastructure must be taken into consideration" (LE [MS], 2010).

An interview with the former Secretary of the Libyan Committee to combat desertification found that culture makes a significant impact on people's attitude towards the environment, and that the land protection law is weak. It is therefore desirable for environmental concerns to be integrated into the urban planning process in relation to best practice in environmental management. The planning agency should also conduct studies to identify the appropriate use of land so that any approach to urban planning takes into account arable land and conservation areas.

6.9   SUMMARY

The main aim of this chapter has been to analyse the responses obtained from the field survey of residents' experience of urbanisation in Enjela and Khalt El-Ferjan. The chapter began by exposing their reasons for settling in peri-urban areas. The findings indicate on one hand that poverty and high living costs push people away from Tripoli, and on the other hand wealthy people also move to peri-urban areas in search of space that can accommodate their family. Factors such as population increase, increased income and availability of roads are considered to cause urban growth. In terms of demography, those aged between 20-59 years are the dominant age cohort of the sample (Figure 6.2). However, variations exist: while Khalt El-Ferjan has more people from age 20-29, Enjela appears to be an aging society with those aged 50-59 comprising around 50 per cent. When length of residency was considered, more than half have been

residing in their neighbourhood for more than 10 years, and one-quarter of the respondents moved to the peri-urban areas less than five years ago.

The activities that the respondents engaged-in to earn their incomes were diverse; they included construction work, factory labour, civil service business activities, professional employment, artisan work, and farm wage labour on the nearby agricultural farm in Enjela. The amount of income varied widely among respondents depending on the type of employment they engaged in (with agriculture providing the lowest incomes). The lower category earns less than £200 per month, middle category earns between £400-£500 and the highest category of income earners earn more than £500. Using a poverty benchmark of US$2 per day indicates that Libya's minimum wage is a 'living wage' – enough to lift thousands out of poverty. Responses indicate that only people employed in the public sector enjoy the minimum wage and food allowance. A high rate of unemployment in the Enjela area is prevalent and the figure in Khalt El-Ferjan is as high as 40 per cent, probably one of the highest in Libya.

The research investigated the size of houses in relation to number of occupants. Of all those that responded regarding the number of people in their house, findings suggest that 30 per cent live in a housing area sized between 100 and 150 square metres, eight per cent are in 300 square metres, and 14 per cent of the houses measured less than 100 square metres, consisting of migrants sharing rooms in privately rented houses. The houses above 300 square metres are owned by the wealthy in both Enjela and Khalt El-Ferjan. Similarly, the type of houses occupied by individuals depends on their level of income without support from the government. People's motivations for settling in the Enjela and Khalt El-Ferjan settlements included space, cost and affordability. Findings

from the field survey in terms of infrastructure reveal that 97.3 per cent are connected to electricity, 75 per cent have telephone services and about 70 per cent have stable water supplies. This means that the rate of urbanisation is moving at par with infrastructure, except that access to the internet and gas supplies are 41 and 40 per cent respectively. Nonetheless, the isolated and informal nature of peri-urban areas makes it possible for fraudsters to provide or connect services illegally. Environmental degradation in peri-urban areas threatens the sustainability of cities through direct and indirect impacts on health and essential life support systems, especially with ineffective environmental management. Lastly, the life of an average resident of Enjela and Khalt El-Ferjan revolves around religion, culture and family, making it easier for the implementation of Islamic urbanism in a holistic manner. The next chapter presents and discusses the key findings of this thesis.

7 DISCUSSION OF THE KEY FINDINGS

7.1 INTRODUCTION

The analysis of urban change in Tripoli in the previous chapter has highlighted several key areas for development. Although the recent conflict and the as yet unresolved change of regime will bring many changes, the need for change was already apparent in the evolving shape and structure of the city. As demonstrated above, these pressures can be seen in many areas of urban planning in Tripoli. For the purposes of this chapter, these have been grouped into: housing and policy, society and culture (including gender) and climate and environmental sustainability. This chapter will analyse each of these in turn. First is the summary of the major findings of this study.

7.2 SUMMARY OF MAJOR FINDINGS

It is important to state here that from when I first started this research in 2008, up to the time that I collected field data in 2010, I anticipated political change and domestic conflict, but not a revolution. Even when the Arab uprising started, Libya did not anticipate that the fire of the revolution would spread to its territories, believing that no one dared protest Ghaddafi's acclaimed pro-Libyans policies. The regime acted as though it indeed enjoys such immunity, possibly wagering on the strict security grip that it has enjoyed for decades. If anything, not only has the Libyan case stressed the role of strategic surprise in international affairs, but also has great implications in the context of this research and the significance of my findings. To reiterate, the thesis analysed urban growth and sustainability in Tripoli, Libya. The thesis makes an original contribution to the body of knowledge on urban geography, arguing for the adoption of HIU in the MENA region. The major findings of this research are presented in terms of the four

research objectives (outlined in Section 1.4) that addressed the aims of the study. This section summarises the major outcome of the study based on the study's objectives.

Objective One: To conduct a survey of academic and policymaking literature on the causes and consequences of urbanisation and the factors to take into account to make MENA cities sustainable

The level of urbanisation in Libya is very high in the Tripoli, Benghazi and Fezzan regions compared to other parts of the country. However, harsh physical conditions in areas such as the Sahara desert and mountains are limiting the growth and development of other regions. In particular, increases in population growth and migration are the most significant factors responsible for the rapid growth of Tripoli and its peri-urban areas. Libya's population is exceptionally young (an average of 23 years) and is growing at a rapid pace, but is marred by inequality and youth unemployment. The implication of this situation is that: "without the means to earn an income and thus the ability to contribute productively to society, these young adults may become a pool of discontent, social protest and political unrest" (Fargues, 2008:5). Further, as the young population size increases, so does the size of land required for residential, industrial and commercial needs.

Migration to Libya has increased significantly in recent years; migrants from the rest of Africa and the nearby Arab countries flowed into Libya after the discovery of oil. These characteristics are common to the MENA region. An estimated one million migrants were living in Libya before the uprising that ousted Ghaddafi. However, unlike the rest of the Middle East, Libya under the rule of Ghaddafi initiated a migration policy that attracted African migrants into Libya to provide labour mainly for the construction and

health sectors. Therefore, some of its population increase is due to the influx of foreign labour, estimated at around one million of the six million population of Libya before the uprising. It is not yet clear how immigration policy will develop in the future, but the likely influx of oil revenues and development money in the aftermath of the revolution may stimulate it once again, as has happened in other MENA cities (e.g. Cairo). Further, demographic factors (e.g., a youthful labour force), together with sociological changes (e.g., the increase in working women and youth education) brought about by the revolution, will produce unprecedented pressure on the employment market.

Urban planning in Libya and indeed the rest of the MENA tends to focus exclusively on physical planning, relegating its social aspect. Nowhere is this more apparent than in Tripoli, which is a place of great complexity of population and ethnicity. Nonetheless, urban governance was done without consideration of the interests of all the people, and based on ethnicity via the nepotism of the past government. A typical instance is that houses were built by foreign construction companies and designers using modern architecture without considering socio-cultural factors, gender relations and the climatic condition of the country. Further, the separation of the genders has always been part of Libyan and Arab/Islamic identity and traditions, yet modern apartments do not have this provision. Generally, people are denied broader rights to the city and are compelled to houses (such as apartments) against their wishes, either due to their income level or ethnicity. A lack of justice and participatory governance, added to deteriorating economic conditions, is behind the Libyan revolution, and indeed the entire MENA region uprising. With the end of Ghaddafi's regime, I am advocating the adoption of HIU as a way of sustainably managing the modernisation and liberalisation that other Libyans may prefer. Holistic Islamic Urbanism is an urban principle that considers the

environment as a part of human existence, considers social relations, outlines an all-inclusive political process and provides economic diversity as part of the development process. The principle preserves people's culture and tradition, and the sanctity of Islam as a religion that provides the code for human existence, including urban configuration and interaction with the environment.

Objective Two: To analyse Libya's patterns and processes of urbanisation and to determine whether current approaches are sustainable or not.

As the peri-urban areas expand, they consume hundreds of hectares of farmland and green areas, threatening the local environment and quality of life. The growth puts additional pressure on the government to spend millions extra to build new schools, streets and water and sewer lines. As the demand for services increases due to growing urbanisation, the government is unable to provide much-needed municipal services, such as waste management, in the face of rapid urbanisation, partly due to limited finance and partly due to the centralised nature of the government. While Tripoli city has had better municipal services, adjacent per-urban areas are in severe shortage. This may be attributed to neglect and the lack of national planning strategies that could cater for their growth.

The urbanisation process of Tripoli is closely linked to the economic development of Libya. This phenomenon, particularly oil production, gave rise to urban growth from people from within and outside the country. Indeed, urban growth was enhanced because of oil wealth and the country's development agenda. Thus, Libyan society became highly urbanised but not highly industrialised, as the country imports most of

what it consumes. As the population is increasing and urban areas are expanding, the country must find alternative means of supporting infrastructural works and urban services alongside the welfare of its citizens. Wealth from oil has been the major driving force for Libya's physical development planning – even though not fully implemented. However, the areas that have experienced rapid urban growth have placed tremendous pressure on the local environment and planning. It was shown in Chapter Six that environmental factors are included in long-term national plans, as well as in sector development strategies, industrialisation and investment programmes, but are still plagued by deficient management.

Tripoli was built using planning knowledge and design from other countries that have different social orientations to the Libyan people. Contemporary Tripoli is a combination of the old and new, wherein the urban fabric of the city comprises a mixture of religious, cultural and postcolonial legacies, such as the influences of Islam, Romans, Italians and more lately Russians and Polish on the architecture of Tripoli. The combination of the above elements not only links the traditional with modern urban cities: it influences the shape and configuration of cities. Findings have shown that the delivery of policy has suffered from a lack of technical skills in planning and urban design. While pursuing the accessibility of housing for all, the housing policy of Ghaddafi has ignored the peculiar tradition, religion and physical characteristics of Tripoli in the design and construction of houses. Socio-cultural and climatic factors are among the most significant aspects which deeply affect dwelling design. For example, the choice of size of house is dependent upon the number of family, because the size of residential houses needs to be of sufficient size to allow the occupants the space to relate, to be apart, and to have privacy. The empirical study in Chapters Four and Six

emphasised that modern house designs were influenced by European styles that are not ideal from the perspective of Islam or the Libyan culture and climate. The arrangement of the elements of the modern house was also a source of concern. The separation of genders had always been part of Libyan and Arab Islamic identity and traditions, yet modern apartments do not have this provision.

Objective Three: To conduct a case study of urbanisation in peri-urban areas of western Tripoli and document residents' experiences of urbanisation and modernisation.

The pressures of the continuous increase in population and rapid urbanisation of Tripoli are gradually changing the surrounding environment and neighbourhoods. In order to accommodate growing population and infrastructure, the city is expanding towards the fringes to accommodate the growth, a phenomenon known as sprawl. The study has classified land-use change in Tripoli with the aid of high resolution satellite data to quantify the change that is taking place in the adjacent areas. The focus on two peri-urban settlements – Enjela and Khalt El-Ferjan – has shown that the increasing need for residential and commercial areas has led to the urbanisation of the two areas. However, it has also become apparent that these areas are not properly planned and are subject to the arbitrary construction of houses and commercial structures. As such, the land cover in the areas studied is constantly changing, from agricultural or grass land to urban land use (Tables 5.1 and 5.2).

The third aim of this study was to examine the rate of urban growth to adjacent areas, and the justification for this was that there was a need to understand the reasons behind the growing migration to peri-urban areas. Indeed, there was no documented study on the recent phenomenon of rapid growth in these sprawls. The question that readily

comes to mind is: why are these areas attractive? The answer to this question was contained in Chapter Six which found that the reasons are more social than economic – a situation that is similar to other cities in the Middle East. Moreover, unlike urban sprawls that are characterised by the poor, these areas are dominated by the wealthy who crave space and privacy. The most compelling factor for people to move to Enjela and Khalt El-Ferjan was an increase in family size and the related need for the extended family to live together in descent and culturally appropriate accommodation.

The study has also found that insufficient and ineffective planning and enforcement of planning rules allows the proliferation of illegal settlements. Some of the buildings found in the areas have been documented in Chapters Five and Six. The ability to buy land and erect structures of choice without recourse to planning rules provided the opportunity for people to move into these areas. Further evidence suggests that, as people get more income, they tend to be attracted to these areas. In any case, the study found that respondents lived together based on their socio-cultural and ethnic similarities. The congregation of similar socio-cultural and ethnic groups reduces the chances of internal conflict but does not necessarily reduce conflicts between community members. In this regard, this highlights that the growth of peri-urban sprawls has significantly altered the urban geography of Tripoli.

The study areas are showing increasing signs of environmental problems. While major concerns for Tripoli and the peri-urban areas are the limited land resources, air, traffic congestion, aesthetics, other areas and open spaces are under continuous threat due to more competitive land uses. Physical developments in Tripoli are deeply affecting the surrounding environment and the overall quality of life of the urban population. For

example, the study found that individual houses are responsible for constructing their sewer system, which in most cases ended up in the neighbours' vicinity. Waste from individual houses accumulates on streets, in open spaces between houses, in stagnant ponds of water, and on wasteland. This has been a challenge that has been without solution by the planning office up to this point. Indeed, the post-war waste management in Tripoli has become a nightmare, with waste mountains piling-up by the day. The following section explains how the findings contribute to urban geography.

Objective Four: To examine the various literatures and the experiences of residents regarding current form of urbanisation.

The reformation of existing urban centres, such as Tripoli, has attracted rural migrants. The cities became a symbol of modernisation to the people. The Mediterranean lifestyle of the northern ethnic groups has had an obvious impact on traditional Arabic and Islamic cultures. Modern economic and social transformation has led to profound changes in social reorganisation and migration pattern. Traditional activities, such as the trade of small shops, the artisan's workhouses and local public administration, gave way to new activities such as a wider range of occupation in public administration, modern-style businesses, mass-production factories, modern construction, and a variety of other jobs in urban services. Despite the rapid modernisation of urban infrastructure (elevated highways, telephone systems and tall buildings), Tripoli (and other less frequently studied cities) appears to be stricken by disorder and incoherence. New problems have begun to appear: for example, shortage of housing, electricity and water, and health care, communications and other services. Similarly, deteriorating economic conditions, social inequality and political injustice by the ruling class prevail. Women often suffer

disproportionately because they experience greater difficulty in accessing resources and services tailored to their needs. Even though the Libyan society has undergone rapid transformation and is changing towards the model of modernity, social traditions and values are still strongly upheld. The most important of these traditions are privacy, kinship ties and the extended family system. The patterns of housing based on these factors are not only special to Libya, they are found throughout the MENA region.

With the end of Ghaddafi's regime, Libya's interim rulers must start to create and implement a policy that would lead to the creation of a broad-based government, provide basic services to the people, pursue reconciliation of all tribes and ethnic groups, and embrace a new democratic future for political stability in a society increasingly divided along kinship and ethnicity, distinguished by varied but often unfriendly gender policies. More than anything, the success of the revolution depends on the TNC's ability to establish a respect for human rights and individual freedom that has virtually diminished.

Amidst all these problems, there is the need to embrace a principle that once belonged to the people but which has been displaced by an 'alien' model imposed on them in the name of globalisation or development. However, I am not totally ruling out the advantages that can be derived from them. Planning in the MENA generally emerged from one main source with the aim of creating a 'desired future' based on faith and culture, but throughout time it has diverged in favour of Western urban development theories that do not reflect the lived spaces of Arabian cities. This explains why the region is ravaged by ethno-religious conflicts and tensions between modernity and Islamic doctrine. In the Libyan case, based on my case studies, the people prefer 'HIU'

as a form of urban renewal as against mere erection of skyscrapers and beautification of road pavements. People desire a return to the traditional design to achieve sustainability (LE [MH] 2010).

The next section discusses the problem of housing and the factors that affect the delivery of modern housing in Libya, with specific examples drawn from the case study. Section 7.3 centred on housing and the policies that are affecting the surrounding environment and the overall quality of life of Tripoli's urban population. The section examines socio-cultural and gender issues, and climate and sustainability respectively.

7.3   HOUSING AND POLICY IN TRIPOLI

As the evidence from Tripoli above reveals, housing policy in Libya has changed considerably in recent decades. Since 1985, there was a reversal of housing policy – the role of the state changed from being a provider of housing to a regulator. The policy has encouraged the participation of private individuals and corporate entities in establishing small, medium and large sized firms in the construction of houses and other infrastructure and engineering works. The private sector provides the funding, expertise and builds the houses, while state intervention in the provision of housing is through loans and the provision of subsidies (General Housing Corporation [GHC] 1999). Even as the private sector constructs the houses, it was the Ghaddafi government that took charge on the sale or lease allocation, just to favour some individuals and loyalist ethnic tribes of the ruling class; however, most of the vital sites, especially in Tripoli, were owned by Ghaddafi loyalists (Sh11: 2010). Because of Ghaddafi's nepotistic approach to governance, Libyans who were waiting to receive their house staged a protest in January 2011, shortly before the recent conflict. The protest was staged over either late

completion of government-subsidised housing or the delay in allocation of the houses. For example, protesters took over 800 vacant units of houses in Bani Walid and about 600 houses in Benghazi cities (Abdel-Baky, 2011).

Both government and the private sector participation in building housing units via loans or personal savings were aimed at reducing the housing shortfall and making sure that every family is at least provided with a suitable house. According to El-Hawat (2003), the housing units were meant to cater for the growing number of low-income Libyan families and to replace settlements considered unsuitable for habitation. While divesting state interests makes economic sense, the thesis argues that loans and subsidies only benefited a minority of the ruling political class. This was demonstrated in the fieldwork when one of the respondents painfully expressed his disappointment with the arrangement thus:

> I have spent months trying to access a loan to buy a house...I couldn't get it up to this moment, but I know of somebody from Ghaddafi's town who applied before me and is now enjoying his house (Sh11: 2010)

The above quote demonstrates that the government used a selective and loyalist-centric approach in the provision of housing during the reign of Ghaddafi. This situation (from 1979-1985) was even more obvious when the government initially constructed and allocated housing in areas of choice. A typical example is the mass housing units built in Ghaddafi's home town of Sirte, while some areas, such as Benghazi, were neglected. On the amount of money provided, the government is said to have provided a minimum amount of £20,000 for the building of a three-bedroom house such as the one depicted in Figure 6.9. Those with larger families have had to negotiate bureaucratic processes before they were able to obtain a loan that is sufficient to build their house of choice.

As explained in Chapter Four, housing policy has been on the high priority list since the beginning of the Ghaddafi military coup and the discovery of petroleum resources. The housing policy in place since the late 1980s claimed to provide housing to residents who were unable to afford to buy or build one. A huge amount of money was spent in building thousands of houses from more than 20 per cent of the total budget in the 1970s to less than 10 per cent in the early 2000s (see Amer, 2007:31-33). The dwellings completed were not satisfactory, as they did not meet the expectations of most Libyans. The buildings have ignored the social and cultural characteristics of the people in their designs and configuration. First, the size of houses needed to be of sufficient size to allow the occupants the space to relate, to be apart and to have privacy. The empirical study contained in Chapters Four, Five and Six emphasised that the houses were built by foreign construction companies and designers, using modern architecture principles that did not consider the socio-cultural factors, gender relations and climatic condition of the country. Findings from Enjela and Khalt El-Ferjan indicate that houses with sufficient size to accommodate extended families are only owned by some wealthy individuals – completely negating the government's policy of providing suitable housing for all.

Second, the arrangement of the elements of the modern house was also a source of concern. The separation of gender has always been part of Libyan and Arab/Islamic identity and tradition, yet modern apartments do not have this provision. The people are forced to accept the houses against their wish due to their income level. The study found that apartments are made up of smaller sized rooms that are only suitable for smaller families. The popularity or acceptance of the villa as the preferred option for the residents is because they are provided by the government through soft loans that offer

lenient terms for repayment. As the size of the family increases, people are then forced to migrate to peri-urban areas in search of suitable accommodation: "many of the big families shifted to the peri-urban areas because the majority of the houses in the urban areas are small size and without gardens" (CRST [SH], 2010). Similarly, significant amounts of people live in old traditional houses. The preference for old Libyan traditional houses is due to a preference for traditional Libyan architecture that can accommodate a large family size on a low income. This is an indication that future building plans must take into account local environment and the needs of the people.

A number of policies and strategies were made to deal with the provision of housing to all Libyans (National Corporation for Information and Documentation, 1995:16). As a result, Libya's government made aggressive interventions in the public housing sector by fully participating in the housing process – the planning, construction of housing units and/or implementation of housing policies. The most important result from these changes is the notorious Law 4 which prevented leases, and prevented families from owning more than one dwelling. With this law (1978 Property Ownership Law No. 4) the government confiscated all private sector or individual dwellings prepared for lease, categorically stating that Libyans had the right to build and own only one house. Landlords surrendered or transferred their houses to their inhabitants on an owner-occupier purchase basis. It is important to note that this kind of law promulgated by Ghaddafi was contained in his Green Book, which relied on some principles of socialism. It seems certain that the TNC or any subsequent government will cancel the law No. 4, which effectively abolished private ownership.

As explained in section 4.4.1, the Ghaddafi-era seizure and nationalisation of properties, even though they were in principle meant to further public purposes, turned out to be an arbitrary means both of punishing opposition and rewarding those favoured by or loyal to the regime. There are two phase plans rolled-out by the TNC to return lands and properties nationalised or seized by Ghaddafi back to their original owners (Bloomberg, Feb. 27, 2012:5). The paper quoted a senior member of the Land Ownership Committee who said: "Libya will announce a law that will return land and buildings expropriated by late ruler Muammar Ghaddafi to the original landowners within weeks". The restitution plan is to first collect and return all properties taken by Ghaddafi's regime and the rebels – 'this process is still ongoing'. The second phase involves the long-term re-housing of families residing in expropriated land.

While those not living in one of the nationalised houses welcome this development, reversing the effect of longstanding nationalisation policies may result in new human rights violations or exacerbate old ones, even as the state retains broad discretion over how to regulate property relations in order to achieve their political and economic objectives. Under the current transitional setting, this disposition must be seen as part of a broader constitutional process of recalibrating the gross violations of human rights and serious violations of international humanitarian law. Indeed, pending the adoption of a new constitution and a transition to democratic governance, the TNC is recommended to be cautious in undertaking such a profound intervention into the rights of ordinary Libyan citizens. Ghaddafi's confiscations policy must be addressed, but the specific policy made in this instance – that they must be undone entirely – poses significant risks without the benefit of having resulted from a process of a clearly democratic (or even a

deliberative) nature. The second phase of the restitution plan can be drawn from the 2007 'Pinheiro Principles' for possible implementation (UNHCR, 2007).

There are problems associated with the cost of housing that need to be addressed by the transitional government. Those who are unable to afford a house under the current arrangement are not able to do so because of the high cost of housing units developed by private housing developers. The high construction cost of housing is because the country relies heavily on imported building and construction materials. There is a gap between supply and demand for cement and other building materials, such as concrete and steel in Libya. For example, only around 20 per cent of building materials were produced locally in the 1960s (Stroller, 1962). From 2002, the production of local construction materials moved to around 50 per cent due to the increased production of cement from the seven large cement plants in Libya (Grifa, 2006; Low *et al.*, 2006). These shortages meant that cement, wood, mosaic, steel and marble had to be imported – mainly from Russia – to prevent a restriction of construction caused by supply deficit. Surely, 'sustainable housing' (using eco-building technologies) would be constructed from appropriate local materials that do not have high embedded carbon through the transportation costs of importation. The traditional houses in the Medina were constructed using locally available materials such as limestone, mud, sun-dried bricks, palm tree trunks, etc.

As the TNC is trying to move towards a market-driven economy, and to attract foreign investment for the reconstruction of the economy, legislation should be drafted that would allow the private sector to build houses for leasing, and give tax incentives or tax waivers to foreign companies, such as exempting them from duties on building material

imports. This incentive will attract industries with a pedigree of building complex projects in the MENA region to invest in Libya. Furthermore, the complete reliance of the Libyan construction industry on importing materials that could be produced locally shows a definite weakness in construction and planning policies. Libya suffers from water shortages, and cement and steel-based operations consume considerable amount of energy and water, and produce high levels of pollution. Therefore, a reduction in the importation of construction materials would ensure the management of limited national resources and cost, and increase the use of locally produced materials.

The field study confirms that urban plans in the past have not been effective and this led to unstructured, un-controlled and haphazard developments. Considering the current pace of development, the Tripoli master plan is becoming ineffective in guiding developments within and outside the city. This is particularly serious in the urban fringes that are constantly experiencing unauthorised changes in land use. This lack of planning has aggravated the high cost of land for housing and the appearance of highly ad-hoc informal settlements. Therefore, the new Libyan authorities should improve urban planning departments and provide crowded cities with land at appropriate prices. New plans for urban development must consider the current needs for land to solve the shortage of housing and preparation of land for future demands.

The task of reforming housing and property law is further complicated by the complex historical relationships between territory and tribal ethnicity in Libya. Throughout the reign of Ghaddafi, even during the first two decades in power – the peak of his popularity – his efforts at delivering housing and social construction were only as effective as his ability to navigate tribal terrain and manipulate his own tribal base using

a reward and punishment strategy to induce citizens' behaviour. Loyalists got a higher share of national resources, so perhaps loyalty still explains much of what is happening in post-Ghaddafi Libya. The TNC has to consider Libya's fragile tribal structure (explained in Chapter Four) and then face the huge task of reconciling ethnic groups/divisions all over the country, so it should also consider resolving housing differences based on ethnicity. For example, Ghaddafi's tribe that have overwhelmingly benefited from Ghaddafi's era must not be discriminated against nor be excluded from the government's development agenda. Access to housing must be treated equally and fairly across ethnic groups and gender, and not based on loyalty. The government should be playing its role to protect low-income families and build housing units for these people no matter their ethnic group, as long as they are entitled to it. A fund should be made available to enable the citizens to build their own houses and public housing must take into account the peculiarities of Libyan society. Socio-cultural factors, gender and climatic conditions are discussed in the next section.

7.3.1 SOCIO-CULTURAL AND GENDER FACTORS

There are different types of housing design in the study area, ranging from villas, apartments and bungalows to duplexes. The survey results have shown that villas and apartments are the most popular. The main advantage of multi-storey apartments is high density accommodation, reducing the use of limited land available within the centre and suburbs of Tripoli. But, one of the focus group discussants opined that: "I prefer to live in large houses with enough space as a result of family size" (FGIE2, 2010). One disadvantage of multi-storey building to the Libyan society is the tendency to separate extended family members and relations. A similar trend was found by Albassam's work on migration to urban areas in Saudi Arabia (Albassam, 2011). Living in apartments

secludes families from their relations when compared with traditional houses or areas where families live within proximity to each other. However, most of the multiple-storey buildings in the study area were designed to accommodate small families; hence they do not allow room for guests or extended family members. The Planning Secretary confirmed this: "in the not too distant past, people in Libya did not like to live in flats in order to uphold their traditions and customs of family life".

From the above findings, religion and kinship in Libya are very strong forces that determine how people build their own homes. Their belief in religion means a total submission to the will of God and believers must conform to the teachings of Islam. Islam strongly influenced the way houses were traditionally designed in Libya. For example, a typical house that conforms to Islam and the tradition of Libyan society is built in the form of a square and the courtyard is usually surrounded by rooms on all sides – a symbol of security, privacy and the co-operation of dwellers. Socio-cultural issues of this nature have been examined by a number of researchers, such as Rapoport (1969:23) who argued, "a home is a cultural phenomenon in the first place, due to the fact that the house is a reflection of the cultural and norm systems". Further, Oliver (1997:45) states that: "the home is both a creative expression of culture and the frame within which people's experience of culture takes place, a process going on between the creation of this physical systemisation of nature and the experience of culture handed down from one generation to another". Even though Libyan society has undergone rapid transformation and is changing towards a modern, Westernised model, social traditions and values are still strongly upheld. The most important of these traditions is kinship ties and the extended family system.

In traditional Libyan society, the composite family lives together in one compound (house). This consists of the parents, their children, as well as their married male children with their wives and children, and the grandparents, who traditionally spend their old age in the care of their children and grand-children (Amer, 2007). In order to maintain kinship, families have moved out of the city to the neighbouring peri-urban areas in order to find houses that can accommodate them. This was the case with one of the interview respondents:

> As a result of the increase of my family, which was only two people living in 120 metre squares but now have grown to 12 members and we wish to live in the same area with separate houses because of the need for social cohesion and upholding Islamic principle of living together as one family (LRIK [AS], 2010).

This pattern of housing is not only peculiar to Libya, it is found throughout the MENA region. This means that a society's traditional ways of living dictate the choice of housing style and the orientation and shapes of the building (Figure 7.1). The situation is different in the developed world, where industrialisation, rationalisation efficiency, and new types of social organisation determine the design and style of housing. The different pattern of housing is a reflection of socio-cultural factors and people's choice of dwelling, which invariably form the built environment (World Commission on Environment and Development, 1987).

As mentioned in Chapter Five, many modifications and alterations have appeared in the layout and architectural style of the peri-urban areas of Tripoli. Even though residents could to afford to rent a modern apartment, they were concerned that the style of houses is only promoting individualism and separation from family members.
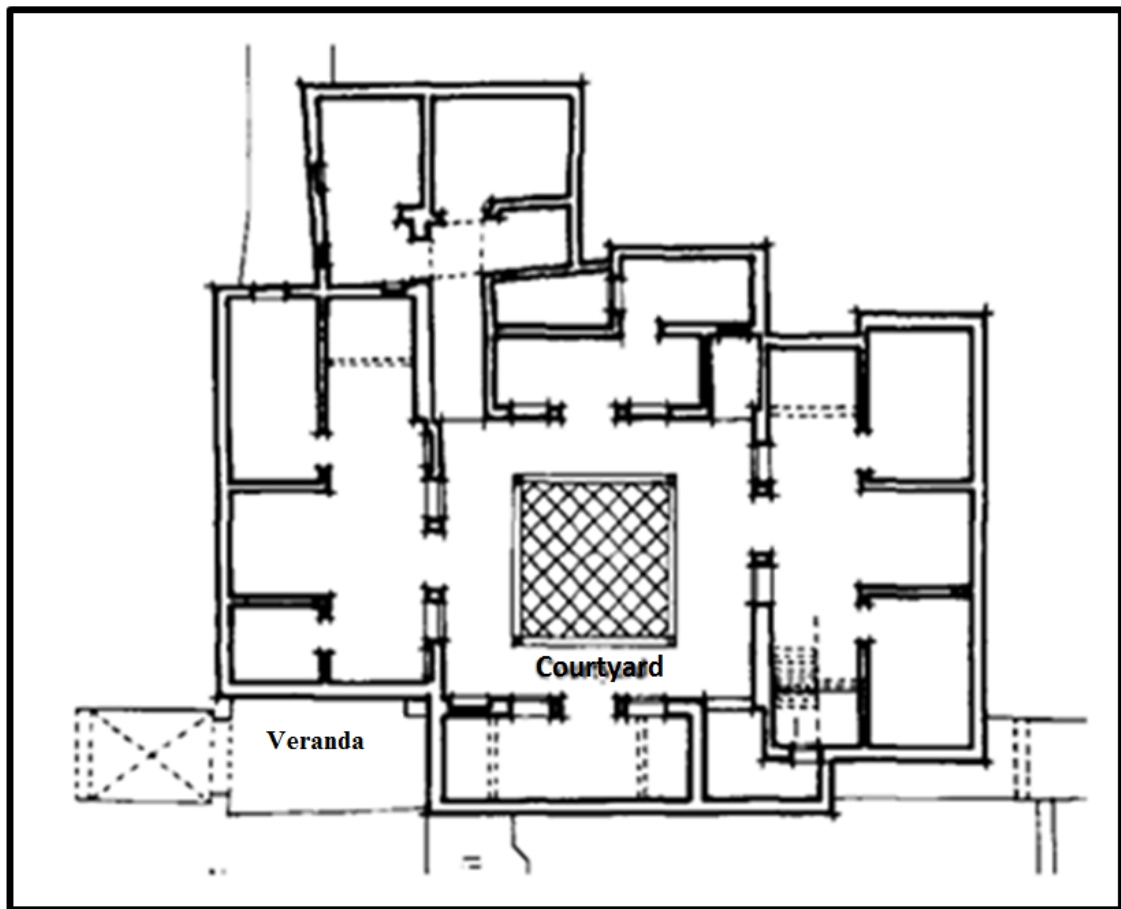
Figure 7-1 An example of a Traditional Islamic Arab house. Source: El-Shorbagy (2010:16). This type of houses consists of a courtyard surrounded by rooms, which in themselves may be separated from the open courtyard by open arcades

In some cases, apartments are used as a first step of adulthood living for those with a small family, so it is transitional housing for newly married people. This suggests that Libyans are ready to uphold their traditions even as they embrace a modern life style. Similarly, the large external glazed areas, external balconies, and other outdoor spaces in the villas and apartments are considered damaging to the privacy of the occupier and that of neighbours, which is an important aspect of Islamic culture. As noted in chapter seven, socio-cultural factors are important in the design of houses and can also be modernised to carter for differing interests (Figure 7.2). This is especially so now that Libya is undergoing post-conflict reconstruction. While embracing modernity in the

planning of cities, the people's traditions need to be taken into account in both internal

and external housing design.
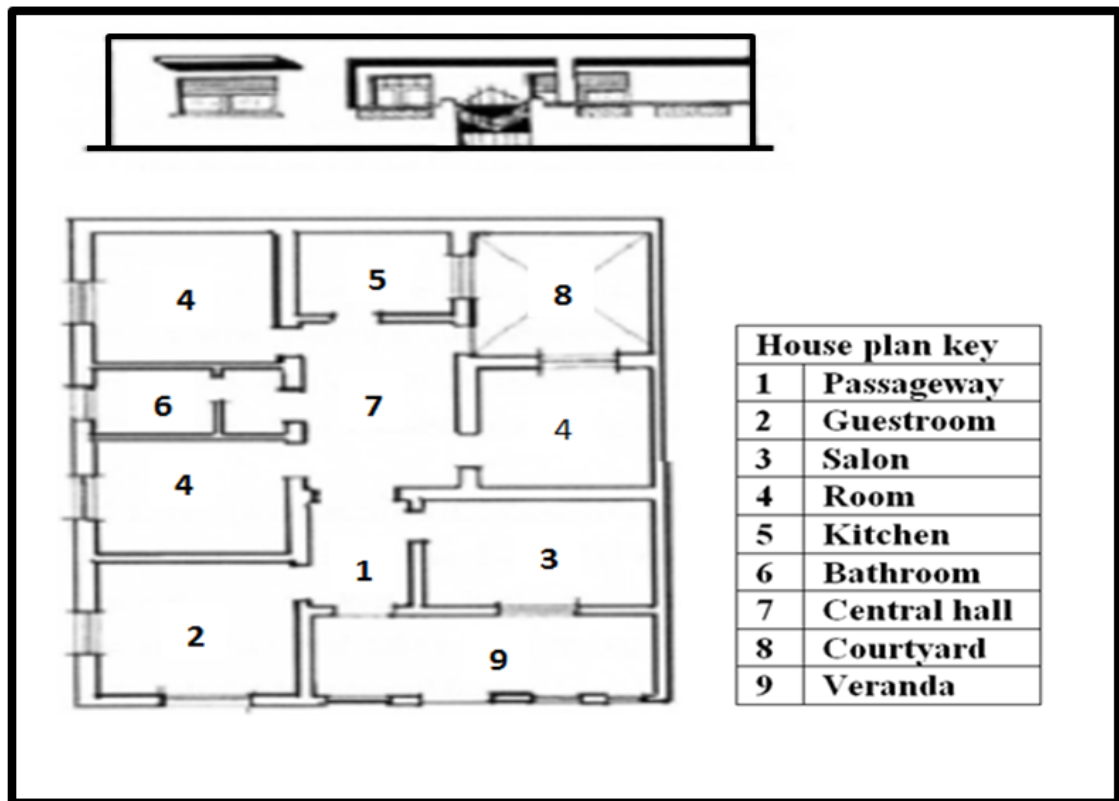
Figure 7-2 A modernised traditional house. Source: Municipality of Tripoli in Amer (2007). 'This shows how houses may be modernised whilst maintaining important Islamic features.

Responses from interviews strongly emphasised that modern buildings or layout

arrangements must reflect religion and customs, and the people's desire for complete

privacy within the home. For internal design, housing policy should ensure privacy in

the internal design of dwellings: the family area, guests' area and sleeping area. This

ensures respect for the concept of separation between males and females according to

Islamic instructions, besides assuring visual and aural privacy between the guest area

and household members. For the external design, the heights of the residential areas or

neighbourhood should be synchronised with the surrounding buildings. This design will not only make for uniform housing but improves privacy and airflow.

In Libyan society, as in some parts of the MENA, women are traditionally not allowed to interact with men that are not related or known to them. This is similar to the custom, which dictates that women may not be in a car with a man who is not their close relation. The researcher experienced this during the research, and that is why a limited number of women were interviewed. The position of women in Libya is guided by Islam and tradition. According to Showdhury (1992) the Islamic religion and position of woman in Islamic society played a significant role in shaping their life, housing and the built environment. House design was based on the need to protect the domestic life of the family, the women and her children. The different roles of men and women in Libyan society influences housing design.

Generally, in an Islamic society like Libya, women are not permitted to mix freely with men, but they must be allowed to carry out their daily activities in comfort and without feeling exposed. Libya is a male-oriented and male-dominated society; the women have a subordinate role. This is because the Quran advised women as follows: "Stay quietly in your houses, and make not a dazzling display, like that of the former times of ignorance" (Quran, 33: 33). The Quran also advises Muslim women to be conservative in their appearance, but it does not suggest that women cannot work outside their homes. They are permitted to help their husbands in their work. The privacy of women is physically obvious in various forms of barriers, through which women can see but not be seen. Men and women in Arab and Muslim society are in two separate domains; the women's activities are clearly centred on the private life of the family. Therefore, it is

only logical to posit that houses are built to ensure maximum privacy especially for women (Amer, 2007; Elbendak, 2008).

The privacy of women in traditional Islamic houses is physically made possible with the use of barriers, walls or curtains through which women can see but not be seen (Figure 7.3). Sometimes a clear separation is made with the use of partitions to divide the house into two sections (general and women only) and each has its own entrance. According to Bayazit (1979), the houses in the medina were designed based on Islamic principles of giving protection to the domestic life of the family, the women and children – that is not to say that they are secluded from the house.
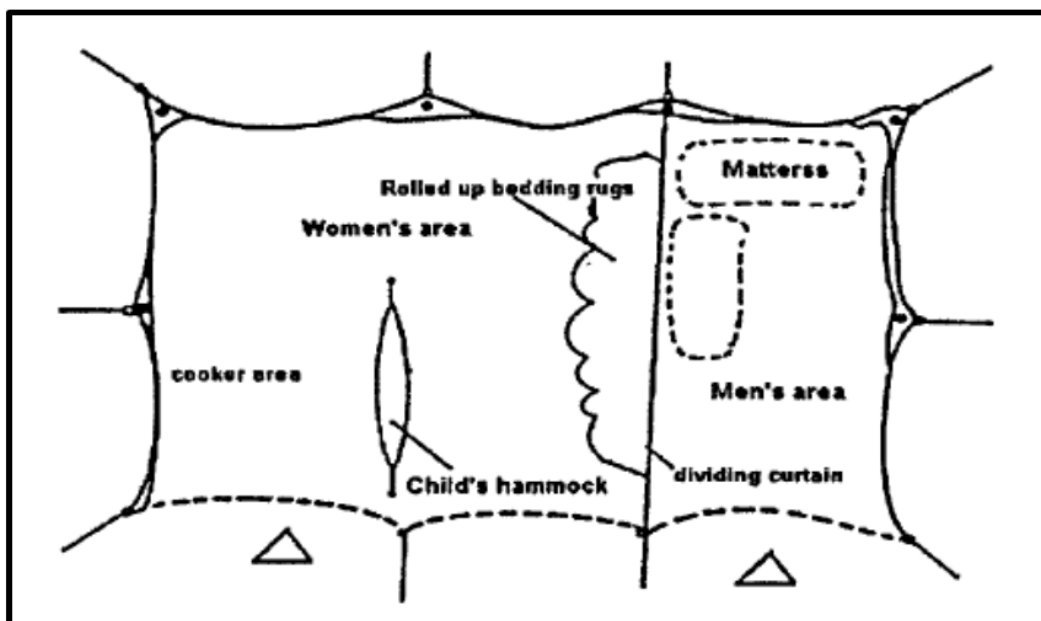
Figure 7-3 Gender segregation in traditional Libyan houses. Source: Amer (2007:58)

The above situation is, however, not as rigid as it once was. One consequence of the Arab uprisings last year has been an opening up (with a lot of resistance) of the question of women's roles and rights. In general, women in the MENA tend to be better educated than the previous generation of women – which raises their expectations and

aspirations. In terms of capability, they are increasingly on a par with the men of their generation. These women are likely to express their views about their respective roles in the family, and also agitate for equality and fair treatment in both private and public spheres, in order to cope with the changing economic, political and social reality. Women have played an important role in the Egyptian revolution and are playing a similar role in Syria (Anderson, 2011). Through this involvement, they are raising important issues about women's rights. In Egypt, young women have played a central role in the revolution. While some of them are educated middle-class women, the rest are 'devout' Muslim women with little education, secluded to the role of a wife. In addition to making space for themselves in street protests, women in Syria are using the social media as a means of making sure their voices are heard just as the Egyptian women did. Libyan women (who are mostly educated) have for the first time demonstrated their capacity to engage in the protest that finally brought about the revolution. This debunks the idea of Arab woman as a "heavily veiled, secluded women, whose lives consist of little more than their homes, their children and the other females in the 'harem' or immediate kinship circle" (Golley, 2007:522). In fact, Libyan women are known to have been the masterminds of the Libyan revolution.

Privacy is not limited to any particular culture. However, there are different meanings and rules for defining the concept of privacy around the world, with each society viewing the concept from a different perspective (Rapoport, 1969). Privacy in Islamic society is a very important issue in the construction of the family and society, where the distinction between men and women spheres is emphasised. This distinction has a major effect on the plan and form of housing and on the patterns of cities in the Islamic built environment. For example, in traditional cities such as Tripoli, privacy is symbolised in

the house interior through the position of the main entrance in relation to the street, the existence of the courtyard, the position of windows, the existence of the *mushrabiyyah* (window enclosed with carved wood often on the second storey of a building) and also through other physical elements such as open space, divided into semi-private, semi-public and public. Such categories help to regulate and control social interaction and contact, and maintain the desired degree of privacy. The courtyard is space in which various housework activities can be done away from street noise and public view, such as women's daily work, like weaving and spinning material for sale in the city. Palm trees and a fountain are more often found in the courtyard to provide shade, fresh air and serve as wind breaks. The fountain provides cooling during the summer through evaporation. The Salah is a family living room used for eating, sitting and preparing tea as well as receiving women guests or relatives.

As demonstrated in section 6.6, the general level of privacy among respondents living in multi-storey buildings, bungalows and duplexes was low because the function of these houses was not oriented to provide privacy as defined in the Libyan context. The concepts and principles applied in designing and building these homes were not based on local conditions. As a result, the Tripoli family does not identify with the way privacy is structured in these houses. This is because it has not addressed male-female separation in the house. In this manner privacy in the modern house has not been well defined because the interior layout of the space is not suitable for the Libyan family. The designers have ignored local people's needs, habits, customs, religion and social structure, where privacy remains very important for Libyan families. In designing contemporary neighbourhoods, planners have not placed enough emphasis on providing privacy within and around dwellings. For example, the residential houses under

construction in the western part of Khalt El-Ferjan were not set back from the street, and the windows were not only located close to ground level, but a *mushrabiyyah* was not included, meaning that pedestrians were able to see the interior of the dwelling of those on the ground floor. In summary, the separation of genders has always been part of Libyan and Arab Islamic identity and traditions; therefore, future planning must take into account gender factors in housing to maintain Libyan tradition.

Changing broader attitudes towards women across the city will be a bigger task. The chance of women getting equal rights of interaction and association to men is unlikely, even with the TNC. This is a matter of tradition and religion and not about Ghaddafi's regime. The changes that are likely to occur will be in the number of women employed in services such as nursing, midwifery and teaching. The war has forced the rebels/TNC to draft women into the struggle by taking care of the men that are wounded and in a critical condition. They are also engaged in preparing food for revolutionary fighters, thus women have had decisive roles in Libyan revolution. At the onset of the war, foreign nurses (mostly from the Philippines) were forced to flee the country. The authorities have no choice other than to fill the gaps with female medical students that are not allowed to practice as publicly as their male counterparts until graduation. Women, under the new government's demands, should be fulfilled and given the freedom to choose their profession, and be integrated into development goals in accordance with the Quran, whose teachings supersede traditions. This is because, in the context of the failed Ghadaffi regime, women were already providing a key social role (they were central to the core Islamic institution of the household) and then played a key role in the revolution itself. They are therefore key participants in Libya's future.

7.3.2 CLIMATE AND ENVIRONMENTAL SUSTAINABILITY

It was reported in Chapter Five that many urban environmental problems in Libya are a direct result of poor planning, poor management and the absence of coherent and stable urban policies. It was also pointed out in section 6.6 that Tripoli and its surrounding areas are experiencing an increase in the magnitude of waste management problems, mainly due to rapid growth in population, the expansion of Tripoli, and changing consumption patterns. The key problem is the lack of proper waste disposal and collection areas. These problems pose serious environmental challenges to achieving sustainable development. For example, the alteration of green belts is worrying in the city of Tripoli – with implications for habitation, encroaching desert and flood. Climatic factors influence building design and the growth of urban areas but are not taken into account in urban planning.

The study's results indicate that some older residents are dissatisfied with contemporary housing, compared with traditional housing, in terms of the suitability for climate conditions. The design and construction of traditional housing was suitable for climatic conditions in terms of home ventilation, the direction of wind, wall thickness and materials used in construction. According to the types of housing occupied by respondents (Table 6.5 and Figure 6.4) there appeared to be a number of shortcomings in modern design relating to the climate. Given the extreme heat, a large glazed area does nothing to reduce the diffusion of heat into the house, placing greater demands on today's air conditioning systems and necessitating the use of blinds at windows to protect furnishings from the glare of the sun. An external courtyard, as in the case of apartments, does not help to increase the natural ventilation in the house as much as the

internal courtyard, a distinctive feature of the traditional house. Numerous examples of this can be seen in entire elevations of modern buildings in the case study.

The coastal climate is along the Mediterranean and it extends from Egypt in the east, to Tunisia in the west. Unlike the desert land that is unproductive, the coastal areas have fertile land that supports agricultural activities (see Chapter Four). Tripoli, Misrata, Az-Zawiya and Benghazi are all on the coastal areas. The new government should renew its interest in the development of agricultural housing to reduce overcrowding in the coastal cities. A policy must be developed from the old agricultural housing of 1970s to provide houses for workers in the agricultural areas and the rural communities around them. This policy will help young people to remain in their communities and so that they will be motivated to find jobs in the agricultural sector rather than be pushed out in search of different opportunities. The engagement of people in farming and fishing will make a valuable contribution to food security and poverty alleviation. The provision of essential services such as schools, shops and hospitals, in addition to subsidies, should be adequately supported in the planning process.

The housing scheme in the study area appears to be modern design with high-rise apartments, duplexes and villas (Table 6.5). One of the important traditional cities in the coastal area in Libya is 'Old Tripoli'. A closer examination of the scheme of the old city of Tripoli indicates that it does not follow any superimposed grid system; it gives an obvious example of organic growth. The old Tripoli is a typical scheme admired by the respondents, and they desired a modernisation of this kind of urban design, for housing design that provides privacy, promotes kinship and conforms to the religious tenets of

Islam. This supports Azzuz's (2000) conclusion that the consideration of climate, customs and traditions were major factors in shaping the old city of Tripoli.

From the above, it would appear that climate, as well as habitat, plays an important role in shaping the rhythm of people's lives. Thus, they construct houses that are more or less satisfactory in providing them with the required microclimate. Therefore this should be taken into account when establishing new housing projects. Most housing projects designed during the 1970s-1980s were of very similar design without consideration of the characteristics of the different areas. Consequently, the study suggests that the housing authority must identify what is most appropriate for each region and provide guidelines for the design and planning of new projects in order to obtain more suitable designs for each region.

This is a good time for planners to design cities that are sustainable, giving consideration to varying climatic zones, use of local and eco-friendly materials, minimisation of required inputs of energy and water, and reduction in waste disposal and recycling. These approaches in the design of sustainable cities can be practically achieved through the following few points that are by no means exhaustive:

1. Investment in renewable energy sources that are abundant in Libya, such as solar panels, wind turbines and bio-gas derived from waste dumps and sewage (Shalabiya *et al*., 2006). Future cities in Libya can make such energy sources work in street lighting, pumping of water and rural electrification. Maximising amenity and energy efficiency by climate-sensitive design, which takes account of orientation, topography and surrounding features, can control wind effects while optimising the benefits of the sun.

2. It is often suggested that the best way to improve the public transport system and to encourage people to use it is to ensure that it is fully integrated and goes where people want/need it to. Walking and cycling are the most sustainable modes of transport (Newman and Kenworthy, 1999 and Kenworthy, 2006), but this is not the case in Tripoli as transportation is dominated by the private car. It would be difficult for the city of Tripoli to become more sustainable with the absence of public transport systems, especially rail, and better conditions for pedestrians and cyclists. The most effective and appropriate form of sustainable public transport for Tripoli entails the total reorganisation of the road system to include pedestrianisation, traffic calming schemes, control over parking provision, tighter neighbourhood roads to discourage driving, road-pricing schemes to reduce traffic, and stronger rail systems powered by electricity. Electrically powered trains have zero emissions in the city – no exhaust pollutants emission, no noise and saves carbon emission into the atmosphere (Girardet, 2004; Newman *et al.*, 2009).

3. Planting of trees and green spaces can assist in combating the encroachment of desert, and maintaining the beauty of the environment. Shelterbelts are particularly important in the desert areas and green areas in the peri-urban areas, because the study found a significant shortage of green areas or mis-use of public space in some parts of Tripoli, Enjela and Khalt El-Ferjan (refer to Figure 5.21-5.22). This will provide a sound environment without pollution damaging to the inhabitants' health, and with sufficient green areas to give opportunities for the population to experience and become emotionally related to nature. Green belts in Tripoli counter the 'urban heat island phenomenon' caused by

built environment (such as concrete and asphalt) which makes the temperature increase.

4. Future buildings should be constructed with private open spaces that should offer adequate privacy for residents, convenient access from a main entrance, and some trees and a canopy to provide shade during the hotter months of the year. In addition, public housing should not only conform to cultural needs, it should include a special shaded area for the various activities of families.

The above list, although important, is by no means exhaustive. There are however challenges to achieving the above, as described by The United Cities and Local Governments (UCLG) report (2010) titled 'Local leaders preparing for the future of our cities'. For example, under spatial patterns and urban growth, the report pointed that: "many cities just grew organically and did not plan for the number of citizens who would depend on the city as a place for trade, jobs, education, transport, healthcare and specialised services" (UCLG, 2010:12-17). Based on this submission, the city of Tripoli tends to focus more on the modernisation of highways and streets, as opposed to designs that enhance people's quality of life, which is a factor emphasised in the holistic approach to urban development.

Population growth and migration are the most significant factors in the rapid growth of Tripoli and peri-urban areas. Libya's population is exceptionally young (an average of 23 years) and is growing at a rapid pace. As population size increases, so does the amount of land required for residential, industrial and commercial needs. As Tripoli city appears to be growing at the most rapid rates, it has given rise to peri-urban areas to relieve saturation in the city. The growth puts additional pressure on government to

spend millions extra to build new schools and streets, and expand water sources and sewer lines. On the new land, a completely built environment is constructed – altering animal populations, indigenous species of flora and fauna are eliminated, and new and foreign species are introduced. For instance, rapid urban expansion has encroached into Enjela, which used to be an agricultural area surrounding the city of Tripoli. As the peri-urban areas expand, they consume hundreds of hectares of farmland and green area, threatening the local environment and quality of life. This has led to the devastation of the natural environment and the loss of many plant and animal species in the short and long term (Eben-Saleh, 2002 and Gillham, 2002). Worse still, unplanned buildings with improper waste disposal exacerbate environmental degradation. For example, indiscriminate disposal of solid waste in open spaces, on verges of streets, on sidewalks and sometimes in residential alleys in Khalt El-Ferjan has potential risks to human health and the environment. Cleanliness is a fundamental part of Islam and every Muslim is duty-bound to maintain hygiene and a clean environment. However, due to the scale of waste disposal, residents (through communal self-help) were unable to manage the scale of accumulated trash due to a lack of local authority waste services.

Thus, the evidence gathered shows increasing signs of environmental problems. Major concerns for Tripoli are the quality of air, traffic congestion, noise pollution and limited land resources, while green areas and open spaces are under continuous threat due to increasingly competitive land use. Activities in Tripoli are deeply affecting the surrounding environment and the overall quality of life of the urban population. Residential buildings, non-residential or other buildings, infrastructure, maintenances and repairs, and modernisation and demolition works have ignored the importance of

the natural environment in the city, and this has caused serious damage to the natural environment.

The motive behind recycling is to prevent the waste of potentially useful materials produced from domestic, civil and industrial operations, particularly within current human societies that use things once and discard the remainder, which is particularly a problem in oil producing MENA countries. Islam stands against extravagance and waste of natural resources, and calls for moderation and reduction of the consumption of fresh raw materials. The harmful effects of waste on the environment when left unattended have serious health hazards on people. Returning to an Islamic heritage, we will find many references to resource reuse as long as they do not produce damage and are not forbidden in Islam. Thus, Islam has laid the foundation for the three Rs of waste hierarchy (Reduce, Reuse and Recycle). Waste management has a direct impact on creating jobs in the sales of recyclable, processed and manufactured materials. Recycling would attract new small-scale industries, such as scrap-based manufacturing, further increasing the number of people employed through recycling (see Kaseva and Gupta's [2006] case study of Dares Salaam, Tanzania).

It is not unusual to find mountains of solid waste in different areas of Tripoli. The most obvious is the Ein-Zara dumping site, an area that has accumulated waste over the years as a result of poor waste management and a lack of allocated places for the sorting and classification of waste. The consequence of this situation is that it poses a risk to human health and the environment, by contaminating water, causing public health problems, attracting wild animals and biting insects, increasing flooding due to blocked drainage canals, and even the risk of fires or explosions due to poor safety, as well as increases in

the emission of greenhouse gases. Municipal waste management was previously managed by the local branch of the Public Service Company (PSC). This research gathers that PSC now subcontract private companies to collects waste from households and dispose of it at authorised dumping sites, but inconsistently.

Since the revolution, the lack of funding has hindered the frequency of waste collection. This is a non-holistic approach to waste management and planning for a greener environment. No doubt, there is litter all over the peri-urban areas because of the lack of dumping sites. Waste is dumped close to residential houses, along drainage and in football fields. For Tripoli to be sustainable, the waste hierarchy of reduce, reuse and recycle remains the cornerstone of most waste management strategies that should be adopted. Islam, for example, cautions its believers against waste and spoiling the land, and exhorts them to re-use materials as many times as practicable. A well-known example in the early Islamic period was the washing and reusing of papers – a means of recycling. It would also be desirable to develop a new Libyan capacity that would compete for investment with the precondition that companies' operations will not have a devastating effect on the environment. The urban planning process must be supported by analytical studies to be able to make plans that satisfy the spatial needs of the population and ensure social and economic equity, and sustainability (Ravetz, 2000 and Azitni, 2005). The above sections have shown how non-holistic approaches to urban planning have not worked in Tripoli, or the rest of the cities and their peri-urban areas.

Following the above discussion, the concluding section proposes a new approach to planning for Tripoli – and by wider implications for the MENA region as a whole – based on the principles of 'HIU', which is described in section 8.3. This brings together

the concrete evidence of the changes already taking place in Tripoli with planning principles inspired by the Quran which are thus necessary to urban planning in a North African context. These discussions are summarised in the following chapter, which concludes with a reflection of possible future work inspired by this thesis, argues for sustainability after the conflict, and outlines some of the constraints of the research.

7.4 SUMMARY

This chapter has brought together some of the major findings of the research and discussed them under three main themes – housing and policy, climate and environmental sustainability and an holistic approach to urbanism. It was clear in the discussion that Libya's modernisation approach does not take into account the peculiar socio-cultural, gender and climatic conditions of the country, because it was first instituted by the Italians. In other words, foreign policies were not indigenised before implementation, which displeased respondents, especially with regard to the design of their houses. This chapter has also highlighted the environmental sustainability of increased urban growth in Libya and which planning approach is most suitable and acceptable to the people, especially now that post-conflict Libya is on the path to reconstruction.

Holistic urbanism leads to the planning and implementation of urban design that is in harmony with the present and future generations of people and the environment, with both economic and social policies that are in the interest of the people and have taken into account the differences and peculiarities of the country. Islamic urbanism advocates for a holistic vision of urban design that considers the natural environment, social relations, political processes and economic diversity as part of the development process,

while preserving the sanctity of Islam as a religion that provides the code for human existence including urban configuration and interaction with the environment. The thesis advocates for greater adoption of HIU, now that the Libyan TNC is proposing to embrace the Islamic doctrine of Sharia. As stated earlier in Section 4.2, the TNC must understand that the tribal landscape, along with Libya's recent history, makes it hard to see how a power vacuum could be filled and by whom. Based on this, the thesis proposes a model outlining my vision for the future of Tripoli, taking into account HIU and sustainable development. This vision of the future of Tripoli is contained in Chapter Eight. The chapter also gives an indication of further works to be done to expand the scope of this thesis. Policy recommendations and study constraints are also contained in the concluding chapter (Chapter Eight).

8 CONCLUSION: TOWARDS A HOLISTIC ISLAMIC URBANISM

8.1 INTRODUCTION

This chapter concludes the study on urbanisation and sustainability in Tripoli as well as its peri-urban areas. The chapter draws together the findings from the literature, the remote sensing analysis and the peri-urban areas case study to explore the implications of the research for both theory and practice. The chapters have elaborated comprehensively the four aims of the research. First, it contributes to urban geography of the MENA region and explains the distinguishing elements of sustainable urban growth in Libya. Second, it has identified the rapid urbanisation of Tripoli. Third, it has assessed urban growth in Tripoli as well as determining the shape and structure of urban growth to adjacent areas. Fourth, it has argued that HIU is the most appropriate model for urban growth and sustainability in Libya, and indeed the MENA region. The research aims have been achieved through the collection and analysis of data from a number of secondary sources, ranging from academic and policy papers including those from World Bank and United Nations to Libyan government policy documents – from the central to local authorities.

The next section of this chapter highlights the contributions of the thesis to theory and practice. In addition, reflections and limitations of the research are contained in this section. Section 8.3 argues for the adoption of the Holistic Islamic Urbanism (HIU) for urban growth and sustainability in Libya. Based on this argument, section 8.4 presents an alternative and sustainable way to diversify Libya's economy. Section 8.5 contained

the researcher's vision for Tripoli's future in adopting the HIU. Finally, the last section (8.6) identifies opportunities for further research.

8.2 CONTRIBUTIONS OF THE STUDY

This thesis makes a significant contribution to existing knowledge in the wider literature on urban geography in general and MENA urbanisation in particular. As far as the researcher can ascertain from the literature on Libya, this thesis is the first study carried-out to examine urban growth and sustainability in peri-urban areas of Tripoli. This thesis took a distinctive approach to the study of urban growth, analysing in detail the experiences of Tripoli residents' peri-urban built environment. This thesis used remote sensing techniques to offer the basis for logically understanding land-use change over a period of ten years. However, remote sensing is less successful at clarifying human behaviour that considers the direct causes of the spatial process – hence the use of mixed methods. The use of various methods have afforded me the opportunity to open up a debate about the potential for an HIU that can both embrace the futures being opened up by political and economic reforms in Libya and other MENA countries, and do so in a way that does not simply import a development model from the West. Previous studies on urbanisation in Libya tends to focus on cities' infrastructure, migration, demography, housing and planning, without being critical of the regime that created the urban spaces.

If this idea is adopted, it must also be accepted that information gathered in this way can provide important guidelines for decision-makers, planners and experts in planning and urban development processes in Libya, and the MENA in general. The findings further provide theoretical and practical bases upon which to set up national strategies and

policies that would improve the existing structure of Libya's built environment, which may enable them to become sustainable cities of the future through suitable designs and effective management. The MENA region and Libya in particular are becoming places of unprecedented development – rising skyscrapers, wide network of roads, modern shopping malls and offices and a growing unabashed consumerism. Most importantly, as these cities emerge, Elsheshtawy (2008:77) observed that "the tensions of modernity and tradition; religiosity and secularism; exhibitionism and veiling; [mean that the modern MENA city] is in short a place of contradictions and paradoxes". Libya has encountered modernity through colonialism and modernisation which have shaped and influenced its urban form and built environment. In the process, national identity and socio-cultural and religious factors run alongside. In line with Malkawi (2008:35) this research exemplifies the transformation in terms of structure, polity and social life which has occurred.

The findings from this thesis suggest that while modernisation and globalisation principles are applied in the planning, design and governance of Tripoli, it turns out that such plans failed because of parochialism and the lack of a holistic view that embraces a civic vision for the common good of the socio-cultural, economic and physical environment. This study is, therefore, a substantive investigation that enriches the study of urbanism and modernity in the MENA, and most importantly in proposing a new approach of 'HIU' as the only thing that has a chance of working, because it reflects the culture it is there to serve, house, protect and employ. Despite the attention given to modernisation during the entire reign of Ghaddafi, basic principles for planning practice have been narrowly focused on urban liveability, and have given limited attention to religious and cultural freedom, social equity, environmental protection and economic

development. Given these limitations, HIU would extend the already existing modernisation principles to embrace urban ecology, place-based economies, spirituality and social equity, in addition to global and regional concerns.

8.3   HOLISTIC ISLAMIC APPROACH TO URBANISM

As explained in Chapter Seven, Islam already influences planning practice in housing and other forms of life in Tripoli. However, the precepts of Islam remain relevant to the needs of what is rapidly becoming a modern, Western-style city. The planning of Tripoli city occurs without comprehensive studies for the basic elements or the tools required for a successful urban practice that considers the basic principles of Islam rather than architectural symbols of a specific time. It is high time that the initiative of integrating the Islamic worldview into the planning of Tripoli takes off in effect. This is because Islamic urbanism reflects the social and religious prescriptions of ensuring that each member of society is treated equally, enjoys full rights to a secure and inviolable private space, and that the environment is protected and preserved for current and future use. Some works on Islamic perspectives on the environment, ecology and climate change are already underway (see Hussain, 2004; Hussain *et al*., 2010). This research has extended their approach by considering socio-cultural and religious factors in urban sustainability.

The penetration of Islam into Libya had an irreversible impact on the morphology and configuration of the built environment. The traditional Islamic cities of Libya suffered changes through the introduction of planning and economic characteristics to suit the colonial masters. As stated in section 2.2, the cities in the MENA region have passed through various planning paradigms since the Islamic era, which is considered to be the

initial stage, followed by the formative stage, which came with colonialism, and finally urbanisation, which saw the city expand outside the walled city, creating a new neighbourhood parallel to the previous city (Lkahel, 2001). The new European planners brought new designs that slowly eroded the functional viability of the traditional city. The relics of these traditional cities are the medinas (see Chapter Five). After political independence, Libya's quest for development adopted the modernisation policy, which has led to the alienation of cities based on rejection of the concept of Islam in favour of those brought by modernisation.

Since the Libyan modernisation approach has not been holistic due to differences in tradition and ideology, the holistic Islamic approach is most suitable for Libyan society. This is due to the fact that Islam is a very private religion, conjoining Muslims with God and requiring Muslim standards of behaviour and attitude as set out in the Quran and Sunnah. HIU raises awareness amongst people of the links between religion, tradition and modernity and benefits from them. Certainly, in today's globalised economy, it will almost be impossible to throw away modernisation. However, certain elements that conform to religion and tradition can be adapted, while areas that are to the contrary, if they cannot be accommodated at all, can be discarded. The house, for example is defined quite clearly as a sanctuary from which the Muslim sets out to fulfil his or her public obligations. This belief establishes the importance of understanding the planning of Islamic towns. In contradiction to Western planning, the concept of settlements begins with the privacy of the interior of the house and moves out through the districts. Within the house, the Muslim enjoys his or her privacy dependent upon his or her own predispositions and requirements. With the uniqueness of these characteristics, it

becomes almost impossible to tell from cursory inspection who lives behind the wall in an Islamic town.

In Libya, the socialist policies adopted by the Ghaddafi government at all levels had a big impact on the structure and growth of the city. According to the planning policy of that time, the government was responsible for increasing the standard of living in the city through the provision of infrastructure and the establishment of urban services in the fringes. In Islamic planning: "there are certainly thoroughfares and there are areas where business is carried out, but the structure and design of the town is the introverted, undistinguished residential area where it is wrong to distinguish your house from your neighbour" (Catnaps.org, 2012:1). This means that future houses should be built to accommodate both the rich and the poor in the same neighbourhood to foster social equity. The more modern approaches to planning have created the setting in which individuals display themselves and their wealth to their neighbours. This cannot be a healthy trend and detracts from the ownership that was enjoyed in traditional towns, reflecting the differences in the allocation of houses by the Ghaddafi regime.

Libyans' traditional experience of space is established and moulded by their culture – through 'deep, common, unstated experiences which members of a given culture share and which form the backdrop against which all other events occur' (Grifa, 2006). The Islamic perspective goes beyond the principles of modern urban planning described by Al-Ghannouchi (2000:101) as: "the formulation of alternative patterns of urban settlement, the rational use of resources to alleviate urban problems, and the provision of a city's physical and social infrastructure: transportation, utilities, housing, community facilities, and services in a manner the way that make the city aesthetic,

convenient for human uses and environment-friendly." Islam extends to social organisation, economic prosperity and spirituality. Bearing this in mind, sustained programs can be developed whose original goals and objectives are in harmony with the individuals, families and communities they were originally intended to serve. Islam teaches shared responsibility and negotiation as a powerful tool for living as one community of Muslims and non-Muslims (see example from the work of Wang Yong Bao, 2009).

The Libyan government has recognised the need for housing and has initiated projects in that direction. However, as findings from Enjela and Khalt El-Ferjan demonstrate, the overwhelming problem is not urban growth in itself, but that planners either lack the resources to manage growth or adopt inappropriate and obsolete planning paradigms. It is important to note that poor urban planning or the lack of implementation of planning policies has led to the emergence of illegal residential areas in Enjela and Khalt El-Ferjan. It appears that holistic planning has not been adopted to address the growing city of Tripoli and its peri-urban areas. Within this context and the need to address future urban growth in Libya, a holistic urbanism approach within the context of Islam is timely. In addition to the influence of local topography, and physical characteristics of early civilisation towns, the Islamic approach reflects the general socio-cultural, political and economic structures of the society. This may involve the following:

1. The first principle that defined much of the character of the Islamic city is the adoption of the built form and plan of the city appropriate to local environmental circumstances e.g. weather and land surface configuration. Courtyards, terraces, narrow covered streets, gardens and open ground (green areas) can be designed to suite local climatic and physical conditions.

2. Religious beliefs and practices formed the centre of cultural life for Libyans, thus giving the mosque a central position in urban development. The cultural and religious beliefs separating people's lives, both public and private, regulated the spatial order. Thus, early planning consisted of streets - in the form of narrow roads – that separated private and public buildings, while the internal structure or plan of the house clearly separates male and female users as expressed in section 7.2. Consequently, economic activity that involved exchange and public presence was separated from residential use and concentrated in public areas and in main streets.

3. The social organisation of urban society was based on social groupings. Development was therefore directed towards meeting social needs, especially along kinship lines, defence, and religion as opposed to individualism. The Quran says: "People have been divided into nations and tribes only to know each other, learn from each other, and cooperate at various scales in righteousness and piety – not that they may loathe each other and conspire against each other" (Quran, 49:13).

4. In terms of environmental management, Islam strongly voices a spiritual dimension. The need to change means that humans go back to their 'pure state' (as understood in Islamic teachings) – resisting the corruption that changes the pure state of the environment. The pure state of the environment in Islam is the *Mizan,* the balance that was established by nature (Quran 54:49). In relation to human responsibility for climate change and environmental degradation, humans should live in harmony with the environment, take only what they need, and not waste (Hussin, 2004). The spiritual and ecological message in Islam merits revisiting in a world of seemingly endless consumption, excess and materialism

(Quran 6:141). The Quran (5:100) states that: "...not equal are the things that are bad and the things that are good, even though the abundance may dazzle thee; so fear God, O ye that understand (so) ye may prosper".

5. In Islam, environmental resources hold enormous potential and diversified resources are meant only for the vicegerent of Earth (Quran, 2:21–22; 14:32–34). Hence it encourages its believers to depend more on renewable energy sources than non-renewable ones. This therefore emphasises the need to reduce dependence on oil, coal and gas, for instance, and to use green energy such as wind, solar and tidal for our cities. The environmental resources are an 'ally' or a 'partner' in the execution of a human's mission on Earth.

A holistic Islamic approach includes social, cultural, political and economic logic in terms of physical fabric, layout, and uses which can be applied in modern design and planning. This principle can be adapted to meet modern functionality and living standards and maintain its high congruence with natural, religious and socio-cultural environment. The absence of Islamic design principles, such as harmony between religion and people and the environment, in the morphological characteristics of the modern Libya could be the main reason behind the social crisis of the urban communities. This is because the majority of people feel that it is only Islam that can turn back the injustices certain sections of Libyan society have suffered during Ghaddafi's regime.

Therefore, future development plans in Libya need to adopt these principles, but in a modern context, so as to bring the cities back to Islamic manners and guarantee their sustainability. The practice of Islamic urbanism could lead to the planning and

implementation of urban design that is in harmony with the present and future generations of people, and the environment. The decision-making and responsibility is shared by the public, so that the city is put on the road to sustainable practices. In this manner, decisions are made in a participatory approach such that every member of the community can contribute to decisions that affect his/her built environment.

8.4   ALTERNATIVES TO OIL: A LOOK AT TOURISM

I noted in Chapter Four that Libya formulated its economic development strategies and transformation agendas based on the income and revenues from a single commodity, oil. Even though the revenues from oil will play an important role in Tripoli's reconstruction, they are not being reinvested effectively in funding some sectors, such as manufacturing, that can contribute significantly to self-sufficiency and net export of goods and services. It is important to note that many resource-rich countries, like Saudi Arabia and the UAE, are making efforts to tackle the un-sustainability of oil-based production and consumption by diversifying their economy (Aldagheri, 2008). Libya lags behind in this. In the light of increasing demand, price volatility and depletion of global oil resources, many debates have arisen to explain 'oil depletion' and 'peak oil'. For example, Sorell *et al.* (2009) believe that 'peak oil' refers to the point at which the amount of oil produced becomes unsustainable. Oil depletion, by contrast, refers to the point of exhaustion of oil due to either geotechnical reasons or government policies. In view of this problem, countries are strategising to develop alternative and renewable sources of energy that are sustainable and have lower carbon footprints. This prediction of the future of oil cannot be positive for Libya, whose budgetary provision squarely relies on the petro-dollar.

For Libya's economy to reduce its volatility and achieve sustainability, it has to develop other sectors that have competitive economic advantages, and are sustainable, to complement the revenues from oil. One such area that Libya can develop is tourism. In doing so, both the domestic and international tourism market should be explored as opposed to promoting only the latter. The opportunity exists to increase the value of domestic markets even as only a small proportion of the domestic population currently undertakes trips for holiday or tourism purposes. While the international tourism market has potential, international tourism is not environmentally sustainable (and, if oil prices rise significantly, as supply peaks, air travel will be prohibitively expensive and the number will significantly reduce). Taking this economic strategy creates long-term, sustainable growth – and in so doing, helps to ensure stability, provide employment and protect the environment. Kalesar (2010) reported that the tourism industry in Egypt has employed about one million people directly, and a further five million indirectly, in the last two decades.

In terms, of tourism, the countries in the MENA belong to one or more of the following categories: 1) those with a rich tourism history due to their diverse cultural heritage and archaeology (e.g. Egypt, Jordan, and Tunisia) and 2) those that have some historical heritage but are rich in oil resources. Countries like Libya, the UAE and Saudi Arabia (which also benefits from hajj – spiritual tourism) belong to this category (Daher, 2007). While the UAE has recently experienced some relative improvement in its non-oil sectors, such as the development of the tourism sector and an extensive development of the tourism services sector such as real estate, the tourism sector in Libya can best be described as comatose and underdeveloped. Morocco, Egypt and Malaysia have a more developed tourism sector with millions of guests, particularly Western tourists.

The location of Libya on the south coast of the Mediterranean affords it an attractive and pleasant climate as well as a variety of natural resources, such as a relatively clean sea, sandy beaches, green mountains and stunning oases. These physical features provide an opportunity for the incoming government to look at the possibility of using about one million square kilometres of desert, 1900 km of sandy beaches and mountainous plateaus of up to 500 metres for tourism, since no attention was paid to it by the Ghaddafi regime. As all ready indicated in Chapter Four, Libya has extremely well preserved Greek, Spanish and Roman historical and heritage sites such as Cyrene, Aploiona, Tolimita, Sabratha, Leptis Magna, and stunning ancient cities including Gadamas Ghat, Gurza, Nalut among others – all with great potential for cultural tourism. At this present time (2012), the beaches are neglected and used without any international standards or guidelines. Furthermore, neither the antiquities' authority nor the tourism police department are capable of protecting and maintaining these valuable historical treasures, so as to realise their huge economic potentials.

The development of tourism from the above potential can be a sustainable diversification strategy; however, since this research advocates the adoption of HIU, it has to be developed in line with global standards (e.g. UNEP), regional (e.g. Arab Tourism Organisation), and Islamic principles to welcome both Intra-Arab and Intra-Muslim tourists. For example, tourism is part of religion and travel is fundamental to Islam (Q29:20; Q22:46). In other words, tourism development must avoid consumption and utilization of things that are forbidden by the Holy Quran and the Hadith (sayings and deeds of Prophet Muhammad [PBUH]), and which are unacceptable to the culture of the people. For example, these are the common features of Islamic tourism: restrictions on nakedness, alcohol consumption and in-door disco/nightlife hotels,

gender-segregated fitness and sport facilities, conservative indoor dress-code, availability of prayer-rooms on site, and women's floors.

However, to maintain religious harmony and for modernity, some aspects of the law can be relaxed (such as in tolerating the dressing of a non-Muslim visitor), and certain areas (such as luxurious hotels and resorts) can be less controlled to promote a liberal atmosphere. Tourism can be holistic and sustainable as long as its policy and implementation is practised in conjunction and collaboration with customers, governments, service providers and communities. A more important dimension of tourism under HIU, however, is the question of equity – tourism should be for all people, not just a limited wealthy few individuals – and therefore how to best ensure that all can benefit from it, including those with low budgets. Based on the thesis, section 8.5 envisions the future of Tripoli.

8.5   VISION FOR THE FUTURE OF TRIPOLI

This section of the thesis presents my vision for rebuilding Libya's urban environment. This vision was based on the findings of the study and responds to the needs and aspirations of the people. Suggestions are also proposed on housing, the economy, planning, environment and gender, including practical steps on how to actualise the vision.

On housing: Libya, like several developing countries, came up with public housing policy, but this has produced little success recently. As demonstrated in Chapter Six, one of the lingering challenges to housing development in Libya is unprecedented urbanisation caused by high rural-urban migration and those from other African

countries, leading to the merging and expansion of peri-urban settlements. The public sector-driven housing policy which adopted Western ideologies does not best suit Libya. It has rather added substantial challenges to the delivery of affordable housing development, resulting in a substantive housing deficit and a lack of recognition of the society's tradition and Islam. One of the principles of HIU is the provision of necessities before luxuries. For example, the issues of housing, the accommodation of people and public health should be provided for before the development of recreational facilities such as stadiums and cinemas. In the case of Libya, the culture of the people is associated with Islamic principles, but the situation is that houses are built without taking the religion and tradition of the people into account, in a bid to provide mass housing and to compete with the rest of the MENA cities.

For Libya to meet its housing needs in accordance with its peculiar environmental and social conditions, it is imperative for the government to design and implement policies and partnerships with the private sector that combine Islamic style, social cohesion and modern design to adhere to the four principles regulating the traditional built environment of typical Islamic urbanism (Bonine, 1977): 1) *fina* (space on the street abutting a property used exclusively by those owners); 2) closed-streets; 3) *hima* (land which cannot be developed by individuals e.g. green belts and conservation areas); and 4) public spaces such as streets and squares such as Tahrir and Green squares in Cairo and Tripoli respectively.

The design of subsequent houses as modern or traditional must take into account climatic factors to allow for cross-ventilation, without necessarily exposing the privacy of the house. The above requires: 1) creation of an enabling environment for private

sector investment in housing development by cooperatives, mutual land trusts, thrift societies etc; 2) the provision of adequate public building policy for effective service delivery; 3) the development and promotion of appropriate designs and production technologies for the housing sector; 4) the promotion of appropriate and cost-effective design of houses for different parts of the country so as to satisfy peculiar local climatic conditions; 5) improving the quality of rural housing and infrastructure; and 6) developing a national building code tied to urbanisation policy.

In terms of planning: The lack of suitable planning that combines religion and urbanisation led people to orient to individual planning that is not based on sound planning, but on integrating their desire for modernity and the fulfilment of tradition and Islamic values (Chapter Six). To solve these issues, previous plans should be reviewed and a new plan developed that combines tradition and modernisation. In the meantime, residents around the peri-urban areas that engage in chaotic and unstructured development must be educated (either by the use of media or through re-certification of land titles) to accept the new and reformed state policies and planning procedures. For example, houses can be designed to appear modern in outer appearance, but the interior should be compatible with the privacy of Islamic traditions and customs.

In terms of the study areas the following points are important: 1) studying and evaluating the study areas from all aspects (economic, social and environmental) and dividing it into three areas. The areas should integrate to the urban fabric and the other areas should stop developing, and finally, areas that are incompatible with planning standards should be removed and compensation paid or alternatives to these areas found; 2) re-planning of areas, by the Urban Agency Planning, taking into account HIU

principles that will integrate to the urban fabric; 3) redesigning and linking built environments via infrastructure.

On the economy: From an Islamic perspective, the economy relies on private and public sectors, which means a combination of socialism and capitalism. However, we know that Ghaddafi's regime oriented Libya to the communist bloc, following a socialist perspective. Therefore, what Libya needs now is a liberalised economy that would sustainably develop all sectors of the Libyan economy. Thus, the private aspect, which does not exist at the moment, can play a leading role in broadening the ownership of banks by individuals, foundations, and corporate entities, while the state can regulate their activities. More so, liberalising trade can be a means to developing sectors (such as agriculture, fishery, and arts and crafts) where Libya possesses a comparative advantage. Trading any commodity (whether locally or at the international scale) produced by local or transnational companies would be a means of sustained economic growth, and would provide employment opportunities, improve living standards and reduce rent-seeking. However, any trade measure of improving production and market access to these commodities can have a wide range of economic, social and environmental effects, such as incremental consumption, wastage of natural resources and transport pollution. In this case, George and Kirkpatrick (2003) advocate for developing and rich oil countries like Libya to conduct sustainability impact assessments to provide a better understanding of the effects and how to mitigate any impacts.

On the environment and sustainability: In order for Libya to achieve sustainable development, it must take into consideration the triangulation of factors in achieving

sustainability. The concept of Islam itself is sustainability, where holistic Islam's view of sustainable development ensures the harmonisation of economic, social and environmental aspects fed by spiritual and moral aspects. In the other meaning, a person should be neither a slave nor a master of the environment, but must respect it and ensure that it is protected for use both today and by future generations. This implies that Islam is also concerned with ecological services that fully support socio-cultural and socioeconomic systems. In the Libyan context what exists is a reversal of the concept of sustainability in Islam – natural environments surrounding Tripoli city are being violated and used indiscriminately without any moral or legal deterrence. Following the current environmental challenges faced by Tripoli, my visions in this regard are:

1. Water scarcity and quality and air pollution: this can be addressed by better exploitation of the water supply using soft and environmentally friendly technology to find alternative water sources. In the meantime, the project would be viable in the medium term as long as it remains cost-effective, environmentally sound and socially equitable. When questions related to sustainability are raised, desalination of the Mediterranean water comes with more advantages – it is cleaner and more cost-effective. The exploitation of groundwater aquifers in the long-term, as in the Manmade River, is non-renewable and thus unsustainable.

2. Land degradation and desertification: Tripoli is located on a fertile land, so it is possible to exploit (by planting) the surrounding area of the city. For example, one might divide these lands into wooded areas and rain-fed areas, and issue strict laws to preserve the surrounding environment. Similarly, integrated space-based approaches to the natural resources inventory, desertification, and climate

change and flood risk assessment would assist in monitoring the severity, and create adequate measures to combat it.

3. A spatially networked system should be designed that comprises a location of industrial processing facilities that can utilise energy from urban waste streams, along with careful monitoring, control and enforcement of emission limits, and energy exchange between the industries and the city.

4. Inadequate capacities for waste management: Islam cautions its believers not to take advantage of everything, and also not to spoil the land. In Tripoli no-one has responsibility for waste disposal, so it would be desirable to bring waste management companies that would collect and recycle waste into usable products, but with the precondition that their operations will not have a devastating effect on the environment.

5. To develop a resilient transport network system that is green and reduces overdependence on cars as the only recognised means of mobility. In this way carbon emissions from cars would be reduced. Walkable and cycling infrastructure, fast trains and public buses, traffic calming measures, electric vehicles and vehicle emission control that are not available in today's Tripoli can be developed in addition to some elements proposed by Newman *et al*. (2009:90) that can make urban transport resilient. Just as they highlighted: "if a city has an accessible, efficient, affordable transit system that can be expanded quickly to cope with increasing numbers, it will be much more resilient than one with a poor, largely inaccessible transit system that is quickly filled just as its highway system fills everyday" (Newman *et al*., 2009:87). Libya has the potential human and resource capital for the conditions of developing a resilient green transport system.

6. Good understanding of local conditions before preparing plans. This would involve an assessment of the social, economic and environmental impact of developing new towns in Benghazi and Tripoli regions. Using indicators such as biophysical, health, economic, social and cultural aspects of the society to facilitate decision-making; whilst promoting strong community involvement and participation; and ensuring life-cycle sustainability.

On gender and urban governance: The findings in Chapters Four - Six have shown that women use and gain from the city in different ways from men, and that urban governance needs to be gender-sensitive if these differences are to be accounted for in urban governance. Although the role of women was very effective in supporting the revolution in Libya and other Arab Spring countries, it can be seen in the political arena that the number of women in the Libyan TNC was contrary to the volume of women that participated in the revolution. Thus, it can be argued that sustainability cannot be achieved in the transitioning countries of the Arab world without the active participation of women on an equal footing with men at all levels. My first vision in this regard is to see an increased participation of women in all sectors of national life. Secondly, to have a situation where there is gender awareness and gender competence in all spheres of the future Libya's life, be it in the political arena, the policy process or in planning practice. Similarly, it has been noted in the thesis that deteriorating economic conditions, social inequality and political injustice by the ruling class are the main reasons behind the unrests and revolutions in the MENA region (Arabic states).

My vision to see historical changes brought about by the revolution in Tripoli includes; 1) religious beliefs in truth, peace and justice and 2) upholding international values,

standards and human rights declarations because people's lives are becoming more flexible and more globalised, implying a need to consider and domesticate international conventions that are compatible/acceptable to Libyan society. Whilst this research has met its aims and objectives, I have however, identified areas which would offer an extension to this research project.

Many of the above points are Libya-specific, but some of them are already evident in some European planning systems. However, in accordance with the WHO Regional Office for Europe (1996), most European cities operate over a range of geographic scales which includes community participation in planning decisions, and takes into account future socio-economic and environmental issues for different groups within the population. This is the path to ensuring sustainable planning that the Libyan urban planning strategy needs to adopt, because it has not contravened any religion or traditional/cultural practices. Indeed, it has provided an opportunity for the people to be part of the building process of the city from conception, through management, to development.

8.6   AREAS FOR FUTURE RESEARCH

A number of issues have been addressed and several key areas have been generated from the study of urbanisation and sustainability in Tripoli. The following three potential areas are suggested as a further extension of this research project.

8.6.1   WOMEN AND THE ARAB SPRING

Some countries in the MENA region have experienced great political turmoil since the beginning of 2011. Deteriorating economic conditions, social inequality, human rights

violations, government corruption and political injustice perpetrated by the ruling class are the main reasons behind the unrest and revolutions in the MENA region (Arabic states). This study has, to a certain extent, addressed some of these issues as they relate to the urban space; however, these developments are ongoing as the Libyan political system is still under transition. Most importantly, and rather unusually, was that women's participation in the Arab Spring brought critical legitimacy and attention to Islamic feminism opposition movements, and their ongoing activism signalled opportunities, new beginnings, possibilities, and most of all hope. For example, women have always played a large role in Libyan society during the forty-year reign of terror. Libyan women have also for the first time demonstrated their capacity to engage in protest that would bring about regime change. In fact, the rapid urbanisation of Libyan society created the social tensions that ultimately led to the Revolution, and women have – to a large extent – powered it.

Therefore, this study may serve as a basis for policy formulation that would enhance the contribution of women to the development of urban policy. The focus would be to examine women's experiences and their particular circumstances – or, often, their plight and problems in the urban space. This is because women have not played their full role in urban life – at least not in Libyan public life. Case studies of this nature would considerably add to Islamic feminist literature, which has implications for the entire, rapidly urbanising and increasingly revolutionised, MENA region.

8.6.2 LIBYAN CITIES

It has been observed that there is a lack of similar studies focusing on suburbs and the most urbanised cities in Libya; therefore, it was not possible to compare this study with

those of other suburban areas of Tripoli, especially the eastern suburbs of Tajoura and Ain-Zara. There is also the absence of a similar study on the geographical extent of the expansion of the cities of Benghazi, Biyda, Misrata and Az- Zawiya, which are host to Libya's political and economic power. For this reason, there should be more studies of similar processes of urbanisation in these cities and suburbs, so that the findings can be tested against each other and generalisations can be drawn for the sustainable management of Libyan cities and their suburbs. This kind of study is timely considering that Libya is currently in the process of complete transformation of its political and economic systems. Because the findings would rely on residents' experiences, it has a greater chance of reflecting local realities, which if properly embedded in public policy and planning, would facilitate the emergence of urban citizens as opposed to mere 'inhabitants' with little stake in the city's future. The role of women in Islamic societies is undetermined, but is central to debates about the meaning of urban sustainability in the MENA region.

8.6.3 TRADITION AND URBAN PLANNING

The adoption of a multi-method technique in understanding the experiences of urbanisation from the perspectives of residents and policy makers was shown to be beneficial because it recognised that such processes are a complex system where economic and socio-cultural factors interact and determine outcomes. Unlike migration, where economics was the most significant dimension, socio-cultural factors, such as the need for privacy and space, were the most significant motivations for settling in the peri-urban areas. In order to gain a thorough understanding of the factors pulling residents to suburbs, it is necessary to understand in detail the role that is played by, for example, political and planning factors under the past regime. The findings have

revealed the diversity of peri-urban dwellers and their differing demands in housing, environmental and urban services, and neighbourhoods. This is because contemporary modern structures and planning methods are not conducive to Islamic principles and indigenous traditions, as most people are not satisfied with the compact nature of modern houses. The study therefore recommends future research into how the elements of the traditional built environment of the Islamic city can be fused into modernity, so as to satisfy local conditions and meet local physical environments.

There are many reasons for Ghaddafi's failure – corruption, cronyism, links to terrorism, militarism, tribalism – but these in themselves did not trigger the revolution. That was finally caused by external pressures (such as human rights violation and killings of women and children), internal pressures (such as unemployment, nepotism, women's agitation and increasing poverty) and by a general failure to create a sustainable environment as apparent in Tripoli. With the end of Ghaddafi's regime, Libya's interim rulers must embrace HIU, which would lead to the creation of a broad-based government, provide basic services to the people, pursue reconciliation of all tribes and ethnic groups, and embrace a new democratic future for political stability in a society increasingly divided along kinship and ethnicity, separated by varied but often unfriendly gender policies. More than anything, the success of the revolution depends on the TNC's ability to establish a respect for human rights and individual freedom (as contained in HIU) that virtually diminished during Ghaddafi's regime.

8.7 FINAL REMARKS

Overall, this thesis argues that HIU is a real opportunity to build the state, and the proof for this is the Islamic civilisation that has continued for more than 800 years. In Libya,

Islam is a way of life, and also a religion and a custom intertwined. Based on a system of governance, Islam has various links to socialism and capitalism, because the teachings believe in the philosophy of private and public property ownership. Therefore, Islam realises full social justice and economic freedom, and completely eliminates the exploitation of human rights. Islam represents a systematic attempt to create a socio-economically just society. In this instance, this thesis strongly advocate for HIU to be considered as a strategy of sustainability, for globalisation, like urbanisation, has brought numerous challenges that have eroded Libya's ability to contribute innovations that spring from its unique geographic setting, cultural identity and history. Furthermore, consideration would be given to the city and its immediate suburbs natural habitats, to increase the overall biodiversity, healthy, siren and resiliency of the city. In all, the HIU framework must be seen as an option for the on-going process of post-war reconstruction for a sustainable future, not simply the maintenance of current conditions.

However, it is worth reflecting that the adoption of HIU may not be without issues and must be adopted with care and thoughtfulness. For example, there are tribal tensions, gender and generation issues in Libya that might pose challenges for the 'holism' of HIU. Social equity and acceptance of responsibility to future generations are essential parts of HIU. Each person has an inherent right to exist, to have access to national resources, and to pursue a decent life, despite his or her kinship, regional, gender divides or economic background because in Islam each person possess equal rights with everyone else. In an HIU framework, people are urged to consider how issues of equity intersect and interconnect with reconstructing public facilities, housing, economic

disruption, the physical environment, and the society including families, neighbourhoods, cultures and religion.

With the success of the revolution, women are asserting their role in society and in the government, and are demanding more representation in the political process, but the participation of women (irrespective of their social class or age) in Libyan civic life is particularly uncertain. For example, women have pushed for a 40-50% quota in the parliamentary committee that formulates Libya's new constitution, but are only able to get around 30 members of the total of 200 parliamentary seats. Even if this is not enough, it is a slight improvement from the dangerous environment of the past regime, which served as an automatic deterrent for women's ability to work or to reach the height of their chosen career. One of the important recommendations is to encourage Libyan men (through constitutional mechanisms) to consider giving up their numerical domination and to implement a quota system of at least 10 per cent to foster female politicians and allow freedom of participation, association and work.

Planning for the post-conflict reconstruction of Tripoli, on more sustainable terms, must tackle gender inequality and enable women to play a more active role in the public life of the city. For example, a focus on Islamic values in spatial planning would further allow women privacy and protection within the home and give them the rights to work and freedom of association. Islam recommends full social justice, economic freedom and completely eliminates the exploitation of human rights. Islam offers a systematic attempt to create a socio-economically just society. But this provision is often not implemented due to personal inclinations of dictatorial governments rather than based on religious ideology. In HIU secular feminism and Islamic feminism dissolve into each

other to produce a gender revolution that is acceptable to the Middle East and beyond which will be in line with their tradition, religion and modernity. It is true that women were disenfranchised by the past regime, but it is also true that certain traditions continue to prevent women from participation into any political appointment or leadership. This kind of opposition to women's leadership role is a challenge in the new Libya. However, through the provision of sound education, political awareness and training, this perception -as well as women's capacity and ability to participate in governing process- could be altered.

Moreover, a final point to consider is that in the coming years, Libya is likely to witness an influx of international financial institutions and corporations engaged in policy consultations and technical assistance, aiming to maintain macroeconomic stability and develop an institutional infrastructure that would promote post-conflict economic recovery. Whatever this assistance, it must be in line with the principles of sustainability and ideology of the new Libya.

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APPENDIX A : INTRODUCTORY LETTER AND QUESTIONNAIRE

<div align="right">
Department of Geography
University of Leicester
LE1 7RH
Tel: 0116 2523823
Fax: 0116 2523854
E-mail: geog@le.ac.uk
</div>

Dear Mr. /Ms

I am writing to you with regards to a survey I am conducting to acquire further information on **"Towards Holistic Islamic Urbanism: planning for Tripoli in the new Libya".**

I would be grateful and most appreciative if you would kindly complete the enclosed questionnaire and return it in the self- addressed envelope that has been provided for you. I am confident that it may only take 15 minutes of your time to answer the questions. Please rest assured all the contents of the questionnaire will be kept confidential. Therefore, we hope that you will answer the questions as fully and honestly as possible.

I'd also like to inform you that just a few chosen and select individuals have been approached and your responses and opinions are very valuable and important to me on the course of my research.

Finally, I'd like to thank you sincerely for your time and effort in completing this questionnaire, and I look forward to hearing from you soon.

Please do not hesitate to let me know if you are not willing to participate in the questionnaire survey.

Yours Sincerely

Researcher

<div align="right">Date: 01/01/09</div>

Location (grid reference, street name):--

Section 1 household Profile Data:

1- Age profile: Please list the number of people of each age group in your household:

Under 18----------   18-25----------   26-45----------   46-55----------   56-65---------   over 66---------

2-   Gender balance: Please list the number of men and women in your household
Male-------   Female-------

3- How long have you lived in this house? (In years).:……………..

4- The area of house:

❑ Less than 100 m2   ❑ 101 – Less than 150 m2 ❑51 – Less than 200 m2   ❑ 201 – Less than 250 m2   ❑ 251 – Less than 300 m2   ❑ More than 301 m2

Section 2 Finance Data:

5- Monthly household income (in Dinar):

❑ Less than DL 300 ❑ DL 301 – Less than DL 400 ❑ DL 401 – Less than DL 500 ❑ DL 501 – Less than DL 600 ❑ More than DL 601

6- Owned outright:

❑ Yes   ❑ No

7- Mortgaged:

❑ Yes   ❑ No

8- Value of the house (in LD)?

☐Less than DL 25000 ☐ Less than DL 50000 ☐ Less than DL 100000
☐ Less than DL 200000 ☐ More than DL 200000

Section 3 Area Infrastructure Data:

9- Services:

Electricity: ☐ Yes ☐ No   Gas: ☐ Yes ☐ No
Water: ☐ Yes ☐ No   Phones: ☐ Yes ☐ No
Internet (broadband): ☐ Yes ☐ No

10- Transportation:

Road access: ☐ Yes ☐ No   Buses: ☐ Yes ☐ No
Taxis: ☐ Yes ☐ No   Cars: ☐ Yes ☐ No
Airports: ☐ Yes ☐ No

11- Facilities:

Primary Schools: ☐ Yes   ☐ No   Secondary Schools: ☐ Yes
☐ No   Banks: ☐ Yes   ☐ No   Shops: ☐
Yes   ☐ No
Healthcare: ☐ Yes ☐ No

Other – Please describe: ……………………

Section 4 opinion Data:

12- How has this area changed since you have lived here?

13- What facilities would you like to see in this area?

14- How might those facilities be created?

15- Do you know what the planning process is for this area?

☐ Yes   ☐ No

16- If yes to 15, is the planning process functioning effectively in your area?

☐ Yes ☐ No

17- What are the main factors driving change in this area?

18- How significant is the natural environment to this area?

19- Should green space be preserved?

☐ Yes ☐ No

20- If yes, how?

- Are you prepared to take part in a follow-up interview of around 40 minutes?

☐ Yes ☐ No

- If yes, name and address please: ---

APPENDIX B : THE TECHNICALITIES IN DETAIL

3.6 Satellite Imaginary Technique

In this stage two satellite imageries 2002 and 2010 were used to classify and make a comparison of the study area images and pictures were collected and were modified in the method approach. The area of study was classified into four classifications; build up area, street area, vegetation area and another classification include unexploited and cemetery areas. This was done by overlapping satellite images of two periods 2002 and 2010. The outcome of this approach clearly shows the rate of urban growth and change in land use. A detailed explanation of the techniques applied is explained in the following sections.

3.6.1 Stage 1: Primary work

The primary work was divided into three main steps. These steps are:

1-   Gathering existing land cover data for the study area: Studies that use remote sensing techniques in Libya are very limited. The main study of land cover data in Libya was done in 2000 and this study shows that 10 generalised land cover classes exist. These land cover classes as categorised by Food and Agriculture Organisation (FAO) Libya Land Cover Change Analysis are shown in the figure below.

Source:
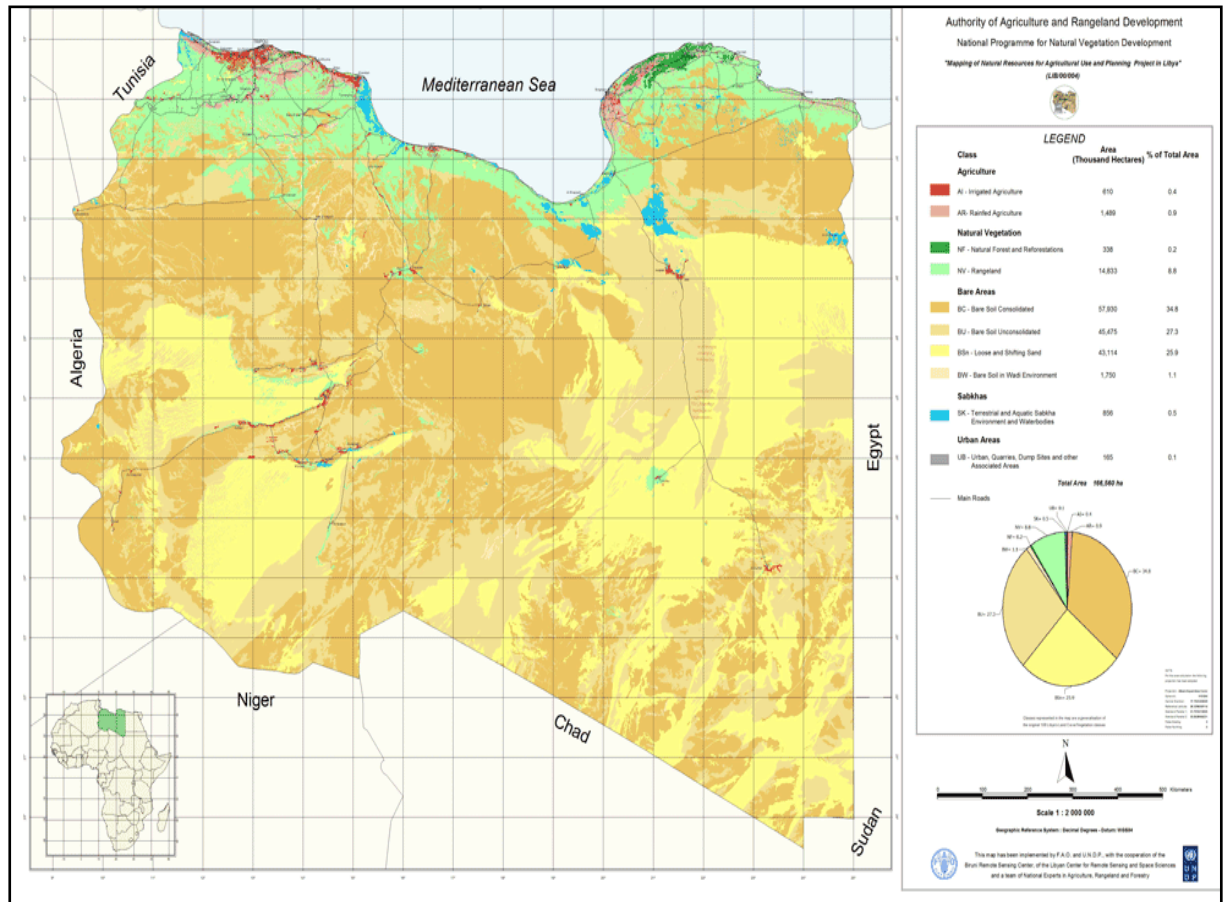
http://www.fao.org/geonetwork/srv/en/metadata.show?id=37147andcurrTab=simple

2- **Satellite image data:** A number of satellite images were taken into consideration in this study: the Landsat images Thematic Mapper (TM) data acquired in March 2002 and 2010, with 2.50 spatial resolutions. A series of operations were performed for the classification of land cover features using the Erdas Imagine 9.1 software package. The researcher believes that images and the analytical tools used achieve the required purposes of the study. In addition. The aim of using the satellite images, however, is to help to understand and analyse the sustainable change processes that have occurred from period to period, and further support and enhance the possibility of success of the study.

3- **Image processing:** Many algorisms are available for classifying land cover/use data. For this task the following algorism was adopted:

1. Image projection,

2. Geometric correction,

3. Subset of the study area.

3.6.3 Stage 2: Derivation of the classified land cover images

There are two main methods used to this end: supervised and unsupervised classification techniques. These two approaches are more suitable than visual interpretation because the study will include urban, commercial, residential and industrial classifications, plus the vegetation classification. This means that the reflex images of the study area are heterogeneous, which would make visual interpretation inaccurate, as a result of the existence of multiple uses of green areas. The unsupervised classification technique does not require the user to indicate any information about the features included in the images; that classification will be attending in this study in pre-field work of land sat data will be done for land use/vegetation cover. Further to this, the spectral signatures of the supervised classification technique are developed from particular locations on the image. The familiar area of study that considers the main condition to supervised classification first took place during fieldwork. In addition to supervised classification, maximum likelihood classification was employed to enhance the classified land cover data.

Supervised classification requires previous knowledge from the image analyst of the number of land-cover classes that are found in the area under investigation as well as information gained from maps or from actual fieldwork where different Land-cover Classes are identified and their geographical positions are noted (Gibson and power,

2000; Richards and Jia, 2006). In supervised classification, it is important to divide the image into a sample of training fields for each class. These training areas are used to provide the classification programme with typical examples of each type of class of land-cover to be used in the classification. There are two-fold of disadvantages of supervised classification. First, the "set-up" time of supervised classification is much longer than unsupervised classification because the training areas have to be identified outlined and measured before supervised classification can proceed. Second, training areas or fields in supervised classification are selected based on their cover types and not essentially their spectral differences. Consequently, weakly chosen training fields will yield a poor classification (Verbyla, 1995; Gibson and Power, 2000).

3.6.4 Stage 3: change detection techniques:

Change detection is the measure of the distinct data framework and thematic change information that can be able to guide to more concrete insights into underlying process involving land cover and land use changes than the information gained from continuous and permanent change. Digital change detection is the process that assists in identifying the changes associated with land use and land cover properties with reference to geo-registered multi-temporal remote sensing data. It helps in determining change between two (or more) dates or periods that is uncharacterised of normal variation. Change detection is useful and helpful in many requests such as land use changes, urban growth and urban population, habitat fragmentation, rate of deforestation, coastal change, urban sprawl, in determining the direction of city growth and other cumulative changes through spatial and temporal analysis techniques such as Remote Sensing along with digital image processing techniques.

3.6.5 Stage 4: Change matrix technique

The matrix axes represented land-use categories between periods; the matrix cells symbolized the number of pixels that changed from one class to another (López et al. 2001). Transition matrix is most chosen to measure and assess the urban growth or to explain the transition among land-cover classis over a geographical area. Therefore create a change matrix process that produced the notable change from one class into another, thus it is clear that the increase in urban class at the expense of the others with varying degrees. These data substantiate that long-term land-use change in the two case study areas is from one type to another is closely associated with *changes* in *rates* of *population growth* and urbanization. The process of growth and urban change was quantified using transition matrices.

APPENDIX C : INFORMED CONSENT OF RESEARCH PARTICIPANTS

CONSENT FORM FOR PARTICIPANTS IN REASERCH STUDY

Thank you for thinking about taking part in this research. Please complete this form after you have read the Information Sheet.

Title of Study: "Towards Holistic Islamic Urbanism: planning for Tripoli in the new Libya".

University of Leicester Research Ethics Committee Ref:

I have read the information sheet, and I understand what it means.	Yes	No
I understand that I do not have to take part in this research if I don't Want to, and I can leave at any time.	Yes	No
I agree to the interview being recorded (sound only).	Yes	No
I understand that my real name will not be used with my words in any report and publications, and that my details will be kept private.	Yes	No

Your name (please print): --

Signed: ---

Date: -------------------------------

Please contact me at the University of Leicester if you have any more questions or no longer want to be involved in this research.

Ali Abubrig

Tel: 01162525148

Email: aa451@leicester.ac.uk

APPENDIX D : ENJELA CHANGE MATRIX

11493	2002	2010	Colour	1	Areas		%
0	1	1	33686271	1	0		
0	1	2	1.18E+08	1	0		
0	1	3	1.68E+08	1	0		
0	1	4	2.02E+08	1	0		
0	1	5	2.86E+08	1	0		
0	1	6	3.37E+08	1	0		
0	1	7	3.71E+08	1	0		
0	1	8	4.72E+08	1	0		
0	1	9	5.05E+08	1	0		
0	2	1	5.9E+08	1	0		
0	2	2	6.4E+08	1	0		
0	2	3	6.74E+08	1	0		
0	2	4	7.58E+08	1	0		
0	2	5	8.08E+08	1	0		
0	2	6	8.93E+08	1	0		
0	2	7	9.43E+08	1	0		
0	2	8	1.03E+09	1	0		
0	2	9	1.06E+09	1	0		
114027	3	1	1.11E+09	1	45.6108		
959759	3	2	1.15E+09	1	383.904		
0	3	3	1.23E+09	1	0		
144243	3	4	1.28E+09	1	57.6972		
4256	3	5	1.36E+09	1	1.7024		
110610	3	6	1.41E+09	1	44.244		
0	3	7	1.5E+09	1	0		
0	3	8	1.53E+09	1	0		
488174	3	9	-1.7E+07	1	195.27	Grass to Urban	8.496489
117457	4	1	1.67E+09	1	46.9828		
590045	4	2	255	1	236.018		10.2695
0	4	3	1.8E+09	1	0		
158198	4	4	1.84E+09	1	63.2792		
5339	4	5	1.89E+09	1	2.1356		
44156	4	6	1.92E+09	1	17.6624	Agriculture to Urban	0.768517
0	4	7	2E+09	1	0		
0	4	8	2.05E+09	1	0		
463411	4	9	16711935	1	185.364		
13086	5	1	-2.1E+09	1	5.2344		
52046	5	2	-2E+09	1	20.8184		
0	5	3	-2E+09	1	0		
8919	5	4	-1.9E+09	1	3.5676		
1346	5	5	-1.9E+09	1	0.5384	Forest to	0.023427

						Urban	
4333	5	6	-1.8E+09	1	1.7332		
0	5	7	-1.7E+09	1	0		
0	5	8	-1.7E+09	1	0		
51575	5	9	65535	1	20.63		
35465	6	1	-1.5E+09	1	14.186		
578143	6	2	-1.5E+09	1	231.257		
0	6	3	-1.5E+09	1	0		
72254	6	4	-1.4E+09	1	28.9016		
1851	6	5	-1.3E+09	1	0.7404		
127317	6	6	-1.2E+09	1	50.9268		
0	6	7	-1.2E+09	1	0		
0	6	8	-1.2E+09	1	0	Bare Soil to	
329564	6	9	-65281	1	131.826	Urban	5.735946
60373	7	1	-1E+09	1	24.1492		
284201	7	2	-9.6E+08	1	113.68		
0	7	3	-9.1E+08	1	0		
40313	7	4	-8.6E+08	1	16.1252		
1628	7	5	-7.7E+08	1	0.6512		
33413	7	6	-7.4E+08	1	13.3652		
0	7	7	-6.6E+08	1	0		
0	7	8	-6.1E+08	1	0	Urban to	
494866	7	9	65535	1	197.946	Urban	
41798	8	1	-4.9E+08	1	16.7192		
151583	8	2	-4.4E+08	1	60.6332		
0	8	3	-3.9E+08	1	0		
18460	8	4	-3E+08	1	7.384		
1088	8	5	-2.7E+08	1	0.4352		
14702	8	6	-1.9E+08	1	5.8808		
0	8	7	-1.3E+08	1	0		
0	8	8	-1E+08	1	0		
116117	8	9	65535	1	46.4468	Mix to Urban	2.02097
				Total	2298.243		

APPENDIX E : KHALT EL-FERJAN CHANGE MATRIX

5100	2002	2010	Colour	1	Areas		%
1848	1	1	33686271	1	1.155		
1564	1	2	1.18E+08	1	0.9775		
2846	1	3	1.68E+08	1	1.77875		
7545	1	4	2.02E+08	1	4.71563		
60732	1	5	2.86E+08	1	37.9575		
0	1	6	3.37E+08	1	0		
0	1	7	3.71E+08	1	0		
0	1	8	4.72E+08	1	0		
47519	1	9	-65281	1	29.6994	Bare Soil to Urban	0.961197
14817	2	1	5.9E+08	1	9.26063		
9457	2	2	6.4E+08	1	5.91063		
43909	2	3	6.74E+08	1	27.4431		
13932	2	4	7.58E+08	1	8.7075		
288058	2	5	8.08E+08	1	180.036		
0	2	6	8.93E+08	1	0		
0	2	7	9.43E+08	1	0		
0	2	8	1.03E+09	1	0		
81963	2	9	65535	1	51.2269	Mix to Urban	1.657917
0	3	1	1.11E+09	1	0		
0	3	2	1.15E+09	1	0		
0	3	3	1.23E+09	1	0		
0	3	4	1.28E+09	1	0		
0	3	5	1.36E+09	1	0		
0	3	6	1.41E+09	1	0		
0	3	7	1.5E+09	1	0		
0	3	8	1.53E+09	1	0		
0	3	9	1.58E+09	1	0		
27573	4	1	1.67E+09	1	17.2331		
19830	4	2	1.72E+09	1	12.3938		
79305	4	3	1.8E+09	1	49.5656		
8970	4	4	1.84E+09	1	5.60625		
314940	4	5	255	1	196.838	Agriculture to Grass	6.370501
0	4	6	1.92E+09	1	0		
0	4	7	2E+09	1	0		
0	4	8	2.05E+09	1	0		

119893	4	9	16711935	1	74.9331	**Agriculture to Urban**	2.425149
79384	5	1	-2.1E+09	1	49.615		
75346	5	2	-2E+09	1	47.0913		
195056	5	3	-2E+09	1	121.91		
159240	5	4	-1.9E+09	1	99.525		
2060549	5	5	-1.9E+09	1	1287.84		
0	5	6	-1.8E+09	1	0		
0	5	7	-1.7E+09	1	0		
0	5	8	-1.7E+09	1	0		
751263	5	9	-1.7E+07	1	469.539	**Grass to Urban**	15.19625
3035	6	1	-1.5E+09	1	1.89688		
3898	6	2	-1.5E+09	1	2.43625		
3221	6	3	-1.5E+09	1	2.01313		
1567	6	4	-1.4E+09	1	0.979375		
39746	6	5	-1.3E+09	1	24.8413		
0	6	6	-1.2E+09	1	0		
0	6	7	-1.2E+09	1	0		
0	6	8	-1.2E+09	1	0		
26875	6	9	65535	1	16.7969	**Forest to Urban**	0.543618
0	7	1	-1E+09	1	0		
0	7	2	-9.6E+08	1	0		
0	7	3	-9.1E+08	1	0		
0	7	4	-8.6E+08	1	0		
0	7	5	-7.7E+08	1	0		
0	7	6	-7.4E+08	1	0		
0	7	7	-6.6E+08	1	0		
0	7	8	-6.1E+08	1	0		
0	7	9	-5.7E+08	1	0		
13517	8	1	-4.9E+08	1	8.44813		
7755	8	2	-4.4E+08	1	4.84687		
16428	8	3	-3.9E+08	1	10.2675		
7408	8	4	-3E+08	1	4.63		
163912	8	5	-2.7E+08	1	102.445		
0	8	6	-1.9E+08	1	0		
0	8	7	-1.3E+08	1	0		
0	8	8	-1E+08	1	0		
185741	8	9	65535	1	116.088	**Urban to Urban**	
				Total	3089.836		