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URBAN EXPANSION, LAND MANAGEMENT AND DEVELOPMENT IN TRIPOLI, LIBYA

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Table of Contents

List of Figures

List of Tables

Dedication

I want to dedicate this to my father and mother, for their never-ending love, and prayers for my success and happiness.

To my wife, Madiha, and my beloved children, Aya, Rodinha and Mohamed, for their love, patience, sacrifices, and continuous support. Most importantly, I wish to dedicate this to my late brother, Abd Ahakeim, without whose encouragement and support I would not be here today.

It is to them I dedicate this modest piece of work.

Acknowledgments

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List of Abbreviations

APEO   Agricultural Policy Enforcement Officers

EGA   Environmental General Authority

EEA   European Environment Agency

FAO   Food and Agricultural Organisation

GP   Generation Planning

GDP   Gross Domestic Product

GAI   General Authority for Information

GNA   Government of National Accord

GLCN   Global Land Cover Network

GPC   General Planning Council

LAAF   Libyan Arab Armed Forces

LCRSSS   Libyan Centre for Remote Sensing and Space Science

WFP   World Food Programme

UN   United Nations

UN-H   United Nations Habitat

UPA   Urban Planning Agency

MPD   Ministry of Planning and Development

NCB   National Consultant Bureau

NRHD   National Report on Human Development

NSP   National Spatial Policy

WHO   World Health Organization

NPC   National Planning Council

NPPP   National Physical Perspective Plan

GPCP   General People's Committee for Planning

PIL   Political Isolation Law

Abstract

Libya is considered to have one of the highest rates of urbanisation in the world; especially, when compared to other regions in North Africa and the Mediterranean. Tripoli witnessed rapid population growth and increasing economic development, this led to a concentration of the population in and around the city. Tripoli has witnessed an extreme expansion of its urban area which now contains a population more than 2 million. At the same time, Tripoli is a region which encompasses an area of high agricultural fertility. The objective of this study was to investigate how agricultural land in the Tripoli region could be protected from land use change brought about by rapid urban expansion. This research adopted a mixed methods approach to collect primary and secondary data. Information was gathered from stakeholders, farmers and official sources and triangulated to understand the processes behind rapid urban expansion and the loss of agricultural land. Research included field observations in Tripoli, interviews with government official, and questionnaires for farmers. Research revealed that government policies have played a significant role in creating and exacerbating the problem of urban expansion by encouraging migration to Tripoli. Furthermore, present legislation has been shown to be an ineffective deterrent. Laws are continually broken by various individuals; therefore, current legislation fails to protect agricultural land as it is not enforced properly. This research has, however, identified the existence of effective schemes, such as the National Physical Perspective Plan – Libya(NPPP) and National Spatial Policy (NSP). These schemes would promote balanced sustainable development across Libya, providing better facilities and opportunities in other regions and therefore combat mass migration to larger cities. They have not, however, been implemented due to the difficulty in persuading relevant authorities to do so. This study demonstrates the need for an efficient land use planning in Libya. It provides information to support research and planning efforts related to land development and conservation, ensuring the protection of agricultural land in the face of rapid urban expansion. This is of particular importance to Libya as the percentage of fertile agricultural land is small, around 2% of the country's total area. The study emphasised the importance of protecting this small but significant land space for future use. The findings of this study will therefore provide a significant guide for future urban planning and will be of use to urban planners and decision makers determining policies and plans to control urban expansion. This study is essential to understanding the changes witnessed in Libya's agricultural landscape and the need to protect it to ensure its future. Its findings will be used to provide information on effective

land management, environmental conservation, and sustainable development, which will be of interest to policy planners and government officials in Libya. Preliminary findings demonstrate that government policies have played a significant role in creating/exacerbating the problem of rural-urban migration to Tripoli. Research has highlighted that national land use policies require revision to achieve future sustainability. Revising policy would enable the country to re-balance the construction of infrastructure and services, accounting for other areas. While there are schemes to promote this (to implement balanced sustainable development 2006-2030), it has been difficult to persuade authorities to implement them. Finally, research has shown that despite strict legislation existing to protect agricultural land, it is not enforced and therefore, laws are often broken by individuals. This research suggests that confronting these issues would reverse a trend of focusing on short term economic benefits (housing) at long term cost (loss of agricultural land).

Chapter 1 : Introduction

1.1 Introduction and Motivation

During the period of industrial revolution in the 19th and 20th centuries, urbanisation was one of the most profound socioeconomic changes witnessed. This in turn led to migration from the rural areas to the cities, which are considered places of contact and opportunities (Pereira et al., 2007). Consequently, the demographic structure of the world was transformed. This transformation was a turning point in the history of the world as it changed the existing agricultural society into an urban society where our ways of living become completely different (Roy, 2007). In recent decades, the urbanisation processes were driven by markets, business and industrial forces, growing population and socio-economic developments, and the increase of living standard (Doos, 2002; Loan, 2008) and sometimes by an absence of well-studied government policies especially in developing countries. Previous national government policies, particularly in developing countries, have encouraged rural workers to migrate toward the cities where better living opportunities may be on offer (Saad, 2011). Eventually, as cities become more populated, governments face extra pressure to provide new work opportunities and new building construction for living, and they often address this apparently without considering alternatives or more efficient solutions (personal communication with the Libyan government agriculture expert, 2014). In most situations, policy and decision makers do not pay attention to solving the root of the problem and often only serve to exacerbate the situation. As Tofowomo, (2008) states the issue of urbanisation is due to policies that are based on a lack of information and tools which are needed to assess the real situation. Tofowomo considers such policies and decisions drives of the extension of urban areas. Hence, expansions of development such as industry, transportation, schools, housing, retail sales and other development are driving land out of farming (Francis et al., 2012).

Francis et al. point out that the process of farmland conversion to non-agricultural areas is considered a challenge for the sustainable development of food production and ecosystem services for all countries in the world. According to the FAO (2012) between 2015 and 2050, there will be an increase in demand for food (around 60%), accompanied by a decrease in the area of arable land per person which is expected to reach about1.5% annually (FAO, 2009).

Satellite images show that Tripoli (the capital city of Libya) has undergone various periods of land change which have had a tremendous influence on green spaces. This study explores the reasons behind urban expansion on agricultural land, where the rapid increase in urban population has been accompanied by a growing demand for residential areas in the city. In the same context, the head of Municipality of Tripoli commented this process is likely to continue in the future especially after the 2011 Libyan Revolution (interview, 2012). Unforeseen and rapid changes in land use are growing problems for the new Libyan government. However, the trajectory of urban development policies initiated by the government during the Ghaddafi regime (theoretically), and ignoring urban expansion are not the only factors affecting farmland (technical consultant in urban planning in the municipality of Tripoli, 2014). Human activities have also contributed to this problem. The fragmentation of agricultural land by such activities has caused an increase in land prices, thus encouraging land owners (farmers) to abandon agricultural activities and to sell land for the purpose of construction (personal interview with the former Agricultural Minister of Libya, 2010).

1.2 Definition of Urbanisation

It is difficult to give a concise definition of urbanisation. There are many diverse, and often contradictory, definitions of urbanisation due to varied emphases of researchers. Gyabaah (2004) has defines urbanisation as the movement from a rural to an urban society leading to increase population in urban areas over time. Urbanisation is the result of economic and social developments, especially in major cities. In turn these changes have a tremendous influence on land use (Abubrig, 2012). However, Tisdale (1942) defined urbanisation as a process of population concentration; where the cities change from a state of less concentrated to a state of more concentrated. Chen (2007) states that urbanisation is a growth in the proportion of a population living in urban areas, and considers it one of the major social changes sweeping the globe. Furthermore, Elbendak (2008, p. 60) defines urbanisation:

"…As a process of redistribution, prompting shifts of population from the countryside to towns and cities".

Similarly, Antrop (2004, p. 13-14) defines urbanisation as the:

"Concentration of the population in the city centre by migration of the people from the fringe".

2

In the same context, Mohamed and Al-Mam (2009) have define urbanisation as a process, whereby people move from rural to urban areas as the latter are more prosperous. This process has rapidly increased over time, particularly after the industrial revolution. Urbanisation is also a process which describes the movement of population from rural to urban areas (cities), the latter are human settlements which are characterized by a higher degree of population concentration living in a contiguously built up area, and engaged in mostly non-agricultural activities (Ibrahim, 1975). While, Attwairi (2015) defines urbanisation as an increasing proportion of the total population that lives in urban areas at local, regional, and national levels including and patterns of the urban growth process.

1.3 Negative Effects of Urbanisation

Fast urban growth creates several complex problems, such as growing demand for fresh water and food supplies, pressures on the sewage system, proliferation of hazardous waste, and water contamination (Alawar, 2002). Rapid urbanisation has greatly promoted economic and social development across the world. However, it has created severe environmental damage (Zhao et al., 2006). It is well known that urbanisation has many harmful ecological effects (Whitford et al., 2001). In general, urbanisation has several negative consequences within environmental, economic and social dimensions. However, rapid increase in urban population in the last decades, especially in developing countries, has led to serious problems for humans and the natural environment inside and outside the boundary of the cities. Problems include unemployment, poverty, increased crime and diseases, congestion and pollution, shrinking and degradation of agricultural lands, food and water shortages, and changes of landscapes in particular forest (Brown et al., 2000; EGA, 2002; Hasse and Lathrop, 2003; Zhang and Song, 2003; Weber and Puissant, 2003; Antrop, 2004; Barney, 2004; Bekele, 2005; Esbah, 2007; Doytsher et al., 2010). In the same context, rapid urbanisation is leading to numerous environmental problems, contributing to climate change, such as: a lack of water, soil degradation (desertification), and the loss of green spaces. These developments have been confirmed by Rotherham (2010). It should also be noted that urbanisation is considered to pose a great threat to future agricultural production. Urbanisation has been linked to an increasing risk of soil pollution through waste disposal and acid deposition derived from urban air pollution (Chen, 2007).

Chen has also indicated that the land converted to urban use is an important cause leading to the reduction of cultivated land, which leads to irreversible alteration in the physical

and biotic character of the natural surface resulting in complete loss of soil productivity. According to the European Environment Agency (EEA) (2015), urbanisation is the dominant trend in land-use change. In combination with land abandonment and the intensification of agricultural production, a decline in the area of natural habitats has been witnessed. Therefore, land use influences the distribution and functioning of ecosystems, changes are leading to numerous environmental problems, such as degradation, fragmentation and unsustainable use of land. This is jeopardising the provision of several key ecosystem services, threatening biodiversity, and increasing climate change and natural disasters. Like Rotherham (2010), EEA has also noted that soil degradation and desertification has been exacerbated by these conditions (EEA, 2015).

EEA has also indicated that land-use changes that offer increased economic returns from land, such as agricultural intensification or urban sprawl, can imply the loss of non-market benefits such as, carbon sequestration or the cultural value of traditional landscapes.

Additionally, urbanisation has effected social relations, especially in cities (Rghei and Nelson, 1994). The majority of migrants moving from rural area to cities often worked in the agricultural sector and seek re-employment in the industrial and service sectors. Consequently, agriculture production declines and the consumption of agricultural produce increases (Kezeiri and Lawless, 1987). Moreover, in large urban areas, especially the ones associated with bad interior urban planning, there is often the problem of urban heat island effect whereby there is artificial heating of ground structures (Park, 1987). In addition, Zhao et al. (2006), and Doytsher et al. (2010) mentioned that as well as the heat island effect, urbanisation plays important roles in climate change caused by greenhouse gases and the reduction of forest and land use exploitation. Furthermore, the use of concrete and asphalt in cities is leading to increased temperatures, which creates a temperature difference between the urban area and the surrounding countryside (Figure 1-1). Besides, many researchers, such as McCalley and Sparks (2009), have warned that the temperature increases and shifting precipitation patterns, due to climate change, may lead to further nitrogen losses in arid ecosystems, and make arid soils even more infertile and unable to support most plant life.

Frenkel (2004) and Bekele (2005) have both stated that urban development significantly damages natural resources. These damages can be summarized as follow:

- Decline of open spaces (green spaces).

- Loss of farmland.
- Extinction of wildlife and plants.
- Fragmentation of ecosystems.
- Surface run-off, which causes flood.
- Change to the aesthetics of the natural landscape.
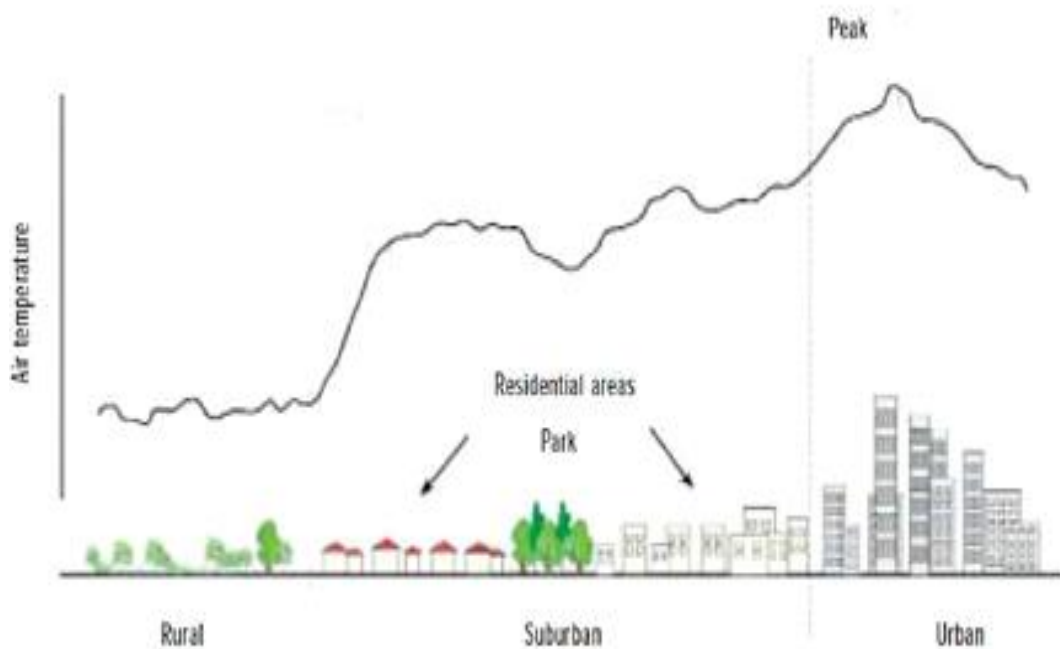
Figure 1-1: Temperature difference between the urban and rural area. Source: as citied in Shahmohamadi et al. (2009).

Finally, the increasing pressure of population growth on natural resources such as vegetation (forests and farms), water and soil (which can be used for economic gain), lead to a negative effect on environmental resources like change in production patterns through escalating land degradation and desertification problems (Shaban, 2015). In other words, human activity causes the deepening of the effects of drought on environmental resources (Saad et al., 2011). Similarly, Zhang, (2004) has highlighted that due to human activity much of Earth's natural environment (more than one third) has been urbanised. This development has led to an expansion beyond the original boundaries. According to report of the Libyan General Planning Council (2003) the needs of water uses has increased as a result of population growth. This, in turn, leads to the gradual decrease of groundwater level, and creates a rise in salinity of sea water along the west coast. This would gradually reduce the agricultural areas and eventually affect the rates of agricultural production.

Similarly, Saad et al., (2011) have pointed out that it is expected to decrease water availability and water quality, increase droughts and salinity leading to decrease in soil fertility and loss of vegetation which will threaten food security at the present and the future.

1.4 Sustainable development

Sustainable development programs must take into account environmental, social and economic (Figure1-2) issues and meet the needs of the present generation without compromising the future (National Planning Policy Framework, 2012; Williams, 2000). Therefore, as Abubrig(2012) notes, when reflecting on sustainable development, the existing life-styles, consumption behaviours and environmental awareness of population must be considered. To achieve this balance and to reach a successful developing plan, governments should regulate human activities to ensure that all three dimensions are protected (Viviers and Slabbert, 2012). Moreover, sustainable urban development should not only focus on the development with regard to the growth in the global markets and technology, but should assimilate ethical aspects which will also provide room for future generations to incorporate changes that meet their future requirements (Zavadskas et al., 2005).

In the UK, for example, the latest National Planning Policy Framework (2012), focused heavily on the significance of considering these three dimensions in all areas. This also corresponds with Layzer (2008), who states that sustainable urban development alternatives have to be assessed taking into account economic, environment, and social. Therefore, the challenges of urbanisation are many and solutions must address the different pressures that might affect the path to attaining sustainability development like land use, construction and building (materials, planning and design applied to urban development and sustainable), management of the waste of the city, quality of the air, urban transportation, sustainable management of water, and sustainable energy (Hernandez, 2009).
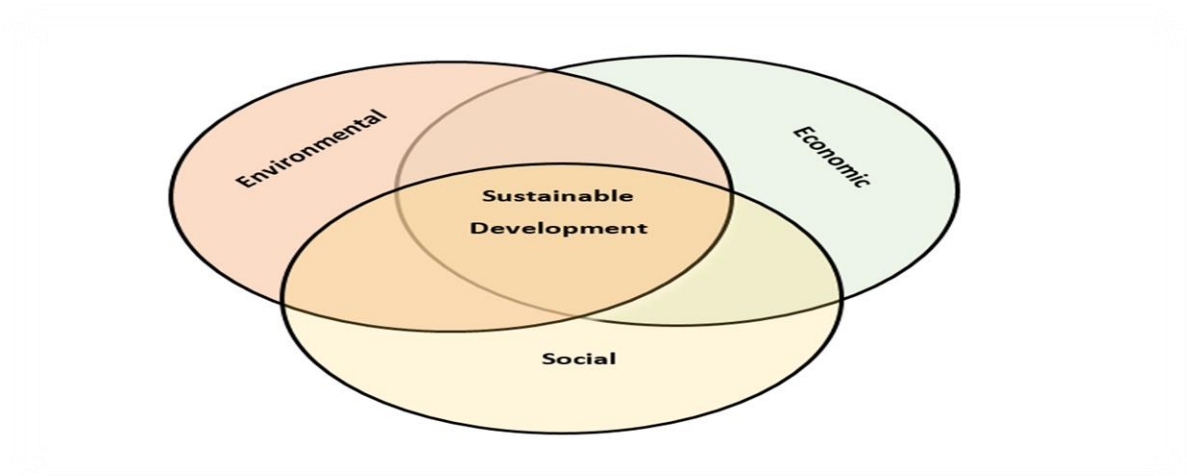
Figure1-2: Sustainable development concept as an interaction between social, economic and environmental factors. SourceGiddings et al., 2002.

Consequently, the exploitation ofnatural resources needs be regulated to maintain sustainable development. Well studied regulation will probably ensure the long-term quality of the resources for several generations and may secure the conservation of the ecosystem biodiversity as well as agricultural lands from urban expansion. Overall, the creation or continuation of sustainable development typically requires accurate information on the patterns of urban growth. Collecting this accurate information can aid in controlling the urbanisation process (Jiang and Yao 2010).

1.5 Study area

Tripoli is the capital of Libya and it is the most important city of the province and country, as well as the main political, economic, commercial, financial and business centre of Libya (Amer, 2007; Salhin, 2010 Al-Sharif et al., 2013; Al-Sharif and Pradhan, 2013). Tripoli is located at N 32°53′ and E 13°10′, along the Mediterranean coast in the north western part of the country. Tripoli covers about 715 km^2 (calculated by the researcher) with the population more than 2 million (Sibley and Fadli, 2008). Tripoli is divided into seven districts; Central Tripoli, SuqAljumma, Hey Alandalus, Abuslim, Tajoura, Ainzara, and Janzour (Figure 1-3). It is selected as a study area as it has the highest population growth rate in the country and it is witnessing a continuous shrinking of agriculture and green lands resulting from uncontrolled urban expansion.
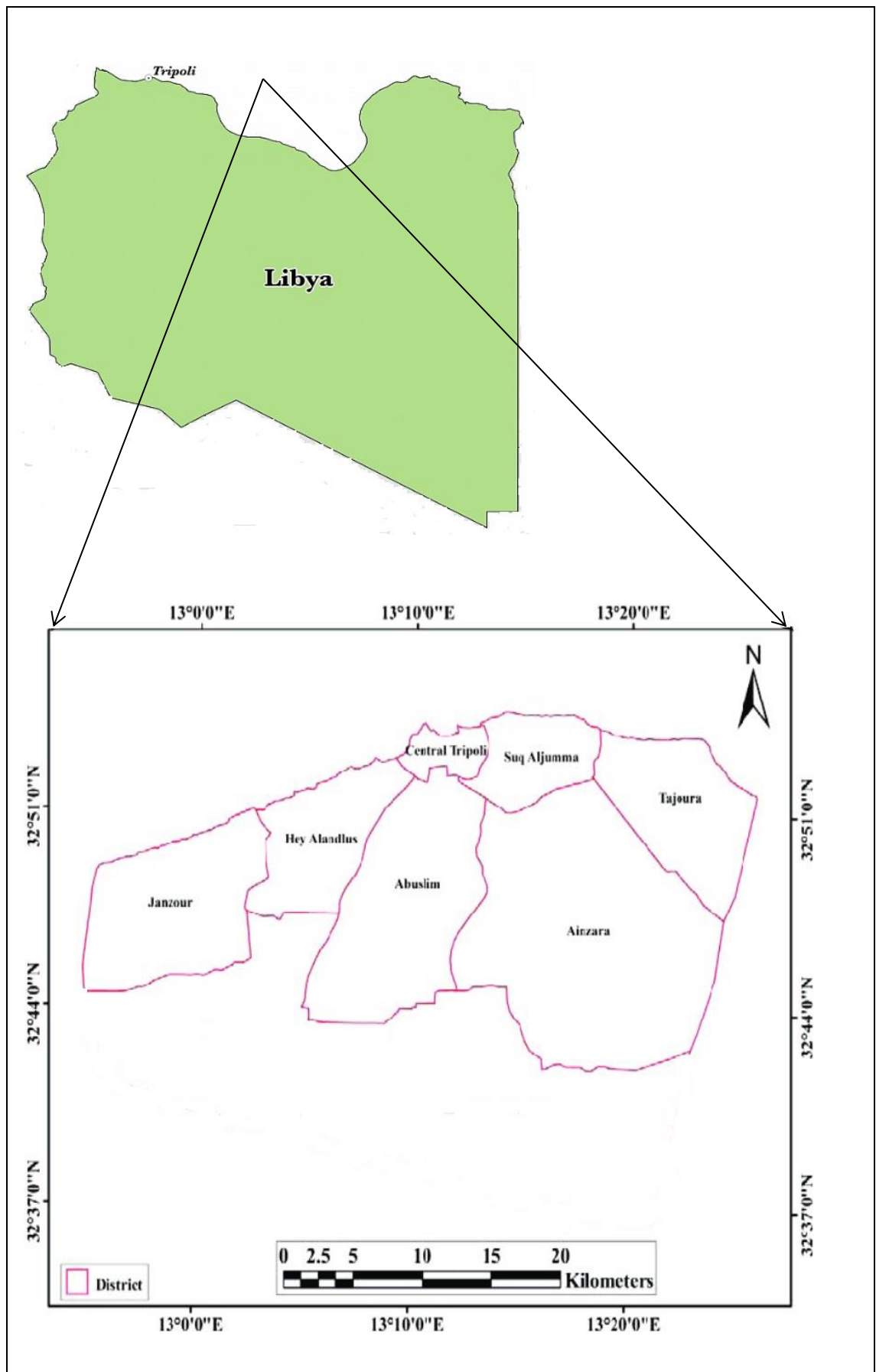
Figure 1-3: Study area location map. Source: Al-Sharif et al. (2013): Study area map has been modified by the researcher.

1.6 Research Questions

- What are key features of rural urban transformation in an emerging economy?
- Have government policies and strategies been implemented to ensure a balance between urban development and agricultural lands?
- What are the likely implications of the recent conflicts?

1.7 Aims

The aim of this thesis is to investigate how agricultural land in the Tripoli region can be protected from land use changes brought about by rapid urbanisation, exploring the applicability of pre-existing plans to the current situation and offering solutions to prevent the encroachment of rapid urban expansion upon the important agricultural and farming land.

1.8 Objectives

- To assess the driving forces behind rural-urban migration in an emerging economy.
- To evaluate changes in land use and related planning policies as they affect the balance between urban areas and agricultural lands.
- To assess the development effects in Tripoli, Libya.
- To critically assess the pressures and impact of urbanisation in the case study of Tripoli.
- To evaluate potential balances between conservation and development issues for the case study region.
- To critically evaluate the potential impacts of recent political change on the urbanisation processes in Tripoli in order to establish the context.
- Select a suitable location for a case study of a region which is undergoing rapid urban- rural transformation.

1.9 Significance of the Study

Over the course of the last few decades, developing countries such as Libya have experienced a rapid economic growth associated with the dramatic increase of urban population. This growth has imposed continuous pressure on governments to meet the demands of increased housing in and around the cities. In Libya, Tripoli has been the city most affected by urban growth. As a result, the city has expanded at the expense of green

spaces inside the city and fertile agricultural land around it, which is considered one of the best areas in terms of fertility in Libya.

The fundamental significance of this proposed study is to pinpoint the real reasons behind the urban expansion of the Tripoli area. In addition, the outcome of this study could help stakeholders to address this problem and develop effective polices needed to prevent invasion upon the farmland from the phenomenon of urbanisation in the future. It could help to determine a sustainable management strategy for the farmland and to develop policies and plans in order to control urban sprawl.

Farmland and rural areas need to be protected and developed to enable the agricultural sector to effectively contribute to the economy of any country. Moreover, by protecting farmland and natural habitats and improving the agriculture sector, social and sustainable development can be secured and hopefully this will retain the balance for the environment against some recent environmental problems such as global warming. Furthermore, although this study will provide recommendations and suggestions to help protect agricultural lands around Tripoli, the findings are likely to be of value to other cities witnessing problems associated with rapid urbanisation.

1.10 Research Problem

Libya has a population of approximately 6 million people and more than 2 million reside in the capital city, Tripoli (Sibley and Fadli, 2008). Therefore, over 30% Libya's population resides there. The massive influx of the country's citizens towards the coastal regions, particularly Tripoli, has been encouraged by policies adopted by government authorities. Recently, this pattern of migration has been aggravated by human activities, in particular, the overexploitation of natural resources (Saad et al., 2011). There have been substantial tracts of land that have been transformed to be used for housing, industry and expansion of the city's infrastructure.

There are concerns over the uncontrolled urban expansion that is becoming associated with development in the region, and the significant loss of natural habitat and green spaces as huge fields of fertile lands have been used for housing and other constructions. The Libyan government has recognized that continued unregulated urban development, can no longer be tolerated. However, there is a lack of collective efforts between the leading officials associated with urban development, for example, Ministry of Agriculture, Ministry of Urban Planning, and the relevant authorities. Those officials should work

together to set and follow-up the regulations and the strategies that are needed to achieve innovative solutions for the existing issues such as urban expansion at the expense of agricultural land. This is one of the main environmental issues in Libya affecting environment and its resources.

A primary goal of this study is to attempt to find a balance between the conservation of natural habitats, green spaces, and limited agricultural land, particularly in and around Tripoli; and continuation of economic development.

1.11 The conceptual framework

The framework (Figure 1.4) brings together issues and processes considered important in order to help in delivering the aims and objectives of the study. It seeks to assist in developing a clear understanding of the primary driving force of urban expansion in Tripoli, and its negative impact on agricultural land, which is undergoing rapid urban (changes in land use). Unrestricted urban sprawl leads to the conversion rural land into urban areas (Bekele, 2005). Previous studies have confirmed that this issue will continue in Libya unless addressed (Saad, 2011). As discussed above (section 1.10), the underpinning problem which has resulted in the loss of agricultural land is rapid urban expansion. Previous research has indicated that there are a number of spatial policies which could help address the problem (McCatty, 2004; Salhin, 2010). In chapter three, studies that have presented potential solutions to combat this trend are discussed. Subsequent chapters examine their applicability to the context of Libya, and Tripoli in particular. In order understand and highlight the factors behind rapid urban expansion, this study explores the role and views of key stakeholders in agricultural land, including governmental ministers, land owners and famers. This data is used to explore the reasons why policy, although adequate, have not been enforced in order to protect agricultural land. In so doing, this study draws on secondary literature and primary data to investigate potential solutions to the problems witnessed in Tripoli whereby the expansion of the city has led to the loss of agricultural land.

City expanded ⟶ Agricultural land demand
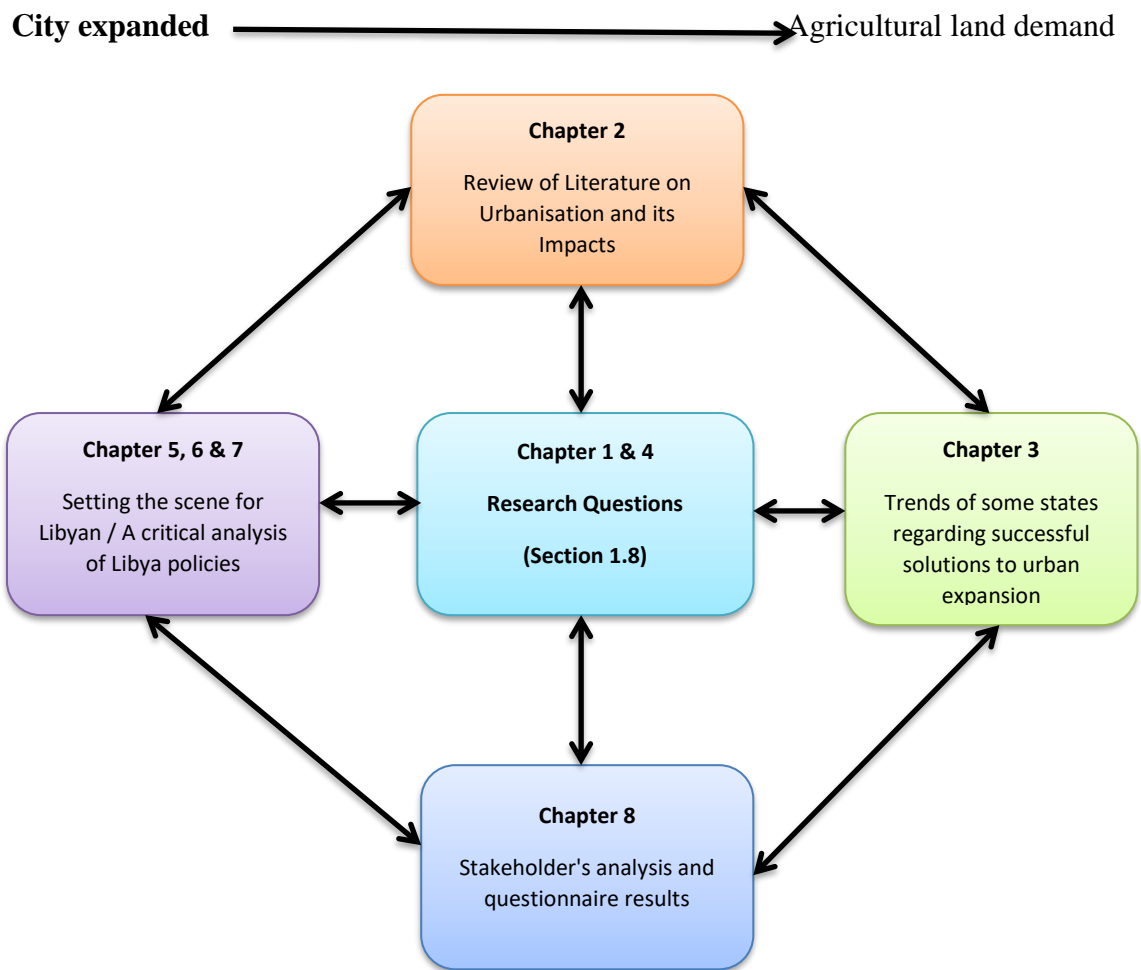
Figure 1-4 : The structure of the thesis

1.12 Thesis Organisation

The thesis comprises of ten chapters. The chapters are arranged to be consistent with each other to ensure that the objectives are achieved and research questions answered effectively.

Each chapter is outlined below:

Chapter One, the concept of urbanisation is introduced and its negatives affects are outlined. An overview of sustainable development, study areas and the research problem is provided. The aims, objectives and research questions are also covered here.

Chapter Two, reviews the literature on the subject of urbanisation across the world and its driving forces as well as the related research issues. For example: controversial issues related to the attraction of cities and demographic shifts towards them, effects of

globalisation upon land use, land consumption and the relationship between economic development and urban expansion.

Chapter Three, examines the emergent process of land use change and urban expansion as well as trends of urbanisation in transforming economies, particularly in industry. Here, the successful solutions adopted in some countries to resolve the problems relating to urban expansion are explored.

Chapter Four, outlines the methodology employed in this study, discussing the mixed methods approach adopted to collect necessary data. The methodological issues in this chapter are organised to cover the research approach, the research strategy and process, ethics, the methods used of data collection, analytical techniques and research limitation.

Chapter Five, discusses the broader context of the study in relation to Libya's history, location, and natural resources. It will illustrate the current laws and regulation in relation to environment and land protection, especially with regard to agricultural land which is concentrated in less than 2% of the country's total area. The chapter concludes with an overview of the Libyan economy.

Chapter Six, (Results part 1: a critical analysis of Libya policies) examines major polices and planning in Libya. This chapter contributes to a definition of development plans for the Libyan state, and spatial planning patterns. It discusses three plans (3 Generations) and some of the solutions that they offer. Furthermore, it presents preliminary perspectives from some companies that have given radical solutions to the problem of urban expansion. It also discusses the current legislation in relation to the protection of natural resources and the environment in Libya.

Chapter Seven, (Results part 2: Libyan case study of Tripoli)this chapter is including an assessment of the existing urban management policies and its framework. It includes an overview of the process of land use change, critically assessing existing housing policy. This chapter will cover the effect of internal and external migrants and population growth on the expansion of the city. In addition, demographic, economic and social impacts on the city are examined as well as critical analysis of the positive and negative consequences of internal migration on the city and the community of the city and related issues.

Chapter Eight, (Results part 3: stakeholder's analysis and questionnaire results) this chapter focuses on an analysis of questionnaire and interview materials and discusses the validity and reliability of data obtained.

Chapter Nine, discussion presents the research findings drawn from them. It highlights the contribution this research makes, as well as its general transferability, strengths and limitations, and finally offers suggestions for future study.

Chapter Ten, conclusions and recommendations.

Chapter 2 : Review of Literature on Urbanisation and its Impacts

2.1 Introduction

The process of urbanisation frequently leads to change in land use, causing negative effects on the environment, particularly in terms of a decline in the area of natural and semi-natural habitats. These natural and semi-natural habitats have been replaced with commercial, industrial and construction sites. This change is referred to as 'land take' (EEA, 2015). Population growth plays a major role in this, contributing considerably to the expansion of urbanisation. This process is driven by the population concentration in a region, and the subsequent growth of large cities. In other words, increased urban population leads to an increase in size well beyond the original limits of the city. In fact, the population of the world grew more rapidly than in previous years due to the notable progress achieved into new technology in reducing mortality rates, resulting in a population increase. As a result, many problems occur upon lands, in particular, fertile agricultural land, which have recently attracted the interest of researchers world-wide. Agricultural land must be protected, because it is the only source for the production of food for the current and future generations by sustainable development.

2.2 Trend of World Population and Urban Population

In 2007, for the first time in history, over half the world's population Figure 2-1 consisting of 3.3 billion people were residing in urban areas (Associated Press, 2008; FIG Commission 3, 2010). Figure 2-1 shows the world population in millions, and the percentage of urban population between 1000 and 1900. While world population increased from about 300 million in 1000 to 1.6 billion in 1900, the percentage of urban population increased from 2 to about 9 respectively (Nunn and Qian 2011). It is worth mentioning that if the percentage of urban population stayed the same (2%) during this period this means that the urban population in the same period increased five times, as the world population has similar rate of increase. However, as the percentage of urban population increased more than four times during same period, the actual urban population increased at a higher rate than the world population.
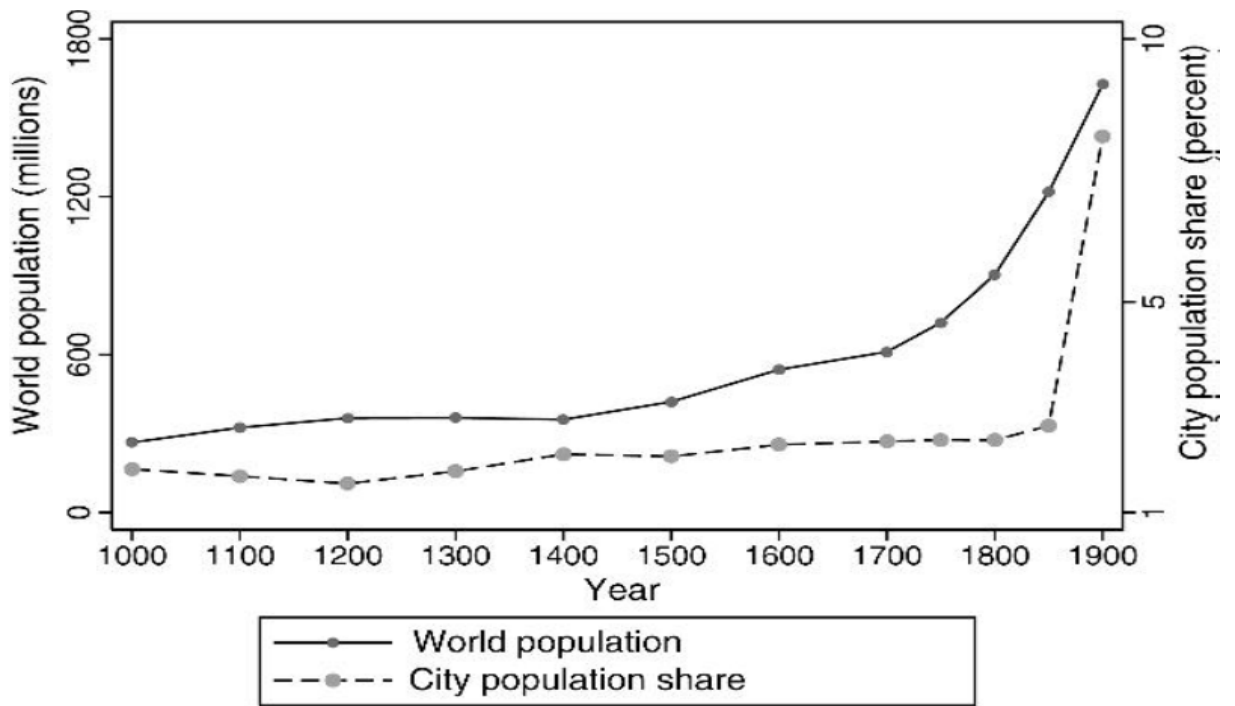
Figure 2-1: Change of world population and urbanisation between1000 and 1900. Source: Nunn and Qian, 2011.

Figure 2-2 indicates the trend of the world's rural and urban population growth. As can be seen, while before 2007, the rural population was more than the urban population, the latter is projected to grow rapidly and is expected to reach 5 billion by 2030 whereas the rural population would stay at about 3.2 billion (Barney, 2004; Bekele, 2005; Cohen, 2006).

According to a United Nation report, by 2050 it is expected that the urban population in the world will increase by about 3.1 billion while rural population is expected to decrease by 0.60 billion according to census of 2007 (United-Nations, 2012). It is worth mentioning that while the urban population has grown rapidly, the majority of this growth has occurred in the less developed countries (Brockerhoff, 1999; Cohen, 2006).
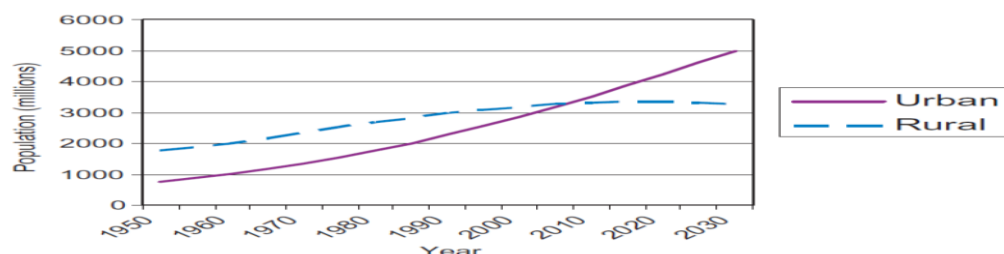
Figure 2-2: World's rural and urban population (1950–2030). Source: (United Nations, 2002. cited in Barney, 2004).

The continuation of urban growth led to a huge growth of urban dwellers as it increased four-fold in the last 50 years from 733 million to 2.857 billion (Cohen, 2006). Moreover, in 1900, for every urban dweller there were 6.7 rural dwellers and this figure 2-1 decreased dramatically to less than one and is expected to reach 0.66 by 2025 (Satterthwaite et al., 2010).

At the end of the 19th century, urbanisation reached over 80% in developed countries (Antrop, 2004). In the 20 the century, urbanisation accelerated growth worldwide. In 1800, the number of people living in urban was areas around 2%; in 1900 this reached 12%. In 2000, the ratio increased with around 47% of people living in cities (Cohen, 2003). Currently, half of the world's population lives in urban areas (Zanette et al., 2005). In addition, projections indicate that in 2030, around 60% of the world's population will live in urban regions (United Nations, 2008; FIG, 2010).

2.3 Urbanisation Trend in the World

In developed countries, development, in construction sector in particular, has witnessed an increase between 1950 and 1960. This has contributed to rapid urbanisation. In turn, this has had a negative impact on the agricultural lands with construction resulting in a massive reduction in those fertile lands (Firman, 1997). In general, urbanisation is considered as one of the most important factors leading to land use change. Individual land users change their behaviour, which in turn, drives changes in land use (Long et al., 2008). These unregulated human activities and the spread of urbanisation on a global scale have led to massive and alarming landscape changes. For example, the world-wide phenomena of rapid expansion of urban areas have occurred at the expense of agricultural and green lands. Moreover, human activities are adding more pressure on fertile land in the world (Rosenberger et al., 2002).

Population growth contributes considerably to the expansion of urbanisation. For example, in Canada, between 1971 and 1996, urban dwellers grew from 16.4 to 22.5 million persons, an increase of 37%. This increase in population led to an increase in the demand for housing. Housing consumes more land than other urban constructions (Hofmann, 2001). One of the major effects of urbanisation is the loss of agricultural land. For instance, in Canada between 1971 and 1996, urban growth expanded over 12,000 km^2 of the agricultural land. This expansion was due to the growing urban population and

higher land consumption by each new dwelling. In Ontario province for example, over 18% of fertile farmland became urban (Hofmann, 2001).

Scarcity of agricultural land and fragmentation of ownership led to the migration of labour to cities (Zhang and Song, 2003; EGA, 2002; Brown et al., 2000). For example, Mexico City expanded from 11,753 hectares in 1940 to about 100,000 hectares in 1980 (Losada et al., 1998) While, between 1980 and 1990, the agricultural labour force decreased from 9% to 1% (Nugent, 2000). In the United States, between 1960 and 1990, the average area of farms decreased by around 1.2 % per year (Brown et al., 2000). Specifically, the period between 1982 and 1997 witnessed a dramatic expansion of development at the expense of open space and natural resource lands in the United States, which, in particular, affected farmland and forest, where some 12 million hectares were lost (Hasse and Lathrop, 2003). In the metropolitan region of Concepcion in Chile, 1417 hectares of agricultural and forestry land, representing about 9% of the total agriculture land in Chile, was lost between 1975 and 2000 (Pauchard et al., 2006). Also, in Brazil around 55% of the population was living in cities in 1970. But today, approximately 80% of the population is living in urban areas this in turn has had a negative impact on vegetation cover (Zanette et al., 2005).

In Asia between 1950 and 2003, the population in urban areas increased from 16.6% to 38.8%. Moreover, in 2000 of the nineteen megacities worldwide eleven were located in Asia. This increase in the population leads to the expansion of urban areas, which mainly occurs on arable land (Zhao et al., 2006; Liu et al., 2010). For instance, in India, from 1955 to 1985 urban areas expanded by approximately 1.5 million hectares. In addition, in China, between 1990 and 2000, 145 cities expanded onto arable land (Zhao et al., 2006). During this period, urban growth accelerated at the expense of agricultural land and forests; about 817 thousand hectares were lost to urban expansion (Long et al., 2008). Chen (2007) has similarly indicated that between 1986 and 2003, a variety of construction activities removed more than 2.9 million hectares of land from agricultural production; this was, by and large, attributable to urbanisation and industrialization. Moreover, in Tehran, between 1921 and 2000, the population has grown by a factor of 33, while the city size has increased more than 100 times (Porahmad et al., 2007).

In Europe, since 1990, residential urban areas have expanded at more than four times the rate of population growth, while industrial areas grew more than seven times as rapidly (EEA, 2013f). Recently, a study (EEA, 2002) showed comparative information on urban

development in selected European cities between 1950 and 1990, based on the interpretation of satellite imagery and aerial photographs. The study provided clear evidence of strong growth of urban areas across Europe, resulting in loss of farmland and natural areas in the surrounding countryside. Furthermore, in the United Kingdom, between 1960 and 1965, urban growth at the expense of agricultural land has reached around 44,000 acres annually (Best, 1968). In addition, a research team at the University of Leicester have shown a significant shift in land use through satellite surveys. For the period between 2006 and 2012, it was found that 22,000 hectares (54,000 acres) of green space has been lost, transformed into construction. Agricultural land represents about 14,000 hectares (Mathiesen, 2015).

In the Mediterranean, urbanisation trends vary. For instance, the urban/rural rate in southern Europe is expected to rise from 44.2% in 1950, to 75.2% by 2030, while in North Africa, in the same period, the urban/rural rate is expected to increase, with a higher rate, from 24.7% to 63.3%. In southern Europe, urbanisation has led to a huge loss in agriculture lands in countries such as Cyprus and Turkey. An estimated 3,200 hectares have been lost around Nicosia in Cyprus, because of the urbanisation since l985. In Turkey, between 1978 and 1998 about 150,000 hectares of farmland have been lost (Losada et al., 1998). Similarly, in the district of Akhisar, famous for olive production, between 1939 and 2007 about 15,043 km^2 of agricultural lands have been lost. In turn, urban expansion increased during that period around 1, 8748 Km^2 (Gulgun et al., 2009).

In Africa, the increase in the number of urban centres and their inhabitants has resulted in the expansion of cities (Mohamed and Al-Mam, 2009). The African continent is one of the world's least urbanised regions when compared with other continents (Keiser et al., 2004; Elbendak, 2008). Nevertheless, North Africa has experienced the highest urbanisation in Africa as well as urban growth because of migration from rural to urban areas (Jelili, 2012; Elbendak, 2008; World Bank, 1995; Mohamed and Al-Mam, 2009). This also corresponds with Keiser et al. (2004), have stated the rural population growth has decreased dramatically, as a result of one fundamental reason: the strong economy existing in cities such as job opportunities, education, and others, which leads to emigration from rural to urban areas

In 1950s, around 20% of people lived in urban regions in Africa. However, at present about 40% of the total population are living in urban areas and some African countries have urban areas listed as megacities which contain more than 10 million inhabitants such

as Cairo in Egypt, Lagos in Nigeria, and Kinshasa in Congo (Odoom, 2011). Examining urbanisation in Africa, Mohamed and Al-Mam (2009) have emphasized that in 2001, Lagos in Nigeria was the most populated city on the continent (13.4 million), and sixth most populated city in the world, while Cairo in Egypt was the second most populated city on the African continent, and nineteen in the world (10.6 million). Furthermore, they have demonstrated, that 40 cities, in 2009, had a population of more than one million, and that it is expected that by 2015 the number of cities with more than one million inhabitants would reach 70.

After Latin America, the Arab World is the most urbanised in all the developing regions (Ibrahim, 1975). As stated above, between the nineteenth and twentieth centuries, cities in Arab nations grew, their composition changed gradually, and markedly. North African cities grew at an even more striking rate such as Casablanca, Algiers, and Tripoli to the detriment of all inland towns. Moreover, the total population has tripled in the last four decades, from 128 million in 1970 to 359 million in 2010, rural population has declined from about 77% to 45% between 1950 and 2000 (Table 2-1). With the expansion of urban population, urban areas expanded and a huge tract of fertile lands has been lost. For instance, in Egypt, it is estimated that about 25,000 hectares, are lost every year since 1952 (Chaline, 2001). In Algeria, it is estimated that about 1,400 km^2 of fertile land have been lost (Chaline, 2001). In Tunisia, for example, due to drought and severe economic crisis affected the country, which the agriculture sector suffered especially between 1944 and 1947, a large number of farmers migrated to the capital Tunis. Since then, migration continued and became stronger in the 1970s and 1980s which led to an expansion of the city from 150,000 hectares in 1975 to 350,000 hectares in 1998 (Weber and Puissant, 2003). In Tunisia, it was estimated that about 9,000 hectares were taken from fertile lands as a result of the expansion of Sfax (Chaline, 2001). In addition, in most Arab cities, the urban population is growing rapidly, 6% annually, and at a rate of 10-15% such as in the cities of Qatar and Kuwait; this rate is not accompanied by sufficient urban planning policies (Omran, 1980).

Table 2-1: Shows the proportion of rural population to the cities in the Arab world.

Year	Rural Population%	Urban Population%
1950	77%	22.5%
1975	60.7%	39.3%
2000	45%	55%

Source: Alshebani (1995)

2.4 General and Local Factors of Rapid Urbanisation

Rapid urbanisation is the result of several factors such as (Johansson et al., 2002; Gyabaah, 2004; Elbendak, 2008):

- Socio-economic factors particularly, level of development.

- Political and administrative factors.

- Demographic factors (Population growth).

Economic and social factors are the driving forces behind changes in land use; particularly agriculture land, which is very important to manage, guide and control current situations and to prepare wise plans for future demands (Al-Sharif and Pradhan, 2013). Hence, there are indications that with significant economic development, urban growth has increasingly expanded and encroached upon arable land (Tan et al., 2005).

Political and administrative factors are another important contributor to increasing population in capitals cities, especially in developing countries. The concentration of political and administrative facilities in major cities pulls the population towards these areas, as they are unavailable elsewhere. Moreover, governments usually feel obligated to provide more services to urban inhabitants. The reason behind the concentration of political and administrative facilities in major cities is political. These facilities are located here by governments to signal economic prosperity, in order to obtain to a larger proportion of the voting population. Governments see a larger political payoff from having prosperous cities and can hide rural poverty; therefore they do not invest in rural areas (McCatty, 2004).

In addition, Mubarak (2004) has confirmed that population growth is the principal driver behind the development of built-up environments. As well as other social and economic factors, population growth plays a decisive role in ordering and forming urban areas, particularly in Arabic cities. Moreover, population growth is one of the possible factors affecting land-use change (Abubrig, 2012). Rapid urbanisation differs between areas and countries. Amongst other general factors described above, natural factors have changed the spatial distribution of the population in different countries (climatic conditions). Therefore, patterns of urbanisation have specific local factors, engendered by the geographic and demographic characteristics of regions. For example, as regards the situation in Libya, there is a difference between the Southern regions, where the temperature is the highest (desert), and the Northern regions, where there is a mild coastal climate (Mediterranean Sea). As a result, the majority of the population is concentrated on the coastal strip. Population growth is driven by two causes.

Ibrahim (1975) and Al-Sanusi (2005) have outlined two principal causes behind population growth in cities across the globe, especially in the Arab World. The first cause of population growth is natural increase. The population of cities has increased naturally due to improvements in medical technology and expertise in Western Europe, which has, as a result, decreased mortality rates. Recently, however, the natural increase in population has slowed. This has been the result of the control of fertility rates through birth control. In the West, patterns of birth rates are smaller in urban centres than in rural areas. This is also true in Libya, for instance, when Tripoli is compared to all other regions. This also corresponds with Cohen (2006) who stated that rates of natural increase are mostly lower in urban than in rural regions. Similarly, NCB (2007) indicated that the fertility, overall, increased in rural areas more than in urban areas. The second cause of population growth in cities is migration to them from rural areas. This is known as internal or local migration, which leads to an increase of the population of cities. The result of significance rural-urban migration is high population density in cities. In addition to internal migration, migration also occurs in the external or international arena. Both forms play an important role in the re-distribution of the population.

Motivations of migration to cities are generally economic, social and cultural or born of the need to escape from the wars (displacement). Population pressure on agricultural land (this is more pronounced in a country like Egypt, in which rural population has been progressively outstripping cultivable land area), lack of job opportunities, harshness of rural life, instability of agricultural activities in terms of income, occasional droughts,

natural or human disasters, and poor infrastructure and public transport are '**push**' factors, which may drive the rural population to the cities. In the same context, Alshebani (1995) confirms that the low standard of living and per capita income is one of the causes of migration from the rural to the cities. In addition, there are '**pull**' factors which attract people to the city: greater opportunities—actual or imaginary—for employment, education, and health services, and social improvement, income stability, and higher living standards. The level of services and amenities are by far higher in cities than in rural areas (see figure 2-3). Similarly, Alsharif and Pradhan (2013) have indicated that the development of a central business region, encompassing a variety of services (active economic centres, educational, roads, etc.) leads to urban expansion and increased population density. Therefore, the concentration of various activities enhances rapid growth and expansion. According to Abubrig (2012) reasons for migration to urban areas due to the following:

- The focus of development in urban areas attracts people to those areas due to the economic prosperity development offers.

- Income levels are higher in urban areas.

- Individuals from larger families in rural areas seek space in urban areas.

- Insufficient enforcement of planning rules, presents the opportunity to build illegal settlements quickly in urban areas.
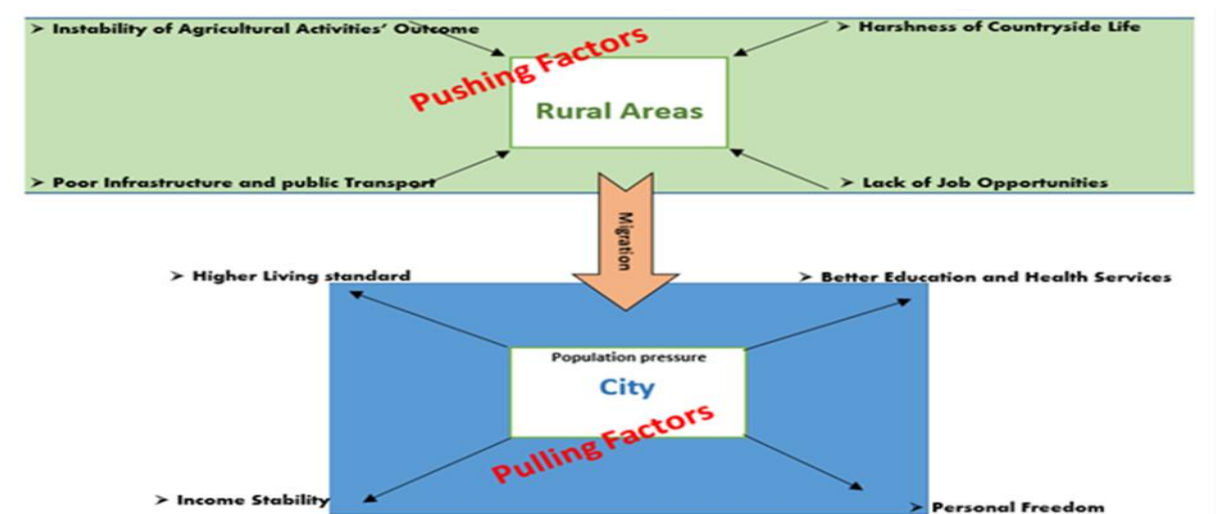
Figure 2-3: Driving forces of urban expansion. Source: Compiled by the author.

Furthermore, while agreeing with the first and second causes of population growth in cities, Attir (1995) has added a third: the return of migrants from aboard. Finally, rural–urban migration is one of the principal reasons for rising of urbanisation, which, in turn, engendered expansion in the city through the arrival of new migrants, which led to massive changes in land use. Consequently, the surrounding areas of the city are annexed; usually these are agricultural lands (Cohen, 2006; Saad, 2012). In addition, Pauchard et al. (2006) have indicated that the urban sprawl has been caused by population growth, income growth, and a lack of environmental awareness (coupled with relaxed legal regulations). Unregulated population growth is leading to an increase in population size well beyond the limits of the city. Consequently, in order to accommodate the expanded population, there have been many, often illegal, changes in the urban form (Almahdowee, 1998; Hofmann, 2001). Ultimately, rapid urbanisation occurs at the expense of agricultural land, thus this places enormous pressure upon the government ministries to combat urban expansion, especially the relevant authorities of urban planning

2.5 The Attraction of Cities and Demographic Shifts towards Them

Across the world, the majority of people live in metropolitan areas. Cities are the command centres of the global economy, nests of technological innovation, and economic functions (Campbell and Fainstein, 2002). Furthermore, cities are continuously considered places of imagination, innovation, creativity, and with the passage of time, will become the ever new and different (Swyngedouw et al., 2002). Cities have always attracted people, as development programmes have encouraged growth in centres of learning, innovation, sophistication, employment and business. Moreover, people are often attracted by the location and topography of regions in which cities are situated. Other vital factors such as the economy have played a significant role for the progress and improvement of numerous cities during the past centuries (FIG, 210; Elbendak, 2008; Cohen, 2006). As the researcher stated above, the spectacular growth in cities in several countries has been linked to major changes in economies which are brought about by higher incomes (Elbendak, 2008). Historically, several cities have witnessed large scale growth due to natural advantages existing nearby. Cities located near natural resources can exploit them, becoming specialized and famous in certain industries; for example, in transport or raw material supply, manufacturing, and tourism (Cohen, 2006). Furthermore, historical towns have helped the development of urbanisation in many countries, and old central cities still contain an increasing proportion of regional wealth and population,

including Tripoli (Misallati et al., 1990; Elbendak, 2008). Cities have provided important opportunities for political, cultural, social, and economic development. Capital cities, especially, are centres of modern life where the availability of health, education, social mobility, literacy, and entertainment such as cinemas, sports, clubs, shops and restaurants, cater for the needs of the residents of these new complexes (Elbendak, 2008; Cohen, 2006).

Seventy-five percent of the world's population live in developing countries. In these countries lie the centres of world population growth. Capital cities, in particular, are significant in terms of influence and power. Given the attraction of the opportunities and infrastructure available in capital cities, they have powerful effect on demographic shifts. However, the vast movement of people into capital cities create many problems related to climate and soil (Cox and Atkins, 1979). Additionally, as Mountjoy (1976, p. 130) has mentioned that:

> "In the Third World the city is still the main point of contact with the modern world and it is in the cities that socio-economic changes and innovations first appear but the character of many of these cities may now be changing. An analysis of this urban growth in the developing world shows first that the process is gathering speed. Second that a major part of its city growth is due to migration and third, that migration to the towns is selective, it is the larger towns often the capital cities, that show the greatest attractive forces, and this is leading to a growing imbalance in the urban structures often only the capital city (which may also be the chief port) can offer the infrastructure and services and can supply the amenities and activities that would be attractive".

Similarly, Saad (2011, p. 32) argues that:

> "The attraction of cities as unrivalled magnets, being the major centres for health, education, employment and entertainment, has led to a growth in the housing market and a great urban renaissance in the cities, which is lacking in the rural areas. This entirely different way of life has led many rural young people to migrate to the cities".

In addition, Ginsburg (1972) states that continued growth in the larger cities and great metropolises, due to changes in technology from transportation and marketing technology (regional development dominance), particularly in developing countries, may well render small and medium-sized cities obsolete.

This pattern has been witnessed in Africa, where cities are considered as centres of great civilizations. They act as centres which provide jobs as well as places for the efficient and

effective provision of services. In turn, the opportunities they provide attract a large number of people from rural areas. This migratory pattern has led to the emergence of big cities such as, Johannesburg, Lagos, Cairo, and Algiers (Ayeni, 1997). As a result, the accelerating urbanisation process has increased the fragmentation of the landscape.

2.6 Effects of Globalisation upon Land Use

According to Benoit and Comeau (2005), globalization means relocation, expanding networks and convergence, increasingly large investments, and investors are always favouring the places (cities) which have high-quality services and advantages such as transport and telecommunications infrastructures, business facilities and services, a well-trained workforce. Globalisation, which has seen revolution within the scientific world, has engendered fierce competition between urban regions with regard to industry, technology and restructuring of the global economy (Campbell and Fainstein, 2002). This has impacted upon land use. A massive economic transformation of the world has occurred through several changes, including rapid technological and political transformations. Currently, technologies developed are playing a key role in terms of urban growth by attracting unprecedented numbers of people to cities. This has resulted in increased demand for expansion into the countryside and/or suburbs (Figure 2-4); this represents considerable area of agricultural land (Abubrig, 2012). East Asian countries, in particular, have enjoyed robust economic growth, and have grown rapidly, which produced considerable transformation. This has inevitably increased population size (Cohen, 2006). Globalization has played a very important role, driven by advances in transportation and telecommunications, and a positive political climate has created a global economy characterized by unprecedented levels of urbanisation (Cohen, 2006). This information is supported by Lambin et al. (2001) who have indicated that an expanding world economy coincides with rapid land-use changes. As a resultof the rapid pace of Globalisation, a variety of strategies and plans in relation to new technological advances have been adopted. In particular, questions have been raised in relation to developments regarding consumption and production, which have emerged from new interactions at regional and national levels (Friedman, 1994). Moreover, globalization has engendered global interdependence between the people and places, though increased exchange of information, global markets, international conventions, and capital flows (Lambin et al., 2001). However, these changes have led to increased urbanisation, by the

diffusion of the urban culture at the expense of forest, rangeland, and agricultural land (Lambin et al., 2001).

2.7 Land Consumption

Urban expansion has become one of the most prominent features of the twentieth century and its study has become more complicated (FIG, 2010; Nhma, 2004). The rapid growth of the world's urban population means an increase in the demand for an expansion of urban areas which will be used for housing, industry, roads and other infrastructure facilities. This will lead to a transformation of agricultural lands and natural habitats thus considerable areas of farmlands will be lost (Doos, 2002: Rosenberger et al., 2002). In other words, a growing population creates pressure upon lands especially, surrounding urban areas where people have begun to look for other places for construction, particularly agricultural land, that leads to a gradual (Figure 2-4) urban expansion well beyond the city boundaries (Ali et al., 2011). This means rapid population increase pushes the cities to unprecedented sizes (especially in the deficiency of plans/planning). There will be, in turn, many negative environmental, economic and social consequences of uncontrolled urban expansion, including: overcrowding which will often be at expense of the destruction of fertile agricultural land (scarce), and deforestation (Andrew et al., 2015). Frequently, human factors cause land degradation (Ben Mahmoud et al., 2003). These gradual expansions of cities are the result of an increase in demand for housing, and land (Nhma, 2004). In addition, Bekele (2005) reports an increase in the demand for housing in the cities, which leads to a change in the use of agricultural land. In the same context, EEA (2015) noted that the cost of housing in city centres greatly increased. This has resulted in driving urban sprawl, and, therefore, excessive land consumption. Consequently, there is increasing concern about the impacts of expanding cities, particularly upon agricultural areas and livelihoods of farmers (Rahman and Agarwal, 2007). Similarly, a change in the green areas from urban expansion leads to a reduction of agricultural and rural employment opportunities. Therefore, this would adversely affect the sustainable developments as well as the livelihoods and quality of life of those who live in these areas (Allen, 2003).
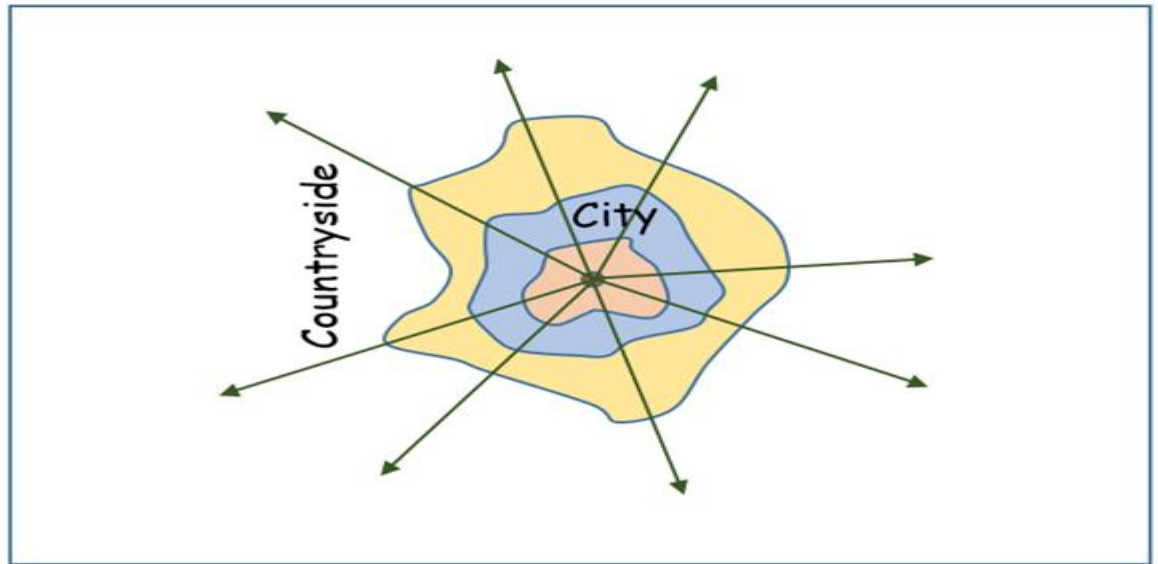
Figure 2-4: Expansion of cities. Source: Compiled by the author.

In general, over-urbanisation is draining valuable resources from the nature (Ibrahim, 1975). Recently, rapid urbanisation has played a major and negative factor affecting natural environment (Weber and Puissant, 2003). The disappearance of massive agriculture lands over the world has increased concern between researchers (Weber and Puissant, 2003; Pons and Pejon 2006). In other words, the expansion of urban areas is a worldwide phenomenon which has received considerable attention by researchers (UN-Habitat Report, 2003). The growth of the cities has become increasingly obvious. This, in turn, has had a negative impact on the natural environment (as the researcher mentioned above). Forests, savannahs, grasslands, and farms have been and are continued to be replaced by buildings and roads. Therefore, there is a massive reduction in vegetated area (Whitford et al., 2001). Recently in Tripoli, there are many major changes in the use of agricultural lands and forests (Ellafi and Meaton, 2014). However, it is widely believed that the main driving force behind the transformation of land is the fast growth of urban population resulting in demands for higher living standards (Doos, 2002). The increasing expansion, the activity of trade and the market economy serves as strong motivating factors encouraging mass migration to cities (Esbah, 2007; Vink, 1982). Therefore, the rural-urban migration is still affecting the structure of the world and this continuous migration flow has significantly contributed to the increase of built-up areas (Weber and Puissant, 2003).

2.8 The Relationship between Economic Development and Urban Planning, and Policy

2.8.1 Economy

Economically, megaprojects in the cities have indeed become one of the basic planning strategies to activate most urban areas and development recovery, which have become increasingly influential upon economic growth. This means generating or fostering future growth by attracting investment capital, which relies on the planning and implementation of large-scale urban development projects such as: business centres, parks, hotels, restaurants, cafes, exhibition halls, waterfronts, museums, hospitals private, and tourist resorts, etc. (Swyngedouw et al., 2002). In turn, development recovery or projects are the very catalysts for urban expansion, where urban revitalization is projected beyond the cities (Swyngedouw et al., 2002).

Accelerated urbanisation is sometimes considered an important tool to boost economic development. But, accelerated urbanisation has also had a range of negative effects relating to the environment system, especially in the elimination of fertile agricultural land, where a frequent conflict exists between economic development (urban expansion) and farmland protection (Du et al., 2013). Therefore, there is complex relationship between development and urbanisation, as pointed out above: there are positive effects in terms of creativity, invention, evolution, progress and construction, but also negative ones especially on nature (the environment), which has found development enhances urbanisation at the same time as urbanisation fosters development. But, urbanisation has often given rise to several problems over the years in developing countries (Tettey, 2005).

When formulating policies, governments often feel obligated to provide more services to urban regions or large cities, allowing easier provision of basic services and the economic prosperity in that cities that leads to increase population (pulling factors) (McCatty, 2004). There is, therefore, no doubt that continued the population growth in urban areas will lead to rapid growth in construction, consequent to increase demand for land for urban expansion (Saad, 2011) unlike rural areas, which suffers lack of meaningful employment, poor infrastructure, and harshness of countryside life (pushing factors) (see figure 2-3). All of these factors create a situation whereby migration towards cities and city centres increases. Therefore, there is a great challenge and responsibility on governments to provide more balanced development between regions, through the implementation of effective policies which aims at restricting urban growth (McCatty, 2004). In addition,

lack of control in planning and development affects a rapid shift in land use changes, especially agricultural land (Saad, 2011). However, many countries are facing issues of rural-urban migration and which seek to reduce for urban bias. These countries should shift attention regarding development to rural areas, implementing rural development policies (promoting rural development), which would create more employment opportunities, and income in rural areas. Thus, development policies of rural areas are one of the main objectives that will ease poverty, and encourage individuals to stay in rural areas without transforming agricultural areas into cities (McCatty, 2004). As demonstrated above, in order to address the problem of migration and urban expansion, governments must take into account the triangulation of three factors: economic conditions; planning and control; and, current policy.

2.8.2 Planning

The world is experiencing a dramatic increase in population, which is causing problems not only for poor, undeveloped countries, but also for industrialized and developed nations (Cohen, 2006). In our time, most countries around the world have witnessed a dramatic increase in population. Overpopulation causes several problems. Competent and coherent, planning is crucial in combating the problems caused by overpopulation. In addressing the problems of urban growth urban planning requires a clear set of control mechanisms, which are aimed to improve the physical, social and economic fabric of the cities and towns across the country. Clark (1980), stated that an important aspect of urban planning is the concept of physical land use planning at the city or town and emphasises the importance of the division of territory within regions in the production of master plans. These plans aim to achieve future, sustainable development through rationalisation, containing policies for redevelopment or the conservation of existing structures. Therefore, planning is essential to solving problems caused by dramatic population increase.

Planning is an urban development strategy is coordinated by the Ministry of Planning to organize the geographical distribution of the population, and to promote orderly urban growth and comprehensive development (Alteer, 1999). In developed countries, planning is based on a strategy which focuses on the needs of human settlements, and aims to create appropriate, healthy and attractive places in which to live (Talen, 2005). In this task, it is essential that economic, social, demographic factors are given equal weight during the adoption of a comprehensive development plans (Al-Sanusi, 2005).

Al-Sanusi notes that neglecting population variables, ultimately leads to the failure of development plans. Principal objectives—improving the economic performance of society and production, to increase exports and reduce imports, and creating sustainable development—are, as a result, missed. When attempting to implement plans, neglecting the population variable may lead to the emergence of multiple difficulties. Difficulties include a lack of social balance, and imbalance in the geographical distribution of the population (Al-Sanusi, 2005). In addition, even when all suitable measures are taken in planning, the process will be futile if other human factors are not extensively studied and integrated into planning principles (Abubrig, 2012). One particular difficulty which has been noted when population variables are neglected by planners is migration. Unchecked rural urban migration contributes to rapid urban growth. This population change poses difficult challenges for some local governments, such as the loss of local workforce in rural areas and the overcrowding of urban centres. In turn, this means that attempts to ensure sustainable development and sustainable urban growth are compromised. The unexpected increase in the population as a result of migration requires the revision of plans and the introduction of comprehensive planning to achieve permanent and sustainable urban development. In this context, cities attempt to reach sustainability goals by various policies, plans, and strategies (Bostrom, 2003; Al-Sanusi, 2005).

For sustainable development, Britain has recently adopted a strategy that gives local authorities total power when considering the importance of local environmental quality through effective urban planning and service delivery. This strategy aims to balance planning considerations between cities at the regional and local levels, especially in terms of environmental performance (Whitford et al., 2001). Whitford et al. (2001) argue that the most obvious way of reducing the impact of a city at the regional level is to make it more compact, since this will reduce the overall area of the built environment. However, this will be difficult because a large increase in household formation is projected over the next 20 years. Therefore, urban expansion can be controlled by local authorities, if they are given the powers to do so. By providing local authorities with powers, concerns about green-spaces and environmental factors will be addressed. Providing local authorities to address the loss of agricultural land to urban expansion is important, as, when unchecked, this general process of will lead to dramatic changes and problems in relation to flooding, due to climate change, and food production, which would endanger future food security (Zhao et al., 2006).

Recently, this approach in Britain has been adopted by the Urban Task Force to provide urban renewal and design, to ensure cities are well designed. This means protecting urban green spaces in a manner that takes into consideration the urban climate and flood provocation schemes. In other words, the UK strategy specifically advocates creating more sustainable patterns of development through concentrating the majority of new developments within existing urban areas (Whitford et al., 2001).

Moreover, Keivani (2009) states that urban planning is different between developed and developing countries. Developed countries continuously seek to improve the standard of services, housing, and consideration. While doing so, the possible environmental problems are taken into account and dealt with accordingly. In contrast, planning in developing countries focuses on the provision of fundamental infrastructure. As a result consequent environmental problems are overlooked. Hence, there is a clear difference between them; all developed countries seek to achieve sustainable development unlike developing countries, which limited steps have been taken towards this objective. In order to achieve sustainable development, planning must make use of both expert opinion and equally the opinions of particular local populations. Moreover, it is imperative that the planning authority consults with interested parties, especially in the preparation of a development plan. In doing so, a balance between green field and urban places can be struck (Omar and Ruddock, 2001). The processes of development planning also require public participation and the involvement of the masses of the various categories and levels; this has been confirmed by Alshebani (1995).

According to the United Nations Centre for Human Settlement (1996), there is a strong trend of urbanisation which can be observed world-wide. Urbanisation often occurs as a consequence of poor land management. Therefore, spatial planning also plays a vital role in the effective regulation of urban expansion. It restricts urban sprawl and the height of new buildings. This aims to preserve a city's cultural identity and urban environment. It also aims to constrain the growth of urban centres, limiting development within them and the intrusion of infrastructure into the surrounding natural environment. If such growth was unregulated it would lead to biodiversity loss and degradation of related ecosystem services (EEA, 2015).

Furthermore, spatial planning has the potential to incentivise more resource-efficient approaches to the built environment. It can help to reduce or avoid the intrusion of urban infrastructure into natural areas or green spaces. In other words, protecting, conserving

and enhancing the natural landscape. Also, spatial planning aims to optimise economic development opportunities and ecosystem services, reducing human exposure to environmental pressures, and reducing social inequities. The challenge is to design a future urban environment with broad public appeal, meeting the evolving needs of the population (EEA, 2013f). Clearly this has played a key role in the urban development and the protection of the natural environment needs to be balanced, this can be achieved by considering spatial planning. Therefore, spatial dimensions have significant implications on resources (land use) and on achieving sustainable development (The European Environment, 2015).

2.8.3 Policies

There is no doubt that rapid population growth is a serious threat to the environment that means when too many people live on the land, the environment suffers especially food threaten. However, the central challenge facing countries is ensuring sustainable development for current and future generations. Thus planning and policies, plays a vital role in solving economic, social and demographic problems, which have culminated particularly in the developing countries. This growth has led to a substantial increase in urban expansion in the form of new districts, towns— which have increased in size well beyond the limits of the city—and housing, which were exacerbated in an absence of well-studied government policies, and planning.

Every policy to deal with urban expansion resulting from rapid population growth has both advantages and disadvantages. Therefore, governments have to be realistic when specifically making rural development policies. The right policy will greatly assist in reducing rural-urban migration, by developing infrastructure on an equivalent level in provinces and rural areas so that the quality of life here is not inferior to the capital city in terms of job opportunities and equitable income distribution among all groups of people in all regions of the country (McCatty, 2004). For example, since 2003, China has sought to develop strategies for rural development, through a set of policy makers which presented drafts for specific projects to deal with social inequalities between rural and urban regions, in particular, the increasing income inequality between rural and urban areas (Christiansen, 2009), which has resulted in rural–urban migration (Alshebani, 1995). Consequently, the Chinese government has taken important steps to improve the basic social assistance system to rural areas. In addition, in 2007, the government issued a programme, called the 'new socialist countryside', which sought to achieve integration

between urban and rural areas, aiming to improve agricultural productivity and improve economic and social welfare for people in rural areas, an aim of public policy (social equity). Furthermore, in 2008, several local development projects in China were initiated along with rural reforms. This addressed the balance between rural and urban regions. There was a particular concern with food security, as farmers faced several problems. These problems were addressed through an increase in rural welfare and focus on long-term social stability (Christiansen, 2009).

Other countries have adopted a policy to slow growth in major cities and redirect it into smaller and secondary cities, especially in developed countries (Hall, 1977; Gugler, 1997). This is known as decentralization, which will be discussed in the following chapter. Moreover, some countries, such as Hong Kong, have adopted birth control policies, whereby each family is permitted only one child. But, in this year the government has agreed to two children. However, the successful implementation of a policy; relies on collaborative efforts and participation among all stakeholders, particularly policy makers. Also important are citizens at national and local levels, which are needed for effective implementation of policies and programs that support sustainable poverty alleviation by inter-related and mutually reinforcing elements, which is progressively made through changes in policy development, management development, enhanced economic opportunities, environment and natural resources, and human resources development (McCatty, 2004).

The weakness of government policies has led to increased migration to major cities. For example, the lack of job creation in rural areas has encouraged labour to migrate from rural to urban areas. This is a particular problem in developing countries. As a result, the continued gaps in rural-urban employment opportunities caused by urban bias have led to increased migration to major cities (McCatty, 2004). Another factor which contributes to rural-urban migration is the development bias; in major cities there are multiple facilities and services which provide many key services for citizen in order to obtain higher living standard (The Agricultural Minister, 2010). These facilities are not present in rural areas.

2.9 The Role of Policy Makers

After the industrial revolution, the majority of the people lived in city areas due to greater economic prosperity, but even in the most economically successful of these regions there

may be sharply uneven development. The economic, social, and environmental circumstances of urban areas have stimulated calls for reform ever after. Therefore, the possibility of developing policies, plans and strategies become more realistic (Campbell and Fainstein, 2002). Consequently, good policy making demands a deep understanding of what can be done, and to understand the potential of urban change. This requires policy makers, who must determine the priority of the issues on the agenda. Top priority should be given to tackling migration, for example. Migration from rural to urban and rapid economic growth in major cities, especially the industrial ones, has often accompanied by many problems, like unemployment, poverty, increased crime rate, diseases, and congestion. This in turn has encouraged policy making to support suburban development by offering many services such as transportation, education, sanitation, parks development and other services for new suburban residents. Furthermore, recently, the scientific revolution has engendered fierce competition between urban regions with regard to industry, technology and restructuring of the global economy. Hence, policy makers must take into account to place economic development at the top of their agenda (Campbell and Fainstein, 2002).

2.10 Development and Balancing Society

The goal of development is to provide opportunities for citizens within a given society to fulfil a happy life of the human, through the optimum utilization of the available resources and create a fair and equal distribution for all areas (Libyan Journal for Information and Documentation, 2005). This also corresponds with Alshebani's idea that when designing development projects, it is crucial to consider equitable distribution of development across all of the state. One city cannot be developed at the expense of others. Adopted this principle ensures that social and economic development becomes a real translation of the principles of social justice, equality and equal opportunities. In addition, there are many development plans which failed to achieve their goals because of the lack of social balance, which, in turn, led to increased rural–urban migration (Al-Sanusi, 2005). Hence, social equity is one of the most important variables that contributes to the reduction of urban expansion, and therefore must be considered in development plans based on that. However, increased migration has always led to a high population growth rate in the city. This ultimately leads to an increase in the many negative phenomena as follows (Al-Sanusi, 2005):

- Rural–urban migration depletes the younger rural population.

35

- This migration is leading to a great imbalance in terms of distribution of the population.

- In turn, this leads to the expansion of major cities, accompanied by increased pollution and the emergence of slums.

- Population growth in developing countries is concentrated in major cities, thus these cities experience annual increases amounting to about 75% of the total national increase (Al-Sanusi, 2005).

This also corresponds with Saad (2011) who has stated that due to internal migration, the population of the city has expanded. As a consequence, the numerous problems, in particular the housing problem, have been exacerbated. This in turn, has had a negative impact on:

- Agricultural land, which has been developed on and, as a result, has witnessed a significant reduction in cultivated areas, affecting agricultural and livestock production.

- As a result of the first point; the agricultural population, including farmers, have migrated from rural areas due to the low per capita income.

- Therefore, the farmers will be forced in this case to sell their agricultural land for the purpose of construction (Saad, 2011).

Hence, the losses of the farmlands have increased exponentially, and this urban expansion is correlated with food security.

2.11 Food Security

In recent decades, a significant proportion of formally productive agricultural land has been lost because of changes in human usage. Inappropriate human activities and unsustainable land management have contributed to increased land degradation, including, urban expansion, desertification, salinization, and soil erosion (Nellemann et al., 2009). Saad (2011) has similarly indicated that the urban expansion of the city (like Benghazi) at the expense of farming land led to a displacement of both cultivation and pastoral areas, which had a significant impact on land-use change in marginal land particularly, leading to increased risk of drought and desertification. As a result, there is a major threat to food

security. This also corresponds with Chen (2007) when has pointed out that the urbanisation in the form of city sprawl, is regarded as a serious challenge to future food security. Moreover, there are further losses in agricultural land recently, which have been exacerbated by urbanisation and explosive economic growth, in particular in developing countries (large cities). Therefore, there is increasing concern over land in terms of production and soil quality degradation (Chen, 2007). For example, North Africa has a very high level of soil degradation due to high population increases and land use policies, which have negatively impacted on crop yields in terms of production particularly in the leakage of seawater into coastal areas (Drine, 2011). It is generally agreed that agricultural areas have a potentially huge significance for food security and sustaining livelihood (Saad et al., 2011). Therefore, development of the agricultural sector must be intensified in order to meet the growing demand for food (Abubrig, 2012). Due to effective policies and a long-term development plan, the growth in food production in developed countries was hastened whereas in developing countries because of inefficient agricultural policies and development plans, growth was significantly slower (Allafi, 2014). Therefore, the problem of food security is one of the most important problems which face countries of the world, especially with the rapid increase of population where demand for food has increased at a rate far greater than the rate of increase in production (Al-Sanusi, 2005). Continuing population growing leads to increased food consumption and thus increasing competition over land and water (Godfray et al., 2010). According to the World Bank, the global population in 2030 will reach roughly 8 billion, which requires an increase in food production by 50% of the current production (Wilton Park Report, 2008). More recent studies suggest that the world will need between 70% and 100% more food by 2050 (World Bank, 2008). Agricultural production can be improved through efficient and equitable use of land (Godfray et al., 2010; Abubrig, 2012). In other words, agricultural lands must be protected as they are vital areas for food production.

2.12 Summary

Most countries around the world have witnessed a dramatic increase in population, focused mainly in larger cities. A complex interaction of push and pull factors have been the driving force behind population growth in cities. As cities are the command centres of the global economy, nests of technological innovation, and economic functions, they are attractive to the rural population which migrate towards them. Furthermore, capital cities, in particular, are significant in terms of influence and power. Given the attraction

of the opportunities and infrastructure available in capital cities, they have powerful effect on demographic shifts unlike rural areas. In addition, globalization has played a very important role, driven by advances in transportation and telecommunications, and a positive political climate has created a global economy characterized by unprecedented levels of urbanisation. However, planning and policies, plays a vital role in solving economic, social and demographic problems, which have culminated particularly in the developing countries. This growth (especially rural-urban migration), has led to a substantial increase in urban expansion in the form of new districts, towns— which have increased in size well beyond the limits of the city—and housing. Hence, countries or cities that develop without planning, in particular urban planning, lead to increasing demand for land use and land consumption particularly with a growing population which ultimately requires some form of land use change. As a result, governments are always concerned about urbanisation and therefore they focus more attention on policies and planning, particularly spatial planning, which aims to optimise economic development opportunities and ecosystem services, reducing human exposure to environmental pressures. Finally, policy-makers and planners should follow a policy of balanced development that means create a fair and equal distribution for all areas in the state. One city cannot be developed at the expense of others. Adopted this principle ensures that social and economic development becomes a real translation of the principles of social justice, equality and equal opportunities. Hence, social equity is one of the most important variables that contributes to the reduction of urban expansion, and therefore must be considered in development plans based on that.

The next chapter discusses land use change as a result of urbanisation and proposes solutions to the problems this causes.

Chapter 3 : A Review of some Positive Trends of some States Regarding Urbanisation: Examples of Successful Solutions to Urban Expansion

3.1 Introduction

The adverse effect of urbanisation on the environment must be considered by authorities. This chapter discusses the urban management policies of several countries which have successfully reduced urban expansion, whereby they have protected green space surrounding cities. Assessing these examples which have successfully limited this dilemma (urban expansion at the expense of agricultural land), this chapter then proposes solutions to the problems caused by urbanisation. This chapter assesses several studies which have provided model examples of how to mitigate urban expansion, highlighting decentralisation as a principal solution. This chapter contributes to existing knowledge by identifying several successful solutions to the problems resulting from urban expansion, and presents recommendations to solve to problems occurring in Tripoli today.

3.2 Process of Land Use Change and Urban Expansion

Urban expansion is caused by dramatic population increase, income growth and a lack of environmental awareness (Pauchard et al., 2006). In addition, the process of urban expansion can be driven by weakness of the implementations on the restrictions of constructions and importing of agriculture products (Figure 3.1). This allows for free competition over land between urban development and agriculture and results in lowering the income of farmers or increasing pressure of extractive activities. This is as a response to the city's demands for new housing and jobs through regional and national policies.For instance, there may be promotion of industrialization in big cities it will to create more new job opportunities. This pressure can lead to change in land use through urban sprawl and unsustainable use of natural resources. Eventually, both environment and humanity suffer from negative impacts such as loss of green spaces, pollution, desertification, poor health, and increased crime.

Process of land use change and urban expansion

Pressures:

- **Restrictions:** weakness of policy and its implementation will allow land competition for urban expansion and importation of agriculture products.

- **Promotion of favourite city:** More infrastructure projects in the city.

- **Privatization of natural resources:** Privatisation of forests

Change:

- **Changes in land use:** from agricultural to industrial or residential uses.

- **Unsustainable use of natural resources:**

Excessive use of water resources, deforestation

Problems:

- **Loss of agricultural land,** leading to a loss of livelihoods for poor farmers and shortages in food production.

- **Pollution** and increased solid and liquid waste

- **Desertification**

- **Increase Crime**

Figure 3-1: Process of land use change and urban expansion in developing countries. Source: developed by the author.

Study of East Libya (Al Bayda city) has shown that urban expansion is continuing at the expense of agricultural land. This is the result of a variety of reasons and these can be summarized as follows (Zaiat, 1999):

- Schemes of the cities are not revised and evaluated.
- Administrative instability of institutions, which is caused by continual restructuring of state institutions.
- The laws are always violated against the protection of agricultural land. Thus, the cities have expanded due to construction (i.e. unplanned growth or random growth).
- Previous government policy has encouraged the expansion of the city through granting loans to citizens for housing construction.
- The government has built many of the institutions of the state, and some of the infrastructure projects such as public housing.
- The Libyan government has failed to provide housing for citizens.
- The above have resulted in the movement of great migration to the city from neighbouring cities and surrounding areas. The upshot of all this is that the number of farmers is declining and the land area farmed is decreasing.

3.3 Trends in Industry and Urbanisation

Generally, increasing economic activities, particularly in industry, has always led to growth, and therefore an increasing demand for employees (labourers) (Elbendak, 2008). Therefore, industry is one of the most important activities that affects and changes the social life of the population; it is clear that the level of industrial activities reflects the general standard of living. The relationship between manufacturing and urbanisation is a key factor that determines the expansion of urban areas which is required to provide the necessary constructions such as warehouses, factories and shops (Al-Satie, 1980). Therefore, industrial growth primary factors that behind the speeding up of urbanisation, especially by providing more opportunities for new workforces which eventually will lead also to social transformation (Polsevice Consulting Office, 1980). For instance, the South African economy has improved as a result of rapid industrialization; now roughly 60 % of the population lives in cities (Cohen, 2006). Moreover, at the beginning of the 20th century the large increase in population in the city of Alexandria, in Egypt, resulted from a high fertility rate and the large immigration from different areas because of the prosperity and progress of the city's industry (Al-Satie, 1980).

The investment growth in industrial sectors generates more job opportunities which lead to urban expansion especially in countries where governments have ignored investment in rural infrastructure. This situation will encourage people to move from rural areas and villages to the cities (Mccall, 1955). Therefore, industrialization is generally seen as one of the most important factors of land use change (Long et al., 2008).

3.4 Urbanisation in Transforming Economies

Developing countries are witnessing a transforming of their economies, which are becoming more industrialised. Developed countries are shifting out of manufacturing toward finance, services, and information marketing (Yeung, 2001, Cohen; 2004).

One of the characteristics of developing countries is that the income gap between urban and rural is high and this gap in increasingly expanding. Moreover, Cohen (2004, 2006) notes that poverty rates, in these countries, are higher in secondary cities when compared to their big cities (Cohen, 2004, 2006; Feler and Henderson, 2011). However, Henderson (2003) suggests that the dramatic increase of urban population in big cities, is leading to a decline in national economic growth. In contrast, rural economies and lifestyles are

41

becoming increasingly urban in nature as the proportion of the labour force working in non-agricultural activities rises (Cohen, 2004).

Studies show that big cities in developing countries have the ability to take the highest percentage of the financial resources of these countries (Jefferson and Singhe, 1999; Au and Henderson, 2006). However, rates of return on capital investment in such countries are higher in smaller cities and rural areas while, at the same time, continuing off-budget investments in big cities in these countries (Jefferson and Singhe, 1999; Au and Henderson, 2006). This is due to big cities having greater freedom in decision making, more public funds, access to off-budget incomes, and greater access to public infrastructure investment and transport facilities, while small cities and rural areas have insufficient financial funds to support public services.

The policies in some developing countries are directed to invest the country's resources in public infrastructure in the primate city, trying to contain the congestion and environmental costs in that city. However, as a result, the quality of life in other cities deteriorates (Henderson, 2002a). This is called a centralized thus the effect of centralisation in developed and developing countries is vastly different. One central characteristic of all world cities is economic diversity; the variety of economic elements aids further production. As a result, metropolitan economies grow, and with them the regions where they are concentrated in/and around (Hall, 1977). However, urban growth has a strong correlation with the economic performance (Nhma, 2004). When a major city witnesses an economic boom, rapid population growth is a by-product. This has positive and negative impacts. Positive impacts include development, technical progress, innovation, and evolution, which lead to a better living standard(see Chapter 1.3).In addition, centralisation has produced several problems including, competition for scarce space due to the congestion of people. This is especially true in developing and third world countries including Libya (Tripoli). Therefore, it is difficult to compare the role of the metropolitan region in these countries with those in developed countries, because, in the latter, sustainable development is equal in all regions as well as high per capita income. In contrast, in developing countries there is a noticeable difference between central cities and other areas. Here there is a great disparity in regard to infrastructure, services, industry, trade and income between major cities and other areas, the latter having significantly less. Finally, increase the population in the central cities is a serious threat to environment. In other words, when too many people live on the land, the environment suffers. Consequently, a proposed solution is described by Henderson (2002 b), who

states that, moving infrastructure investments away from the primary city helps to increase financial decentralization. Moreover, more powers need to be allocated to local governments to achieve efficient equilibrium between different city sizes (Henderson and Wang, 2007). This would reverse the deterioration of life in smaller cities.

An example of the positive effect of multi-nucleation system and the restriction to prevent encroachment on agriculture land and reducing the population density is provided by Dowall and Treffeisen, (1991) who studied Bogota, Colombia. Moreover, Henderson (1988) pointed out that decentralization of industrial activities into smaller cities is generally efficient, as multi-locational pattern will affect positively the rate of internal migration and urban expansion (Henderson, 1988).

3.5 Urban Management Policies: Successful Solution to Urban Expansion

In Tunisia, Algeria, and Morocco, it has been confirmed, that the development of other regions (secondary cities) has successfully mitigated pressure on capital cities, for example, Algiers. Indeed, the National Plan implemented in 2011 to solve urban expansion in Algeria was successful (Zitoun and Talamali, 2009). This plan encouraged the comprehensive construction of infrastructure in secondary cities as well as capitals, especially in terms of urban expansion, restructuring, improving and redeveloping the shanty town, which was established in 1990. Comparing polices implemented to limit urban expansion in different regions of the Mediterranean, there are essential differences between Southern European and North African countries. Chaline (2001) argues that the fundamental difference between these two regions is that in Southern Europe, the laws surrounding construction are stricter and thoroughly enforced, unlike in North African countries. As a result, in urban expansion in countries such as Libya remains unchecked despite legal frameworks existing to limit urban expansion. Furthermore, mega cities outside the Mediterranean have also successfully dealt with problems posed by urban expansion.

Previous research shows that several countries have sought to limit urban expansion in their big cities. For instance, Addis Ababa has implemented some plans and policies, which have succeeded in achieving solutions to limit urban expansion. Such policies are as follows (Bekele, 2005):

- Urban renewal for old constructions in the city centre.

- Constructing new cities to relieve pressure on central areas. This also corresponds with Mathur (1997).

- Use public transportation to decrease the reliance on roads and cars.

- Expanding construction vertically rather than horizontally.

- Implementing policies and strict administrative orders that prohibit change of agricultural lands to other uses.

- Development and implement better and more efficient land use policies.

- Confront the issue of migration, to decrease or stop it altogether.

The study indicates that Barcelona City has high rates of urban growth (urban saturation) which will restrict the municipal Council in the future. Therefore, the urban expansion process is shifting to the suburbs of Barcelona, where municipalities provide cheaper housing prices among many other advantages such as better living standards (pulling factors), and a less dense environment in terms of population (Catalan et al., 2008). Consequently, the suburbs have attracted numerous people and have become an area with a high population density. As a result, agricultural land and forestry has witnessed a decline to make way for housing (Catalan et al., 2008). In a similar context, Hong Kong has encouraged urban expansion in the Pearl River Delta through investment transfer and industrialisation (pulling factors). Currently, rising land prices (pushing factors) in the Pearl River Delta is pushing away light industries (low-profit) to other regions (Du et al., 2013). Overall, urban planning is crucial in controlling the process of urban expansion (Catalan et al., 2008).

Recently, urban expansion has accelerated because of increased investment and inefficient land use planning, which is creating several conflicts between urban expansion and farmland protection. This is particularly evident in China, which has witnessed very rapid urbanisation (Long et al., 2008; Du et al., 2013). In order to control urban expansion, and protect open space and agricultural land, Chinese authorities presented, in 1999, the Land Administration Law, and the Basic Farmland Protection Regulation, which have referred to the policy reformation land use. This requires local governments, decision-makers and people to reduce the demand for new urban lands by using them more efficiently. Also, development on farmlands is only allowed if their substitutes can be reclaimed elsewhere (Du et al., 2013). In conjunction, the above also stated that Hong Kong, one of the megacities in China, has implemented a successful scheme to control

urban expansion. It controls urban expansion while experiencing significant population growth and economic development, by effective planning of land use, which plays a crucial role through public participation and the separation between the making and implementation of land use plans. Additionally, land policies are continually revised, which motivates more efficient urban land use. These motivations maybe come from taxation of urban development on farmlands also maybe more operational if used for open space protection and as subsidies to agriculture. Moreover, in China, between 1995 and 2000, efficient land use policies, played a vital role in lowering the rate of urban expansion, specifically in Beijing, Tianjin, and Hebei (Tan et al., 2005). There are other examples of successful attempts to overcome the problem of urban expansion.

In Bangladesh, the government has proposed some policies that focus to reduce the rate of growth of large urban areas (big cities) which can be summed up (Mathur, 1997):

- Improve the transportation and communication systems connecting the central cities, towns and rural settlements.
- The preparation of master plans for all cities and towns: formulating land and housing a policy which is the responsibility of urban planning and management.
- Refuse permits for the establishment of new industrial projects within 90 square miles around the city centre.

However, policies to mitigate urban poverty one of the key features of the proposed national urban system in Bangladesh is making balanced regional development through the development of regional cities, and development of medium sized cities and small towns as growth centres (Mathur, 1997). Like Bangladesh, polices have been adopted in India which have successfully combated urban expansion.

Low level of economic development in many parts of India, particularly small and medium-sized cities and towns, made the government provide the sixth national development plan (1979-1980). This plan aims to reduce migration from rural areas to big cities, by balancing development across regions (Mathur, 1997). Moreover, in 1988, a national urban policy was formulated, which put forward a comprehensive plan for the development of 600 cities, 329 towns and 49 spatial priority regions. The primary objective of this plan is to create a balanced development by the development and generating economic growth and employment in the above regions, which can summarized as follows (Mathur, 1997):

- The improvement of infrastructure in small and medium towns
- Decentralizing economic growth and employment opportunities between villages, towns and cities, through a regional planning approach.

According to a National Institute of Urban Affairs (1990) development of small towns in India is a process which will be more successful in terms of economics. This process requires financial capacity, good management and time; as a result, migration flows will decrease and reduce the pressure and excessive concentration in large cities. Furthermore, the development strategy for these small cities needs to introduce flexibility in project identification and preparation of development schemes which will be more appropriate to resource potential and background for towns (National Institute of Urban Affairs, 1990). Similarly, McCatty (2004) confirmed that all countries, which have rapid urban growth, seek to slow this growth and redirect it toward smaller and medium-sized cities. Thus, governments should coordinate policies especially in terms of development to reduce the population growth into big cities. As these examples demonstrate, development policies which seek balanced development across regions can alleviate excessive urban expansion in big cities. This would be an effective plan to transpose to the context of Libya.

3.6 Decentralisation and/or Settlement Management as Proposed

Solutions to decrease Urban Expansion

There is general agreement that the continued growth of population (natural increase and migration) in any area will lead to rapid growth, as the construction of housing units is required (Saad, 2011). Increasing construction leads to urban expansion which poses several problems, in particular the encroachment of agricultural land. One way of combating the problems of urbanisation is through decentralisation. Between 1959 and 1961, a system of charges began to operate for building new offices and factories and with it a parallel system of grants for the reconversion of industrial or commercial premises into houses or schools. Furthermore, in the 1960s, the permit system was applied with increasing rigour, so that the proportion of permits to build or extend factories in the Paris region decreased. Consequently, these measures led to construction dropping to 8% in1969, from 26% in 1954. Furthermore, in 1967 stringent controls were established, including tax penalties, which were introduced for all new building in the Paris region above a certain size limit (Hall, 1977). However, unlike regions which implement these

polices, in Africa large cities are still expanding in size and function, without planning and management polices being implemented (Ayeni, 1997).

Instead, a policy of settlement management is required, encompassing all categories of rural settlements. Not only the space of settlements requires organisation, but also the functions attributed to each of them (Alshebani, 1995). The efficient management of all categories of settlements will provide an opportunity to take advantage of unalterable, prevailing trends of urbanisation. Policy is required to turn centres of urbanisation into productive areas of both national and regional economies, and also points which receive rural-urban migration. A key part of efficient urban management is the strengthening of secondary cities and rural areas to alleviate pressure on mega-cities (Ayeni, 1997).

In developing countries, it is very important to focus on developing secondary cities, as doing so will ease pressure on and assist the growth of primary cities. Developing secondary cities will encourage migration towards them. In turn, migration will be directed from primary cities alleviating the problem cause by mass migration to them. For example, McCatty (2004) has demonstrated the positive effects of decentralisation in Thailand. Here, policies were adopted which focused on developing secondary cities, which successfully aided rural development by creating employment opportunities, redistributing wealth more equally. Rebalancing development across cities resulted in equal environmental, natural, and human development in rural regions.

In recent decades, Bangladesh has had one of the highest rates of urban population growth in the world; urban population increased between 1961 and 1981 at roughly 8% annually. Urbanization is considered a powerful factor in the process of development especially into some cities such as Dhaka, Chittagong, Khulna, and Dhaka (Mathur, 1997). In the same context, Ashraf et al. (2009) have indicated that population growth led to a significant increase of urban built-up areas, from 11% to 334%, especially in Dhaka. This shift was attributed to rural–urban migration, and resulted in the rapid loss of arable lands. It was found that much of the city's rapid growth in population has been accommodated in informal settlements at the expense of farmland. Consequently, for balanced development, the government has adopted a policy of decentralization in all regions to preserve a balance in terms of growth among urban and rural areas by the decentralized administration system which aims to develop the district towns and secondary cities (spatial balanced national urban system) that would attract many people thus will reduce pressure on big cities (Mathur, 1997). Furthermore, Bombay is facing many problems

such as a lack of housing and infrastructural facilities, the spread of slums, centre of industries (large number of factories), congestion, unemployment, and pollution which are all the result of increasing population growth (Mathur, 1997). Therefore, previous studies in Bombay sought to develop strategies for the regional plan, which aims to locate future population, proposed establishment of new cities, and advocates decentralization as a policy. As a result, it aims to avoid further concentration in the capital city by dispersing economic activities between medium-sized towns and rural areas. This will lead to a decline in absolute numbers of the people in major cities (Mathur, 1997). This is consistent with Hall, (1977) who has noted that London and Paris have the highest concentrations of population because of the strength of political, economic, and social activities in Europe. Consequently, these cities are attractive to populations, particularly those seeking employment; they are considered rivals for many of the important international functions which are developing so rapidly on the continent (Hall, 1977). The concentration of various activities enhances rapid growth and expansion. In response to this vigorous expansion, plans have been formulated. These plans have attempted to contain and decentralise industry, focusing on the development of provinces outside these cities and constructing new towns. Hence, planning was more effective and more successful through these new towns (cities) which have had an effect to creating new jobs (Hall, 1977). As a result, the pressures of population growth and urban expansion on the cities of Paris and London have decreased. Finally, decentralisation made a positive impact in the society, particularly in the last two decades, where decentralisation has become a key policy in the development and establishment of cities through numerous activities such as commercial, industrial, recreational and service (healthcare, education and social infrastructure) (Deepika and Abdul, 2013).

3.7 The Mechanism of Plans of some European Governments to Reduce Urban Expansion

As the researcher mentioned frequently, a rapidly growing population creates several problems and has serious consequences on the environment, particularly agricultural land. By the beginning of 1900, the British and French governments changed the mechanism of plans, in order to alleviate pressure on their principal cities, London and Paris. Planner did so, by developing financial and commercial functions in separate cities and neighbouring areas of London and Paris, especially in central regions. Adopting this policy of decentralisation was shown to be a good solution to alleviate pressure on the

capital cities. As a result, decentralisation, the development and re-orientation of areas outside major cities, became a modal for planners (Hall, 1977; Gugler, 1997). In addition, the British, who have led Europe in many aspects of physical planning, especially in the problem of the growth of London, found that protecting the green belt prevented cities from expanding excessively (Hall, 1977). Similarly, this corresponds with Bekele (2005) who has indicated that by 1964 the most notable feature of the agricultural region surrounding the city was the Eucalyptus forest in Addis Ababa. The forest belt (green belt) used to provide both a limit to urban expansion and recreational resource for the people of the city. Recently, under the National Planning Policy in the United Kingdom a policy of building upon derelict land by up to about 60% has been adopted. This derelict land is referred to as brownfield sites, that is, land previously used for industrial or commercial purposes (Pauleit et al., 2005). Nevertheless, there are indications that brownfield sites are important to the protection of rural areas, farmland and green spaces in /and around the city. In the same context, former Planning Minister Eric Pickles, announced in October 2014:

> "New planning guidance which would prioritise brownfield sites and protect "our precious green belt" (Mathiesen, 2015).

In addition, there are many old housing sites and ex-industrial land that could be re-used for new construction, rather than expansion at the expense of green spaces; thereby the Campaign for Rural England has been estimated around one million brownfield, are available for purpose which be built on across England at present, and future (Mathiesen, 2015). The above indicators highlight the approach of National planning policy in the UK was very clear on the preservation of the green belt, an aim which would prevent expansion. However, despite this a recent BBC investigation reported that the number of houses receiving permission in green belt areas of England had increased five-fold in five years (Mathiesen, 2015).

Similar to those working in London and Paris, Hall, (1977) has emphasized that the planners in Holland have extensive experience in physical planning, and are characterized by their polycentric quality, operating at a higher conceptual level than the mundane level of effective enforcement. However, unlike planners in Britain (London), they have rejected the green belt as solution, instead adopting the linear extension; a solution which allows unlimited extension along transport lines, where much of the existing development has taken place, while keeping all the advantages of open country between those lines.

The Dutch solution is considered a principal model. In Germany the General Settlement Plan is a regional plan, gives the local authorities autonomy in planning over such issues as: development of the region through preparation of town plans; planning of roads and railways; giving subsidies and loans for road-building, afforestation and planning; and buying land which it is decided to protect in the public interest as well as it has the authority to create new towns or cities for 50,000 people (Hall, 1977).

At the beginning of 1960, Russian planners were worried about the rapid urban expansion. The principal concern of planners was the construction of dachas on Green belt land surrounding Moscow city. It has been calculated that if every Muscovite individual received land to build a dacha, the result would mean building over an area four times that of the present city. Therefore, Russian policy has been to prohibit further construction of dachas on green belt land. In conjunction, solutions have been considered to combat urban expansion. First, new cities, including Zelenograd, Elektrostal, Khimki and Krasnogorsk, were created as part of the policy of relieving the pressure of population and industry within Moscow city. Second, the development of preferential taxes outside the green belt based on major transportation lines. Finally, large growth centres were developed, housing 400,000 or 500,000 people apiece, at distances of about thirty miles from the centre (Hall, 1977).

Hall (1977) also indicates that in 1962, the chief of architects found some solutions to help decrease expansion upon the green belt: construction must be strictly controlled and forbidden upon undeveloped land; the many old houses must be reconstructed, the development of old construction and focus on decentralisation. The latter is a solution which has been considered one of the most effective and has been adopted by the Western world. The policy was successful in protecting green land, and at the same time the protection of the green belt benefitted the Moscow authorities as the area witnessed increased activity in terms of entertainment; some 200,000 visitors a day led to an increase in income for the central government, and local authorities.

Furthermore, in 1971, the planners found that with continued population growth in the future, emphasis will be upon the plan of restructuring the city, which aimed to develop, stabilise, and progressively balance through seven peripheral centres. These centres have provided a superior level of order services; each serving a sector of the city with between 600,000 and 1,200,000 people. In turn these centres are subdivided into districts of 200,000 to 400,000 persons, at distances of roughly thirty miles from the centre. This plan

has clear similarities with the Paris plan of 1965 and the British South East strategy of 1970. It is the preferred solution to combating urban expansion at the expense of green land surrounding major cities, as new cities will receive a substantial share of the growth population alleviating pressure on major cities.

3.8 Solutions to Urban Expansion by the Japanese and Chinese Governments

Between 1955 and 1960, the Japanese government enacted positive regional policies to combat pull factors to Tokyo City. These policies, adopted in 1961 and 1962 promoted regional growth in the less favoured regions of the country; new laws promoted industries in under-developed regions and also encouraged the construction of new industrial cities. In other words, the government sought to develop certain provincial areas into major regional cities, which then acted as a magnet, pulling people towards these regions instead of Tokyo. At the same time, these laws restricted construction, particularly industrial and educational establishments, within the capital region. The aim of these policies was to establish new cities which accommodated around one million people or more, and offered a complete and attractive infrastructure and urban services. Moreover, these cities established a green belt to prevent excessive urban expansion. Consequently, the national capital region plan was a positive plan for regional decentralisation (Hall, 1977).

Hall has stated that by 1965 it was clear that the main lines of the original Tokyo regional plan, particularly the preservation of the green belt, had no hope of realisation; the powers to achieve it were simply lacking. Population increase and new development have occurred at the expense of green belt. Hence, the government revised the national capital region development law, extending the boundaries of the green belt, this was a fait accompli, subsequently abandoned it, and substituted a new suburban development area extending beyond 30 miles from the centre. This process has encouraged population growth at suitable points and might be physically contiguous with the existing urban area, but an effort would be made to preserve open space between them. Nevertheless, Tokyo has a greater wealth of original and unconventional expert ideas for its future development than any other major world city, which reflects the extraordinary technical ingenuity demonstrated in Japan, especially regarding the problems of city growth. There have been many solutions proposed to the problem of urban expansion at the expense of the green belt, which range from the reclamation through the sinking of piers, and the construction of a series of bridges, to a city built on rafts. Another solution is in building upwards with

an average building height in the 23-ward area of only 1.35 levels or storeys. Also, there another idea is the development or construction upon the mountains. Furthermore, in order to reduce the pressure on major Chinese cities, Christiansen (2009) stated that the Chinese Government has adopted the application of social equity that means improved economic and social welfare for people across all the country. This is through an increase in welfare and focus on long-term social stability. In other words, the intention is to develop all regions through equal rights social and economic (equal rights in terms of the service and development for all the areas).

Al Zanati (2003) confirmed that urban expansion has resulted in the loss of a large amount of fertile agricultural land in Tripoli. Furthermore, according to Al Zanan (2006), the urban expansion has increased dramatically, as a result of a lack of effective policies and strategies that can direct and organise the process of planning and control the physical expansion into Tripoli and Benghazi. Indeed, research conduct in Libya has shown that the focus of urban planning on these two cities has led to unbalanced development. In Tripoli and Benghazi, there are many services and facilities which other cities do not possess. The opportunity created by this superior infrastructure draws migrants towards these two cities. In turn, a growing population increases population density, and, as a result, urban expansion. Consequently, one of the successful solutions to this dilemma (urban expansion at the expense of agricultural land), is the implementation of the 3rd Generation National Physical Development Plan (3GPP), which offers a great opportunity to regain control of planning in Libya and lay the right foundations for the next phase in the country's development (WHO, 2007). In other words, the equal allocation of budgetary resources and establishment of projects in various sectors to all regions of Libya will remedy this problem. This will support planning and development in the next stage, which is a pressing need for the Libyan people particularly after the revolution of February 17, 2011 (decentralization).

3.9 Summary

The process of urbanisation is frequently leading to change in land use, specifically in large cities. This has negative effects on the environment. Mitigating these effects, some countries have taken important steps to reduce urban expansion at the expense of the environment, in particular agricultural land, through successful plans and policies. One of the key solutions proposed is the balanced development of regional, medium sized cities and small towns as growth centres. In other words, this means a policy of balanced

growth between all regions through the equal distribution of the various economic and social activities. There are several worldwide examples of successful solutions to urban expansion; planners in developed European countries have advocated a policy of decentralisation to alleviate pressure on major cities. Constructing new towns and cities outside principal regions combats excessive urban expansion, which usually encroaches on agricultural land. In addition, as adopted in London, it is important to protect the green belt surrounding major cities. Adopting these two principal methods has shown to be an effective solution to the problems engendered by rapid population growth. While the context of Japan is particular, the solutions to urban expansion adopted by the government there were successful and should be viewed as a model which can be adapted to other contexts such as Libya. In particular, the development of smaller cities, to alleviate population pressure on capital cities and expanding cities vertically, instead of expanding outwards at the expense of surrounding land. For instance, mountainous regions are spaces which can be developed in order to combat urban expansion and the loss of the green belt in cities. Further, the development of brownfield sites is regarded as one of the best solutions. Consequently, a country like Libya might follow the successful urban management policies of other countries to reduce urban expansion. In conjunction with following successful examples of limiting urban expansion from some countries, Libyan policy planners can look further afield.

Chapter 4 : Research Methodology

4.1 Introduction

This chapter outlines the research methodology applied in this study, and presents an overview of the research plan. The term research refers to the process of gathering information and examining it in order to find answers or solutions to any given problem (Locke et al., 2004). Similarly, Ghauri and Gronhaug (2002) have defined research as the process of investigation, examination, planning, and implementing that plan to answer specific questions.

Research methodology depends on the approach taken to investigate the issue of concern, through individual research methods and tools used to achieve the objectives of the study (Adam and Haley, 2000). The research methodology is required to create procedures for data collecting and analyse the information needed (Zickmund, 2000). It explains the various techniques of collecting data through the secondary and primary data which were used in this study. Secondary research included a review of existing literature on the subject despite the paucity of research in the area of changes in the use of agricultural land in Libya from this phenomenon (urban expansion). The research is based on a case study of urban expansion at the expense of limited agricultural land. This is important given that the latter represents less than 2% of the total area of the country (Libya). The study adopted a mixed approach to achieve its aims and objectives and to ensure the reliability and validity of the findings and it is used as a way to ensure confidence in the conclusions made. A mixed-methods approach combines qualitative and quantitative methods in order to evaluative research. This approach is used to explore issues and problems when little is known. Current research findings will be built through data collection techniques including: semi-structured interviews, questionnaires, field observation and documentation searches such as satellite images, books, reports, statistics and journals. The researcher adopted a triangulation method through data collection to reach reliable findings as well as to provide an in-depth understanding of particular phenomena.

4.1.1 Personal Motivation in Conducting this Research

In an area of study, some researchers are becoming interested reading other people's work and others for the biography of the individual researcher has a part to play (Burgess,

1984). However, in order to discern the reasons behind a research interest can highlight something about the researcher's personality/ personal involvement. The personal motivations of a researcher as to why they chose their topic are important to understand, as they provide insight into the reasons behind their research interests.

As a resident of Tripoli, born and raised there, my choice of Tripoli arises from the fact that, as one of its citizens, I am familiar with the changes in the natural resources, particularly green areas. This in turn, affects the environment, which is considered fragile. In addition to witnessing these changes first-hand, I have also experienced the removal of vegetation or trees in large quantities from these spaces during the last few years. This is not only a personal concern, but also a worry of the Ministry of Agriculture for which I have worked since 2007 until now.

The destruction of green spaces is an understudied phenomenon. There is a distinct lack of literature concerning this area of knowledge—urban expansion at the expense of agricultural land—in Libya and Tripoli. The Ministry of Agriculture considers the study of this topic important, worthy of exploration and discussion in an effort to reduce or eliminate it, especially in Tripoli as a case study which characteristics fertile lands.

4.1.2 The Research Questions

The important step that must be taken into consideration in any research study is determining research questions (Yin, 1994). The hardest task in the research project is designing research question (Stake, 1995). Consequently, the research questions define the methodological foundation of a research project. Research methods should, therefore, be determined by the research question and methodological position of the researcher (Lincoln, 1994).

The critical review of the literature in Libya showed that there are weaknesses in policies and the urban planning system due to ineffective implementation of the laws and regulations related to the protection of the environment in general and to the protection of agriculture lands in particular. In other words, laws and regulations protecting agricultural land are not enforced. Moreover, rural areas lack infrastructure and public services. Therefore, the main research question guiding this research is:

What are the key features of rural urban transformation in an emerging economy?

This research will uncover and evaluate the phenomenon of urban expansion in Tripoli, through land management and development and its environmental impacts especially on farmland (why rapid urban expansion matters and what the real driving forces for urban expansion in Tripoli). In addition, the research will make recommendations that will help towards reducing construction on agricultural land and will find answers to the following questions:

• Have government policies and strategies been implemented to ensure a balance between urban development and agricultural lands?

• What are the likely implications of the recent conflicts?

4.1.3 Research Philosophy

The thinking behind academic research is based on philosophical assumptions (Jennings, 2001). The nature of the research problem is imposed: to choose the philosophical position and the methodological approach for a research project (Finn et al., 2000). Hence, the starting point for the researcher is the philosophical position through discussion of research methodology, which leads to the methodology and research strategy (Crotty, 1998). Consequently, selecting an appropriate philosophy for research is one of the most important steps of the scientific research, because it has essential impacts upon the next steps of the research (Johnson and Clark, 2006). The philosophy of research helps to identify appropriate methods to use in a research project (Hughes, 1994). Research philosophy represents four types: realism, interpretivism, positivism, and pragmatism (Saunders et al., 2009).

Generally, academic research is often focused upon philosophical positivism, interpretivism. According to Hussey and Hussey (1997), the categorized research philosophies: positivist or phenomenological. The questions about the methodology and methods used in the research project depend on our understanding of knowledge and how it is created (Quinlan, 2011). Therefore, to understand the social world it is important to identify the structures at work that generate events and discussion (Bhaskar, 1989). Accordingly, the researcher has sought on the wider reading of academic literature on the topic. Two philosophical approaches, interpretivism, that are adapted to knowledge and positivism. Bryman and Bell (2011) have stated that interpretivism is the study of the ways in which people attach meanings to what they do, and interpretivists interpret these meanings in order to understand the phenomena in question. It can be also said that the

researcher attempts to listen to people's views and understand their perspective on the issue through the range of the interviews.

Interpretivisim is often associated qualitative research based upon in-depth interviews, observation, and an analysis of documents (Villymor and Judson, 2004). In this case, the researchers use a qualitative approach to look critically at their work, to ensure understanding, validity and the scope of their knowledge (Myers, 2009). From the theoretical side it is inadequate to explore the nature of reality because the participants may not have an idea of the processes involves in urban expansion. Also, it may ignore issues such as power relations that have a significant influence on the problem, but may not be immediately obvious to the interviewed respondents (Ateljevic, Pritchard and Morgan, 2007). As a result, the researcher needs to use pluralistic approaches to derive knowledge and understand the problem, rather than sticking to one specific approach. Pragmatism is considered a genuine objectivity to knowledge through claims in terms of actions, situations, and consequences (Creswell, 2003). Pragmatic philosophy has numerous benefits such as:

• Uncover inconsistencies on the research issue.

• Compensates for weaknesses, both for the quantitative or qualitative data.

• Assessment of the research issue from different perspectives.

• Can be compared and combines the results of research.

In this research, the researcher believed that to achieve the research objectives, combining interpretivism, positivism (the interpretivism approach is based on the interviews, while positivism side is based on questionnaires), realism and pragmatic philosophical. These four approaches best meet the needs and purposes of the study through a critical review of the literature, study of the related documents and other secondary data sources. Interviews with the relevant authorities were carried out to facilitate understanding of the reality of the urban expansion and identify the real driving forces for urbanisation in Tripoli.

4.1.4 Research Strategy and Process

This issue of urban expansion in Tripoli is on-going. Therefore, it must be investigate the current situation of urban expansion from all related aspects in order to evaluate the driving force of this expansion and to address this issue. The main purpose of the study is to provide recommendations to the competent authorities to help protect the limited agricultural land, which has seen rapid change over the years.

The research process consists of several stages including, selecting the research philosophy (positivism, interpretivism), research approaches (survey, experiment), and research strategies (case study), and data collection methods: secondary data, observation, and primary data collection through interviews and questionnaires (Saunders et al., 2003). After deciding the nature of research, it is essential to consider the research paradigm; this is the two major philosophies such as qualitative and quantitative (Collis and Hussey, 2003).

This research will combine both, and will use different approaches and perspectives to achieve its aims and objectives through the following:

- **The first and second objectives** of this research are to gather and evaluate official and unofficial documents and published literature in relation to urban expansion and related issues. These objectives will be achieved by undertaking a critical assessment of documentations and literatures which have direct or indirect relation to urban expansion in Libya.

- **The third objective** is to establish the context to critically evaluate the potential impacts of recent change from the urban expansion processes in Tripoli.

  - **The forth objective of this research** is selecting a suitable location for a case study of a region.

4.2 Research Methodology

A research methodology is a plan or strategy which guides the investigator in the process of collecting, analysing and interpreting data (Nachmias et al., 1996; Yin, 2009). Therefore, the research methodology is an appropriate strategy which is going to solve the problem presented in the area to be studied. A methodology encompasses the techniques and tools used, and procedures adopted for collecting and analysing the

information needed to answer research questions (Adam and Healy, 2000; Zickmund, 2000).

The research strategy controls the general trend of any research study, including the process in which the research is carried out (Wedawatta et al., 2011). The choice of research methodology and methods of data collection are often affected by the philosophical position of the researcher (Crotty, 1998). According to Yin (2003) the research strategy is dependent upon three things; (a) the type of research question, (b) the control of the investigator over the actual behavioural events, and (c) the focus on contemporary as opposed to historical phenomena. Also, Yin stated there are five different types of research strategy in the social sciences: experiments, surveys, case studies, archival analysis and historical analysis (see Table 4-3). Each research strategy has its own particular method for collecting and analysing data; every strategy has its own advantages and disadvantages. Determining which strategy—quantitative, qualitative or mixed—required for this study is very important, as it would enable researcher to collect reliable information and data which is needed to achieve the research objectives. In the same context, Wells and Wass (1995) defined the research methodology as the instrument through which the research objectives are achieved (see Table 4-3 below). This is asserted by O'Leary, (2004) when stated that the researcher must find the most suitable method for addressing the needs of the research question. This means to make a decision and choose the right method for the study.

A combination of different methods of data gathering is often beneficial in analysing geographical and environmental data. As such, mixed methods is used as the research strategy, as this is considered the most appropriate for gathering the data required for this research study (see section 4.5 mixed method below). The aims of this research will be achieved by conducting extensive reviews of government policies and regulations. Current strategies will also be examined with respect to current developments that are taking place in and around Tripoli. The impact of urbanisation on the environment will be assessed by collecting information and data from different official and unofficial resources; this includes reports, documents and satellite images, and by visiting the case study target areas and conducting questioners survey as well as in-depth interviews with leading urban planning ministry officials and experts.

Table 4-3: illustrates to use the research strategy in different situations.

Strategy	Form of research question	Requires control over behaviour of events?	Focus on contemporary events?
Experimental	How, Why, What if?	Yes	Yes
Survey	Who, What, Where, How many, How much?	No	Yes
Archival analysis	Who, What, Where, How many, How much?	No	Yes/No
Historical	How, Why?	No	No
Case study	How, Why?	No	Yes

Source: (Yin, 2003).

The purpose of research is to discover valuable information and interpret it in order to conduct a thorough analysis (Amaratunga et al., 2002). In this research adopted mixed method approach through quantitative and qualitative to achieve the aims and objectives. This is the process of the research, which describes how data will be collected and analysed and then solve a particular problem (applied research), or make a general contribution to knowledge (basic (pure) research) (Hussey and Hussey, 1997; Gill and Johnson, 2002). In addition, each research approach has its own particular method to investigate the issue of concern. Overall, research is classified into two categories: qualitative and quantitative as follows:

4.2.1 The Qualitative Research

Qualitative research, in the form of direct interviews for instance, allows the intricacies and nuances of problems to be investigated in depth, by attempting to understand the behaviour of individuals and institutions through an analysis of the opinions and beliefs of interviewees (Nachmias and Nachmias, 1996). Qualitative research offers insight into the subjectivity of the participants. The qualitative approach can obtain additional information which leads to further unanticipated insights thus can be informative in terms of social and policy drivers of change. Also, qualitative research is able to describe and

interpret a particular phenomenon unlike quantitative research. Data can be collected in several ways: open-ended questions, closed question, semi-structured interviews, and observations. Open-ended questions were asked during interviews with officials from several institutions; this approach provided a data set of rich detail and gives the respondent the opportunity to respond freely. This have emphasised Saunder et al. (1997) the qualitative approach allows the opportunity to explore a subject in as real manner as possible and it has a better characterised by its richness and fullness. Furthermore, it grants the researcher the great opportunity to receive feedback from participants through questions like why and how. Also, there are advantages in the qualitative research in terms of enabling the interviewees to express their positions with more detailed information about the relevant issues. They also give the interviewees more opportunity to explain their point of views (Cassell and Symon, 1994). Whereas, closed questions often impose restrictions on participant response through to select from among several answers. Qualitative methods can highlight the key themes or patterns that emerge during the project, which are in turn used to comprehend and manage the data and develop it. There are three major purposes in conducting qualitative research: explain, explore or describe a phenomenon (Marshall and Rossman, 1999). In this way, qualitative methodology has been considered appropriate for this research to extract the official perspectives of urban expansion at the expense of agricultural land. Also, qualitative research is considered subjective in nature and is directly related to social studies. The subjectivity of qualitative research is problematic.

4.2.2 The Quantitative Approach

Hughes (1997) argued that the quantitative method as being more scientific and objective. A quantitative approach collects information through sampling a large number of respondents, subsequently analysing patterns which emerge in the data (Walliman, 2005). Hughes, (1997) has indicated that there is three most common quantitative methods are participant observation, in-depth interviews and focus groups. Each method is useful for obtaining a specific kind of data. Also, it is used for general wide overviews of issues that raise concerns. Naoum (1999) has defined the quantitative method as an investigation of a social or human problem with calculable measurements and/or numbers which are then analysed using statistical procedures in order to determine whether the hypothesis or the theory holds true. Hussey and Hussey (1997) have stated quantitative methods usually involve the numerical analysis of data. Generally, quantitative data is collected through

questionnaires, structured interviews, and numerical checklists, which can be statistically analysed and presented. Therefore, gathering quantitative data is regarded as an appropriate technique in terms of dealing with large numbers of respondents and involves the application of measurement or a numerical approach (Hammersley, 1992). To investigate the views of farmers a quantitative approach was taken in this study, whereby a questionnaire survey was conducted. The questionnaire was used to obtain farmer's perspective on expansion at the expense of farmland.

4.2.3 Mixed Methods Research

Mixed-methods are combined qualitative and quantitative methods as depicted in Figure 4.2 below in evaluative research. They are used to explore issues and problems when little is known. It is the notion of using two methods to study phenomenon urbanisation. It is used to ensure confidence in the conclusions made. According to Gorman and Clayton, (2005) the use of the mixed methods approach improves the quality of the research. In addition, Bryman, (1988) argued that both methods should be combined to get a satisfactory result. They are better equipped to deal with the complexity of social issues and problems, and as a way to extend the repertoire of data or information for motivating researchers to achieve the outcomes desired (Giddings, 2006). Similarly, Amartunga et al. (2002) have stated the qualitative and quantitative approaches are used in order to provide rich information which encourages the acquisition of a photo which clearly shows all aspects of the problem to get the best results. Also, these approaches enhance the credibility and reliability of the research in addition to supporting the findings of the study and making greater contributions on this phenomenon or the problem.

Figure 4-2: The process of the mixed methods research. Source: developed by the author.

In Tripoli, and their surrounding regions, rapid changes were observed in the use of agricultural land, and they have been replaced by dwellings. That is why it was chosen to study mixed- methods to obtain reliable data for good decision-making.

Consequently, qualitative data were mainly integrated with quantitative data for the

purpose of presenting extra information via semi-structured interviews (see section 4.5 below) which might to support this research as well in order to achieve the objectives of the research. This is particularly important due to the limited data available around in Libya the phenomenon of urban expansion at the expense of agricultural land. This also corresponds with Bulmer and Warwick (1993), have pointed out that in developing countries, there are no reliable official data and statistics that can be relied. Therefore, the combination of both approaches can increase and develop our current knowledge for the main reasons or the driving force of this expansion as well as to gain a fuller understanding of the research problem.

4.3 Data Collection

For order to achieve the objectives of this study the researcher was adopted a mixed method approach through two main data sources: primary data, secondary data as well as field observation. The discussion below for explains data collection techniques and the main sources and methods for the data collection which were used.

4.3.1 Primary Data

The data collection for this study includes interviews, questionnaires, and observations. Details of these are described the section below.

4.3.1.1 Field Observations

One of the key data sources was a visit (by the researcher) to the regions of study to make direct and indirect observations and observe the situation on the land, showing their environmental impact. The researcher made two fieldwork visits to Libya (Tripoli), in August 2012 and in January 2014. In order to observe the real situation on the ground and collect the information and necessary data and to gain a thorough insight for the processes urban expansion through the pictures, which will provide conclusive evidence on the rapid spread of this phenomenon by eliminating the fertile farms which Tripoli is famous with it and also the environmental consequences of this. At the same time, the researcher visited some relevant institutions to obtain more information about this.

4.3.1.2 Interviews

The plan of the researcher was to conduct interviews with ten experts at different levels and positions at institutions such as the Ministry of Agriculture (MA), Urban Planning Agency (UPA), Ministry of environment (ME), and the Municipality of Tripoli (MT). These ten people were invited for interview, but ultimately only eight were available. The interviewees were chosen based on the pilot study through their relations of regarding land management and development in Tripoli. The purpose of interviews in this research was to obtain more detailed information from the specialists regarding the urban expansion. The interviews were conducted with three managerial UPA staff, two employees from the Municipality of Tripoli and three employees from MA. Some categories of stakeholders refused to be interviewed (see Table 4-1). These interviews boosted the author's background regarding about the research topic and formed, along with the questionnaire, the main data source for this research. The interview questions were generated based on the issues arising from the literature review and fieldwork observation. In addition, the researcher has felt that they had the desire and ambition to improve the current situation which aims of stemming rapid urban expansion. This was reflected by their agreement to carry out an interview and to allow it to be recorded, as well as their willingness to cooperate to provide more information at a later date after the interview.

Table 4-1: Key stakeholders (interviewees) in the study.

Category of stakeholders	Actual participants selected for study	Number contacted	Number of responses	Coding
Urban Planning Agency (UPA)	-Head of the Management Committee of Urban Planning. -The director of the Urban Planning Administration. -Assistant Secretary for the Real Estate Department and State Property.	3	3	DUPA
				APFO
				AHRERPS
Ministry of Agriculture (MA)	-The First Agent for the Minister of Agriculture. -The Second Agent for the Minister of Agriculture. -Chairman of Administrative and Financial Affairs at the Ministry of Agriculture of Tripoli Branch. -Head of Department of Forestry and Pasture Tripoli Branch.	4	3	FAMA
				SAMS
				AFATB
Ministry of environment (ME)	-A senior official at the Ministry of Environment	1	0	
Municipality of Tripoli (MT)	-The Chief of Administration Affairs of Urban Planning in the Municipality Tripoli. -Technical Engineer in Urban Planning in the Municipality Tripoli.	2	2	MTC
				MTT
Total		10	8	

4.3.1.3 Questionnaire Survey

The questionnaire is one of the most widely used survey data collection techniques. They are considered an efficient way of collecting responses from a large sample to answer questions regarding the research topic (Saunders et al., 2003). In the same context, as Hussey and Hussey (1997) point out, questionnaires are a set of questions addressed to obtain reliable answers from respondents from a selected sample. As stated above, questionnaires have some important features, which make them viable and reliable tools such as:

• The respondents become more open while answering questions because the

questionnaire is more anonymous than an interview.

- The questionnaire is an economical, quick and less biased data collection technique then others such as interviews.

- A questionnaire is a flexible way to get data even from a large sample.

As a result, the researcher chose to use a questionnaire survey to provide a comprehensive overview of the rapidly expansion, the purpose of which is to collect the data or get information from large numbers of people (farmers) to find out their views on this phenomenon. This means in-depth knowledge of the respondents in order to quantify the knowledge and attitude of participants towards expansion at the expense of agricultural land. The researcher used open and closed questions (see Appendix 1). Moreover, the questionnaire was initially designed in English then translated into Arabic for the benefit of the respondents as well as to improve the response rate, and to obtain accurate answers, and to improve the response rate from farmers.

This questionnaire was developed into five sections as follows:

Part I - Demographic Information (General Details): this part of questionnaire consists of four questions which are about social characteristics of farmer. These included: place of birth, age, gender and number of family.

Part II - Land ownership and Farm Structure: this part of questionnaire consists of six questions which are about socioeconomic characteristics of farm. These included: property, farm area, approximate average of built up area and the type of building.

Part III - Farm Income and government support: this part of questionnaire consists of eleven questions which are about economic characteristics of farmer. For example, the farmer career is enough, other sources of income, the existence of co-operative societies by the government for support the farmer, and income for the farm; is a profitable occupation.

Part IV - Legislation and government planning policies (Policies and Laws): government's role policies toward farmers in terms of laws and regulations and facilities and assistance provided by the state to farmers. This part of questionnaire consists of nineteen questions which are about the reasons behind the spread of the building and houses on the agriculture lands.

Part IIV - Farmer financial and problems:

According to Saunders et al. (2003) there are two main types of questionnaire, which differ in the way that the respondents are contacted. The first is the self-administrated questionnaire. The second type is interviewer-administrated, which can be divided into:

- Structured - close ended questions.

- Semi-structured close ended question with some open option questions.

- Unstructured- open ended questions.

The semi-structured method was chosen in the questionnaire and interview because some of the information needed was very sensitive and complicated and also were generated based on the issues arising from the literature review and field observation as well as the researcher's experience of Libya's agricultural field. This research used a semi-structured questionnaire to gather data from farmers since the research required knowledge of the opinions and perspectives of a large number of them and also saving time and money.

Semi-structured interviews are more formal than unstructured ones (open and closed-ended questions), the purpose of it is to discover as much as possible about specific issues related to the subject (Naoum, 1999). As stated above, semi-structured interviews are usually covers of a list of themes and questions (although these may vary from interview to interview), and also are used in qualitative research in order to conduct discussions not only to reveal and understand the (what and how) but also to place more emphasis on exploring the (why). Furthermore, a semi-structured interview has been selected as suitable for the exploratory part of the issue thus can get useful information through to enable the interviewee to explain his point of view. During the discussion may be generating additional questions to get more details about specific points that the researcher might want to explore. In other words, the researcher and can add questions during the interview which the researcher believes that it will add value the search. This means the interviews allowed interviewees to give valuable data from their point of view in their own words. Overall, a semi-structured interview allows the interviewer to follow up the sequence of ideas or points and attempt to motivate the interviewee to explain in depth particular issues that the interviewer wishes to explore (Bell, 2005).

4.3.2 Secondary Data

Secondary data sources provide outstanding background information about the research topic. According to Saunders et al. (1997) secondary data has two main advantages: first, it allows the researchers to generate and refine their research ideas; second, it is a knowledge enrichment process.

4.3.2.1 Documentation

This section will review the publications related to the economic changes that occurred to rural migrants and asses the publications related to the effect of urban expansion on the environment including published academic articles, reports, satellite images, books and magazines.

This documentation includes written documents such as notices, correspondence, minutes of meetings, reports to shareholders, diaries, transcripts of speeches and administrative and public records. Written documents can also include books, academic journals and magazines articles and newspapers which related to the subject or case. These can be important raw sources, as well as a storage medium for compiled data (Saunders at al., 2003).

Furthermore, the research studied a number of variety sources relating to this topic like planning policies, the laws, the legislation, reports and the documentation gathered from the relevant authorities in particular Urban Planning Agency and Ministry of Agriculture as well as international journals and publications, official and institutional websites, and satellite images, which covers a wide range of topics in relation to urban expansion and its impact on economic transformation in Libya. The following is an outline of these topics:

- The trends of urban population growth in Libya in general and Tripoli in particular.

- The physical expansion and urban development of Tripoli.

- The relation between industrial and economic development in Tripoli and the continuity of generating migrants to the city.

- The relation between the government policies and strategy and urban population growth.

- The impacts of urban expansion on the environment.

- The extent of farmland degradation through urban population growth and urban development.

- The impacts of urban expansion on the sustainable development of the country.

4.3.2.2 Remote Sensing

Remote sensing (RS) technique is considered a powerful tool for studying urban problems, including urban expansion (Martinuzzi et al., 2007). Moreover, remote sensing technique has been widely implemented as an important data source and economically efficient tool in detecting urban expansion by collecting multispectral data and converting them to meaningful information to assess and monitor urban area changes or monitor the processes of land use patterns (Weng, 2001; Cheng and Masser, 2003; He et al., 2006; Long et al., 2008). In this study, remotely sensed images captured in different years will be collected from the previous studies, journals, reports, and Remote Sensing Centre in Tripoli to assess the changes in urban area in and around Tripoli. Furthermore, these images confirmed the rapid urban expansion at the expense of agricultural land. It means that satellite images (a wealth of geo-data) can be used to respond to real demand from urban expansion at the expense of agricultural land (UPA and UN-HABITAT, 2006) In addition, Geospatial tools such as RS/GIS tools could help in tracking landform changes to create and update maps for managing land utilization effectively and sustainably (Saad et al., 2011).

4.3.2.3 Visual Material (Photographs)

Recently, many institutions have witnessed an increase in the use of visual methods in research (Sweetman, 2009). Visual materials such as photographs, film, video, drawings, advertisements or media images, sketches and graphical representations have important findings for the sociologists, social researchers and anthropologists (Collins, 2010). According to Ryan and Barnard (2003), visual photographs are promoting the data analysis process through providing broader and more open content thus giving a deeper meaning for research topic. Similarly, Pink (2007) mentioned that images have a documentary value, and these images record the visible phenomena. It is argued that methods based on photography are accepted as a subjective and reflexive form of qualitative data production and are now entrenched in major fields of inquiry, including

sociology, educational research, social and others (Bohnsack, 2009). Moreover, Harper (2004) indicated that photographs are a part of the unproblematic 'facts' that constitute the 'truth' of tales. Photography has been found to be useful in helping develop a field of study since its illustrative function allows for fact gathering which can help in orienting one to the environment of study.

The researcher in this study used only one type of visual data, photographs, to support the research topic as well as to support some of the stakeholders' responses to explore the reasons for the expansion. The research also relied on photographs from the secondary data for confirming the rapid expansion of the building over the past years.

4.4 The Case Study Approach

Hussey and Hussey (1997) have stated that a case study is an extensive examination of a single instance of a phenomenon of interest and is usually an example of a phenomenological methodology. Moreover, a case study technique provides researcher with a variety of tools to gather and analyse both quantitative and qualitative data (Stoecker, 1991; Zainal 2007). Furthermore, large-scale qualitative and/or quantitative studies can implement one or more pilot studies either to test the research process or to explore the issue at an early stage of the research (Van Teijlingen and Hundley, 2002).

A case study for any research will also be exploratory, descriptive or explanatory (Yin, 2009). Therefore, a researcher has to spend a considerable time and effort to find out, understand, identify, and evaluate the facts, and verify and analyse the collected qualitative and quantitative data to present the actual situation and offer an objective explanation about the phenomena. In addition, the exploratory approach provides greater information and objective understanding of the situation under investigation. Like all exploratory research, the results drawn from a case analysis should be seen as tentative. Moreover, the overlapping data analysis with data collection offers increased flexibility for modifying or adding to the collection process.

This study investigated the urban expansion phenomenon in Tripoli to study the phenomena as it occurred and to concentrate on identifying the relationship between all parameters; i.e. organisations, governmental entities and individuals. The case study method in this research was subject to modification throughout the study, however, the researcher has no standard procedures to prove or disprove the phenomena.

In this research, the case study involved in-depth interviews, questionnaires, reviews of secondary data and field observation to answer the research questions Therefore, the case study has the following properties:

• It focuses on urban expansion phenomenon under the previous and current strategies.

• Its data and information based on variety of resources.

A unique advantage of using case studies is that a variety of evidence can be drawn upon such as documents, interviews, questionnaires, observations and others beyond a conventional context (Yin, 2009). Also, it plays an important role in different research areas (Dul and Hak, 2008). In addition, it is considered a broader approach to identify various elements in phenomenon research (Stoecker, 1991).

As a result, Tripoli area was chosen as a case study of this research for the main considerations include:

• Tripoli is the capital city of Libya.

• Tripoli is the city with the highest proportion of the Libyan population which reached more than 25% and most rapid urban growth in Libya.

• Tripoli is a centre for economic, social, political, cultural and service activities.

• Tripoli is a key location for ministries, bodies and state institutions, some of whom are part of the study population (sample), for instance the Ministry of Agriculture and Ministry of Planning.

• Tripoli has the best fertile agricultural lands in Libya.

• The increasing spread of the phenomenon at urban expansion on agricultural land in Tripoli.

To achieve the research objectives primary and secondary data (see Table 4-2) were collected and the government policies and regulations were reviewed (Table 4-2). Current strategies will also be examined with respect to current developments that are taking place in Tripoli area. The impacts of urban expansion upon green spaces were assessed by collecting information and data from various the relevant resources.

Table 4-2: The methodological outline is summarised as follows:

Research Objectives	Research Methods	
Loss of green space / Extent of urban area	Primary data	Stakeholders (Interviews)
	Secondary data	Remote sensing data Government reports Journals and international publications Field observations
Implications of the loss of green space	Primary data	Stakeholders (Interviews) Farmers (questionnaires) Field observations
	Secondary data	Remote sensing data Journals and international publications
Policy processes	Primary data	Stakeholders (Interviews) Farmers (questionnaires)
	Secondary data	Regulation and polices Government reports International publications
Analysis and comparison of the obtained data and information	Comparing the collected data	
	Analysing deferent dated remote sensing data	
	Analysing/compare interviews, questionnaires information and data	

In 2010, as a part of the university's postgraduate modules, the researcher conducted a pilot study to explore the effect of urban expansion on farmlands in Suq Aljumma, the eastern part of Tripoli, where the questionnaires were distributed among a number of farmers in that area. He also undertook field observation in three different areas in and around Tripoli. In addition, a pilot survey questionnaire was conducted to ensure the clarity of the questions and to check their duration by in-depth interviews (single semi-structure interview), with the former Minister of Agriculture, where the researcher used the opportunity of the presence of the former Agricultural Minister of Libya to the UK to arrange an informal meeting to discuss urban expansion at the expense of agricultural land.

Furthermore, interviews were conducted with three researchers of the Agriculture Research Centre in Tripoli to ensure the clarity of the questions and to check them.

Oppenheim (1992) advocates the use of a pilot study so that any weaknesses in the questionnaire come to light. In addition, documents such as scientific fields helped the researcher of the deep knowledge of the problem in order to obtain primary data that can be used to prepare questions. This, in turn, has created the final questions which covers research objectives without any weaknesses (see Figure 4.4).
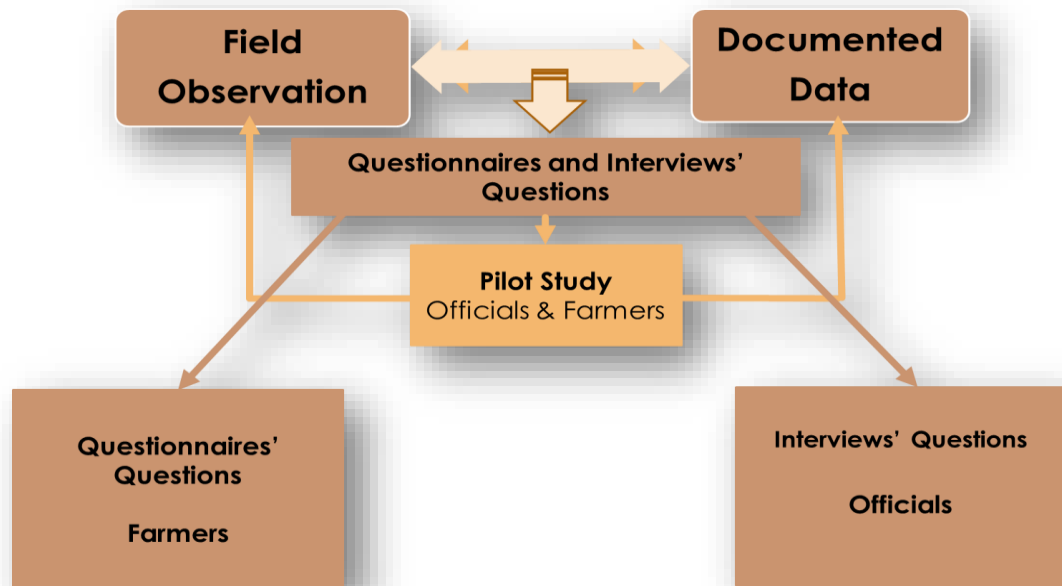
Figure 4-4: A pilot study to ensure the clarity of the questions and to check them. Devised by the researcher.

4.4.1 The Study Area

The initial plan of the researcher was to conduct interviews with stakeholders and a survey of both farmers and residents in the western region, specifically Tripoli, as the case study (see Figure 4.1). However, in February 2011, an uprising took place in Libya followed by subsequent military action by NATO. This, in turn, has created a spread of weapons among citizens in 2012. Therefore, the strategy (a survey of the residents) was abandoned due to the significant risks presented to the researcher in the study region. As a result, it was decided to limit the data collection to farmers and stakeholders only. There were many risks and challenges which faced the researcher during data collection as mentioned above.

Nevertheless, the researcher needed to take proactive measures to do interviews and questionnaires by explaining the issue and its future implications for future generations,

especially in terms of sustainable development even can get positive responses from the participants. Data collection from farmers was very difficult because of the proliferation of weapons and continuing fighting every day. This also corresponds with Ghauri and Gronhaug (2002) when have pointed out that could occur unexpected events, which may influence upon obstruct the data collection process. Therefore the researcher was unable to reach all the farmers. However, of those who were contacted, most of them were very cautious and some refused to answer some questions for personal reasons and to avoid revealing confidential information about themselves.

Figure 4-1: Map of the study area located on the western region of Libya, Tripoli. Modified From Milanese et al. (2008).

4.4.1.1 Selection of the Study Areas and Response Rate

There is large number of farms in Tripoli. Stratified sampling was chosen as a proper way to achieve the research objectives. As the researcher indicated above in terms of the selection of the study areas for the urban expansion, the fieldwork covered seven districts that are located on the Tripoli region's coastline. These areas were: Central Tripoli, Suq Aljumma, Hey Alandalus, Abuslim, Tajoura, Ainzara, and Janzour which covers about 715 km^2 (calculated by the researcher). One hundred and nineteen copies of the questionnaire were distributed to the farmers located across the seven regions; 17 farmers in each zone received the questionnaire. Eighty-four questionnaires were collected, representing a 70% response rate for the total number of 119 distributed questionnaires. Considering the difficulties and challenges which faced the researcher during the process of the distribution and collection in 2011 and 2012 (noted above). The response rate was considered to be very good.

4.4.1.2 Stratified Random Sampling for Farmer

In stratified sampling, the population (in this case, the farmers) was divided into groups called strata or into different subgroups, then randomly selected for the final subjects proportionate to the different strata. This technique is useful as it ensures the presence of the key subgroup within the sample (Saunders et al., 2003). According to Walliman (2006), random stratified samples should be used when the case under study has classes with different qualities thus each layer represent a random sample taken according to the class size, and the total samples are taken from each layer in the same proportion. Hence, this is an accurate representation for the total of samples in terms of question. As a result, the differences will be low in this sample (low variances), and the best consequences are obtained. In addition, this sample is more competent and effective than simple random sampling as it has attributes very close to the same specifications of the community to be studied (Robson, 2002). Similarly, Saunders et al. (2003) have stated that this technique reduces selection bias as well as have a higher statistical precision compared to simple random sampling. This is because the variability within the subgroups is lower compared to the variations when dealing with the entire population because this technique has high statistical precision, it also means that it requires a small sample size which can save a lot of time, money and effort of the researcher. Furthermore, the main benefit of stratification is that allows the researcher to develop a far more precise estimation of attributes of the population (Kumar and Chaudhary, 2004). The researcher has adopted a stratified sample to select at a sample that is representative of all different farms in Tripoli (the study area).

4.5 Data Analysis

The data had been collected from interviews and questionnaires. Where this has been obtained from the response of the interviews with stakeholders, who were translated from the Arabic to English language, it has then been analysed manually (by thematic analysis). Also, the data from the questionnaires were translated from Arabic to the English, and then the quantitative data was coded and inserted in the appropriate statistical tool (SPSS). This program helped to save time in the analysis process. The display of frequency tables, typically to summarise the data by numbers and representing them in percentages, to show all of the factors with high mean scores. The questions of the questionnaire were arranged into groups (themes), as shown in Figure 4.5 below. The findings will be assessed by critical examination. By comparing the findings of this research with the collected information (interviews and questionnaire analysis) and data from the literature and by

conducting discussions with researchers, researcher will try to reach to a conclusion that may summaries the real driving forces for urban expansion in particular in Tripoli, which has seen changing agricultural lands over the years through those themes. Also, the researcher will try to reach to recommendations which may help stakeholders to address the urbanisation issue in Libya in general. The findings will be discussed in the discussion chapter.
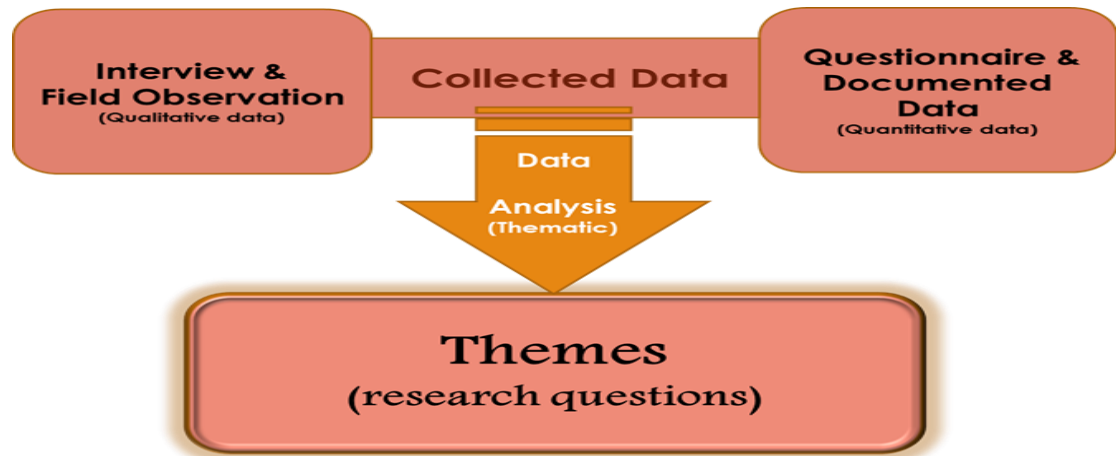
Figure 4-5: Reviewed the themes in order to understand the driving force of urban expansion. Devised by the researcher.

4.5.1 Triangulation

Triangulation techniques is used in this study between the data and information that collected from the literature and documentations, field observation, questionnaire and the interviews, all these data to answer the research question. The main objective of using this technique is to validate the data collected by the researcher and a fruitful way to achieve the aims of the research and answer the research question. In other words, these sources were used to strengthen the information obtained through data triangulation in order to have a better understanding of how the urban expansion. Triangulation methods are mainly employed during research to collect data in order to test the validity of the information collected for a case study at different times or from different sources in the study of a phenomenon and compare the results. Moreover, triangulation gives different views of the issue for the stakeholders and comparisons between them. Also, evidence from the literature review, the scoping study, and cohorts of stakeholders have been helped provide a strong discussion base about the study's themes. According to Bazeley (2004) the adoption of different sources and methods and materials (combine), and integration for analysis strengthens the validity of the data and helps in overcoming bias.

In the same context, Johnson and Christensen (2007) have pointed out that purpose of triangulation seeks convergence, corroboration and correspondence of results from different methods.

4.5.2 Validity and Reliability

Validity and reliability are concepts that have been widely reviewed by numerous quantitative researchers (Bashir, 2008). Validly and reliability can be defined as an agreement between two efforts to measure the same thing with different methods' Campbell and Fisk (as cited in Winter, 2000).

Any research aims to fully understand the phenomena under investigation. Therefore, the content of the questionnaire must disclose the research question under investigation (Flowerdew and Martin, 2005). Researchers tend to use a variety of quantitative and qualitative methods to collect their data to achieve their objectives, i.e. through observation, interviews, questionnaires, etc. However, several researchers strive for reliability and validity in their findings as validity rely on data collection and analysis techniques and research methodology in general. Thus, validity means checking whether the objectives of a research been achieved scientifically or not (Quinton and Smallbone, 2006). Moreover, Winter (2000) notes that each statement requires different means of validation. The above also, stated that validation should be adjusted by appropriate research methodologies and the research should measure what is intended to be measured.

To achieve valid and reliable findings, data and information have been collected using mixed methods and the findings will be based on analysing the views of officials, experts and local farmers. Also, to ensure validity and reliability in this study, the researcher follows four important factors:

- The selection of the research data tools was checked and piloted to ascertain their suitability and adequacy in the pilot study.

- Data was collected from multiple sources, whether primary or secondary, including interviews, questionnaires and field observations.

- The evaluation of urban expansion, land management and development in Tripoli by the participants.

- The use of multiple research methods for data generation to conceptualise the research

problem and obtain the research findings through triangulation.

4.6 Limitations of the Research

During all stages of this research, researcher has encountered some obstacles and difficulties that need to be mentioned, which related to the research topic, while other issues are linked to the data collection methods used. The limitations are summarised in the following points:

- The researcher suffered from the lack of any prior theoretical studies in the research area. This means a lack of available secondary data regarding this phenomenon in all the relevant authorities. Also, data and information availability in relation to the number of emigrants to Tripoli, employments and unemployment figures in Tripoli was limited.

- There were difficulties in obtaining maps and satellite images. Several national agencies are not able to provide large-scale digital topographical maps, and the absence or low quality of cadastres means that basic core datasets are unavailable or inaccessible. As a result, duplication and incompatible data are frequently observed.

- Several changes in the administrative boundary of Tripoli between 1970 and 2010 that led to contradiction among the collected data.

- Several changes in administrative authorities in Libya (Merger some ministries and administrative entities).

- Last census was conducted in 2006. In other words, a lack of data which would illustrate the demographic events in recent years, especially post-2006.

- After the Libyan conflict in 2011(17 February revolution), the majority of agricultural land was destroyed. As a result, the ministries and its administrations have lost their authorities in the implementation of and follow-up tasks at the country and city level.

- In regard to data collection and conducting fieldwork with farmers, there were issues regarding personal security due to the proliferation of arms among farmers. Moreover, there was a lack of awareness among farmers regarding this

phenomenon. Therefore, collecting primary data in the region of study was a difficult and dangerous task, especially in relation to arranging meetings, and discussions; many of the farmers have refused to answer the questionnaire.

It was somewhat difficult to obtain information reflecting the actual state of urban expansion, due to the security situation. Thus, the researcher faced challenges in completing the research picture.

4.7 Ethical Considerations

There is a remarkable increase in attention paid to ethical considerations due to changes in the concept of human rights and the protection of data. These changes seek to increase the level of ethical standards regarding how to deal with research participants (Social Research Association, 2003). According to Bryman (2008), it must be taken into account the ethical principles with participants when conducting research such as confidentiality and the risks. In this context, Gray (2004, p.235) mentioned that:

> "Should not be harmed or damaged in any way by the research. It is also important that interviews are not used as a devious means of selling something to the respondent".

Furthermore, during the writing and disseminating of the research, the researcher should write in clear language through used words and expressions without any harmful references to participants. This in turn has avoided any misuse of the results for the advantage of one group or another (Creswell, 2009).

In this study, the researcher was guided the ethical principles used at Sheffield Hallam University (Research Ethics Policies and Procedures, 2009, 2012), which are based on the standards of the Declaration of Helsinki and the ESRC Research Ethics Framework. On this basis, ethical issues arise at a variety of stages in many research projects which includes four different stages: beneficence, non-malfeasance, informed consent and anonymity/confidentiality.

Based on the principles mentioned above, the researcher should focus on expected benefits from this study and the participants were informed and explain them the importance of studying that will benefit the people for them as individuals and for their country as well. Hence, it is important to indicate the ethical issues, especially in the risk situations, which could face a researcher and participants for example an invasion of privacy, a lack of informed consent, deception is involved and harm to participants. This

corresponds with Creswell (2009) who has mentioned that the purpose of the research must be clearly transmitted to participants, and avoids ambiguity of purpose. This means integrity must be attained prior to conducting any of the data collection methods. To ensure these issues the researcher endeavoured to respect all participants and protect them through the following points:

- The researcher indicated: names of the participants will not be mentioned in the data analysis. In other words, their names and any information revealing their identities were removed from the collected data. Data from interviews and questionnaires were discrete and the contents of these were treated confidentially and were not mentioned or discussed with other participants.

- All the responses which obtained by the researcher will be kept confidential that means any unsafe information should be kept disclosed and the privacy.

- The data collected will be presented for the purpose of scientific research only.

- Participants have the right to answer or to refrain upon the questions and withdraw at any time during the interview. Moreover, distressing and/or uncomfortable questions were avoided and participants were given the right not to respond to any questions they so choose. They were assured that any adverse consequences will be detected and professionally dealt with immediately.

- The recording tools which have been provided during the interviews, are reliable, and will be kept it, and access to it; will be for the researcher and academic team only.

- To avoid any interventions that may affect the value and validity of the data the researcher respected all the issues, political, economic, social and monitored.

4.8 Summary

This chapter has discussed the methodology and the methodological approach adopted for this study. A mixed-method approach was selected as it suited the needs of the study and provided a framework to achieve its aims and objectives and to ensure the reliability and validity of the findings; it is the most suitable approach for the research problem. Considerable value was gained from the use of a mixed-methodology, where different techniques are deployed at different stages of the research process. The research methodology utilises both quantitative and qualitative methods to collect primary and

secondary data. Due to a lack of the required information in this subject, the researcher chose the questionnaire technique as the main research strategy. The questionnaire is considered an essential, and the most appropriate method, for the collection of the main data for this study. Taken into consideration was the questionnaire design, the form of the questions and the questionnaire translation.

A variety of source material was collected in addition to the questionnaires. This included, interviews, field observation and documents (satellite images/ books/ reports/ statistics/ journals). In combination, these sources enable a richer understanding of the research problem, and help ensure and improve confidence in the conclusions made. Additionally, this chapter discussed the pilot study that was carried out before the main survey to explore any ambiguities, weaknesses and problems in relation to the questionnaire design, data collection and analysis processes, and must be integrated to make the study holistic. The transcriptions of the qualitative data from the interviews will be analysed manually. Also, a computer-aided software program (SPSS) will be employed to analyse the quantitative data. In the subsequent chapters, the findings will be discussed and results of the study explained, utilising the information from an analysis of the data.

Chapter 5 : Setting the Scene for Libya; Location, Climate, Resources and General Overview Location and Area.

5.1 Introduction

Located in the centre of North Africa, the northern coast of Libya sits on the Mediterranean Sea. Libya has a coastline that stretches for approximately 2000 Km (Milanese et al., 2008). To the east, Libya is bordered by Egypt and Sudan, to the south by Niger, Chad and Sudan and finally to the west by Algeria and Tunisia. Seven times larger than the United Kingdom, Libya has a total land area of 1,775,500 square kilometres (685,000 square miles), making it the fourth largest country in Africa and the 16th among the countries of the world (Alawar, 2002; Oesri, 2006; Amer, 2007; Mohamed, 2008), this is greater than half the total area of India, or more than the total area of Western Europe (World Bank Report, 1960; Malhauf, 1987). However, more than 90% of the land is either desert or semi-desert, most of the areas are unproductive, and are considered to be one of the most arid places on earth; except for the area along the coastline and some of the oases in the south where the cultivated land is concentrated in less than 2% of the country's total area such as Jafara Plain, and Jabal al-Akhdar (See Figure 5.1)

Between 75% and 80% of the population live on the coastline. The climate is affected by the Mediterranean Sea to the north and the Sahara to the south (Ministry of Municipalities, 1979; Abuarrosh, 1996; Terterov and Wallace, 2002; FAO, 2005; WFP and FAO, 2011). The majority of the people are concentrated in the western region of Tripoli (FAO, 2005).Tripoli is the capital of Libya. Petroleum, natural gas and gypsum are the main natural resources of the country (Terterov and Wallace, 2002).

Libya is one of Africa's largest countries, and largely consists of barren rocky and sandy desert, which is part of the Sahara. Along the southern border near Chad rises the rugged mountain range of Tibesti Massif, which is Libya's highest point (2,286m; 7,500feet)(Mohamed, 2008). In other words, the Libyan deserts are amongst the most arid places on earth (Oesri, 2006). Consequently, natural factors like geographic location, climatic characteristics, topographical nature, and water resources are considered to be the most influential in the distribution growth population and cities. Thus, the human population distribution is a reflection for those factors.

From 1934 until 1951, Libya was divided into three major regions: Tripolitania (Tripoli) in the northwest, Cirenaica (Benghazi) in the northeast, and Fezzan in the south which areestimated to cover areas of approximately 360,000, 855,000, and 550,000 square kilometres respectively (Amer, 2007).
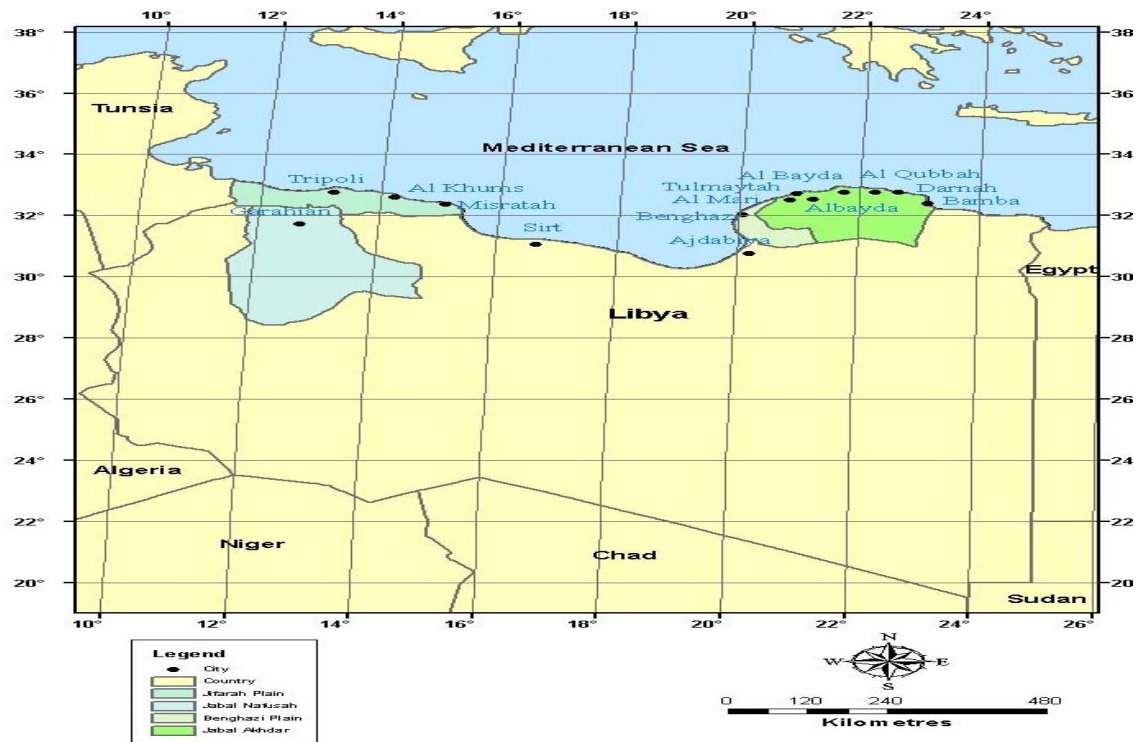
Figure 5-1: Map of Libya. Source: Nwer, 2005

5.2 Climate

The climate in Libya is a mixture of a Mediterranean climate, characterised by cold, wet winters, and hot, dry summers and a desert, which is characteristically dry. It has high temperature variations between day and night, and between summer and winter, where rainfall along the ranges coastal areas from between 150 mm to 400 mm in the year (Al-Sanusi, 2005; General Planning Council, 2003). This is considered to be the most important factor in agricultural production; the temperatures vary substantially between the summer and winter season ranging from 0ºto more than 40º C with very high rates of evaporation (General Planning Council, 2003). There are hot, dry and dusty winds that blow from the desert, one of which is the called Ghibli which prevails only for a few days (Amer, 2007). Furthermore, Libya can be divided into four climatic areas: the coastal area, the highlands directly following the coastal strip, semi desert areas and the desert (EAP, 2000).

5.3 Historical Overview of Agriculture

Archaeological evidence indicates that agricultural practices in the region of Libya can be traced back centuries (Atir et al., 1981). The Libyan population was mainly divided into three groups: the first group settled in the coastal strip of the country and agricultural activities were their source of food. The second group; were nomadic tribes spread all over the Libyan Sahara. The third group; were sub-nomadic. Over time the first group expanded while, the nomadic and sub-nomadic population decreased (Alshebani, 1995;Atir et al., 1981).

Moreover, these studies indicate that Libyans exercised the way of life of settled cultivation and grazing for a long period, since ancient times and before the arrival of the Phoenicians, Greeks, and Romans to the Libyan shores (Porter and Yergin, 2006; Almahdowee, 1998; Atwaar, 1991; Atir et al., 1981; Yousra, 1968). However, in the era of the Greeks and Romans the agriculture practices had improved especially in Tripoli and coastal regions due to the improvement of the farming system which based on more developed water management practices as building dams to store rainwater and digging wells and channels (Almahdowee, 1998; Yousra, 1968). As a result, most of the population concentration is found in the northern part of Libya or upon the coastal areas (Almahdowee, 1998; Kassas, 1989).

5.3.1 Recent Agriculture Activities

At the beginning of the twentieth century, Libya was classified as an agricultural country (Al-Hajaji, 1989), where about 93% of Libyan revenue was come from the agriculture activities, and around 87% of Libyans were worked in the agricultural sector (Al-Hajaji, 1989; Yousra, 1968). At that time, Libya was exporting some agricultural products such as citrus fruits, olives, dates, peanuts, and grains (Almahdowee, 1998; World Bank Report, 1960).

The Italian occupation of Libya began in 1911 (Amer, 2007), and the Italian government spent about $150 million over 30 years of governance, above all on agricultural development. It granted approximately 66% of its total spending to this sector. In later years, between 1936 and 1942, much land was reclaimed for cultivation, reaching about 225,000 hectares. This contributed to improving economic growth particularly in the agriculture and housing sectors. The population of Italian citizens in 1941 stood at about 110,000 inhabitants, most of whom lived in Tripoli i.e. roughly 70,000 inhabitants (World

Bank Report, 1960). Tripoli, was the first city occupied, which showed in new architectural styles and forms of planning that spread throughout the city, such as Western styles of houses, offices, shops and the width of streets and roads, and size of squares (Amer, 2007).

During the Italian invasion, the majority of Libya's population lived in the rural areas in the coastal strip and they were dependant on agricultural activities (Alshebani, 1995 and Atir et al, 1981). One of the aims of the Italian invasion of Libya was to annex the agricultural lands and to export its products to Italy. For instance, in the Tripoli area (Jafara Plain), the fertile lands represented more than 60% of the total fertile lands in the country. Most of these lands were under the control of Italian farmers (Atir et al, 1981).

Before the discovery of oil, more than half of the Libyan people were dependant on agriculture, which was the main natural resource of the Libyan economy. Then with the discovery of oil in 1958 there was an impact that was effective in the acceleration of development processes, prosperity and creation of new job opportunities outside the agricultural sector. Therefore, the practice of agriculture became less attractive in terms of profit and so many farmers shifted from rural areas to the cities searching for jobs with higher salaries. Therefore, agriculture sector performance fell and the production decreased (World Bank Report, 1960; WFP and FAO, 2011; Alhajaji 1989). Alhajaji (1989) summarised the impacts of shifting from agriculture activities to other activities as follows:

- Rapid spread of the urban population.
- Rural-urban migration.
- The increase of consumption per capita.

5.3.2 Libya after Independence

In the early nineteen-fifties, 80% of the Libyan population were living in rural areas and they were dependant on agriculture and grazing for their living (Alshebani, 1995). In 1959, the Libyan, and Italian governments issued an agreement, which allowed the Italian farmers to sell their farms to the Libyans until the end of 1960; in other words, the transfer of property rights (Atir et al., 1981; World Bank Report, 1960). Libyans, in particular farmers, at that time could not afford to buy such large farms, so Italian farmers started to divide their farms into smaller units, in most of the cases these units did not exceed

two hectares to sell them to a largest number of Libyans (Atir et al., 1981). Furthermore, in 1961 the Libyan government decided to facilitate agricultural loans without interest to some Libyans (farmers) to purchase farms owned by Italians. With the absence of laws that forbade the division of agricultural lands, farm owners started to divide their farms and re-sell them to make more profit. As a result of this fragmentation, agricultural production dropped considerably and farms became unsuitable for agriculture activities. It became more profitable for (building constructions) or enjoyment, recreation and relaxation purposes (Atir et al., 1981).

With the decline of agricultural production, farmers' income in conjunction with the absent or ineffective government regulations and restrictions, some farm owners started to divide their farmlands to smaller pieces to sell them for construction. Samba (2010) for instance, stated that farm owners tended to sell their farms after dividing them. This was to secure greater profits and avoid unexpected declines in the income from unpredictable agricultural activities.

Fragmentation of farmlands and construction on these lands has negative effects on agricultural production as well as on the rural scenic quality (Brabec and Smith, 2002). Urban expansion on farmlands will pose new difficulties for farmers, as the costs per unit area increase and the total production decreases. Therefore,the farmers' income will decline and the value of their land as agriculture areas decreases leading to more fragmentation of the farms and more farmers considering leaving agriculture.

5.3.3 Population and urban expansion in Libya

In ancient times, Tripoli and Benghazi areas were classified as fertile agricultural lands, and the majority of the population, over three-quarter, were found near or along the coast (Salhin, 2010). In 1954, the demography of these regions was split into: 30 per cent urban population, 45% rural and 25% nomadic or semi- nomadic (World Bank Report, 1960; Malhauf, 1987). Urbanisation occurred in Libya during the 1920s, and the urban population in Libya started to increase rapidly and its rate reached a peak in the 1960s (Kezeiri and lawless 1987; El-Tantawi, 2005; Ali et al., 2008). In the same context, Chaline (2001) indicated that between 1950 and 1995 Libya has witnessed increasing urban rate growth from 20% to 79%. The majority of this increase occurred in Tripoli and Benghazi and was followed by a period of very fast growth in those cities. When compared to neighbouring countries in Southern European, the Middle East, and North

Africa, the rate of urbanisation witnessed in Libya is the highest. This is due to the weaknesses of poor urban planning and regulation/law enforcement. As a result, this situation has created numerous environmental problems, due to a concentration of population in these the major cities. Furthermore, Libya has the most rapid rate of urbanisation rate in North Africa and Mediterranean Sea (Table 5-1) from 18.6% in 1950 to 87.6% in 2000 (Lawless, 1989; Alawar, 2002; Brauch, 2003; Kreimer et al., 2003; El-Tantawi, 2005; Elbendak, 2008; Commission of the EU, 2009; Mohamed and Al-Mam, 2009; UN and Habitat, 2010). In 2010, the majority of the Northern African population lived in urban areas. Studies of countries in North Africa found the proportion of the national population living in cities was 67.3% in Tunisia, 66.5% in Algeria, 58.2% in Morocco, 41.4% in Mauritania, and in Libya 77.9%. The latter represents one of the highest percentages in this region. By 2030, the population living in cities is expected to increase further. Also, urbanisation rates are expected to rise in all countries, reaching 82.9% in Libya, 75.2% in Tunisia, 76.2% in Algeria, 69.2% in Morocco, and 51.7% in Mauritania (UN-HABITAT, 2010).

Figure 5-2: Urban rate growth in some countries (1950-1995). Source: Chaline (2001)

Table 5-1: Changes in the urbanisation rates of North Africa (**1950-2030**)

country	1950	1960	1970	1980	1990	2000	2010*	2020*	2030*
Algeria	22.3	30.4	39.5	43.5	51.4	57.1	62.2	67.5	71.7
Morocco	26.2	29.2	34.6	41.3	48.4	55.5	61.7	66.7	71.0
Tunisia	31.2	36.0	44.5	51.5	57.9	65.5	71.3	75.2	78.4
Libya	**18.6**	**22.7**	**45.3**	**69.3**	**81.8**	**87.6**	**89.7**	**90.9**	**92.0**
Egypt	31.9	37.9	42.2	43.8	43.6	42.7	44.0	48.2	54.4

Source: Brauch (2003).

Elbendak (2008) maintained that urban population growth is mainly due to migration rather than natural growth. Rural-urban migration is considered as the main factor for urban population growth in Libya (Kezeiri and lawless 1987; Almahdowee, 1998; EGA, 2002; Graeml and Graeml, 2004; El-Tantawi, 2005; Amer, 2007; Elbendak 2008; Ali et al., 2011). Jelili (2012) and Elbendak (2008) stated that education, jobs, and health care availabilities are the main reasons that led people to choose to live in cities rather than rural areas. However, rural migration is a major contributor to numerous the problems of urban regions, especially the environment sector (McCatty, 2004).

5.4 Natural Resources

5.4.1 Water Resources

Water is one of the most important develop mental factors in any country. Therefore, the non-abundant rains make water a valuable economic resource in particular a determinant factor for developing the agricultural sector (EAP, 2000; GPC, 2003).

Libya depends mainly on groundwater and represents more than 95% of the total water use which is consumed for different activities such as agriculture and industrial and domestic use (General Planning Council, 2003). However, groundwater in Libya suffers from over-abstraction as the demand has increased fourfold in the last 30 years and this has led to deterioration in its quality as a result of seawater intrusion (Commission of the EU, 2009; El-Wifati, 1987). In Tripoli for instance, it is estimated that seawater intrusion has affected the water table as far as 20km inland (Commission of the EU, 2009).Similarly, Sadeg and Karahanoglu (2001) added that Tripoli was affected by saline

intrusion which extends about 10 km inland from the coast (Jifara Plain), this has been accelerated due to high rates of urbanisation.

While surface water use does not exceed 5% of the total water use of the country, the most fertile lands are located in coastal areas where average precipitation is between 200 mm to 350 mm (General Planning Council, 2003).

In conclusion, lack of water resources has always posed a vital problem especially stability of agricultural production, Libya relies mainly on groundwater and the rainfall. Moreover, the scarcity and fluctuation of rainfall can be considered as a main factor that is threatening the stability and development of agriculture (El-Wifati, 1987; Yousra, 1968).

5.4.2 Agriculture Lands

According to United Nations Population Fund (1991), the global population in 2025 is expected to be 60% urban. This will require a consumption increase in food production. The problem of food security is one of the most important problems related to the agricultural sector. It is a problem which most countries of the world are aware of and focus on. This is especially true in developing countries, including Libya, where agricultural land is limited—only 2% of the Libya's total area is agricultural land. Hence, there are two major constraints to agricultural production in Libya:

- The scarcity of arable land.
- The scarcity of renewable water resources. This means a reliance on erratic and low rain fall, and a lack of surface water flow (Laytimi, 2002).

Libya is located in what is called "The Desert Belt" where the total area which can be considered as an agricultural land does not exceed 5% from the total area of the country and the rest is agriculturally useless desert (WFP/FAO, 2011; Azlitni, 2005; Nwer, 2005; Ben-Mahmod, 2000; Evaluation of agriculture policies in Libya 1996; Al-Hajaji, 1989; Kassas, 1989; El-Wifati, 1987; Yousra, 1968).

The Sahara Desert represents around 95% of Libya's land. Therefore, the majority of Libya's land is dry and arid (Laytimi, 2002). However, some reports estimated that the total area of farmland in Libya was about 3.7 million hectares; which represents about 2% of the country's area (See Figure 5-3) (Porter and Yergin, 2006; General Planning Council,

2003). In other words, the total agricultural land is about 15.4 million hectares including 13.3 million hectares of pastures, and the remaining 2.1 million hectares; divided into 1.8 million ha in arable land and 300,000 hectares in permanent crops; primarily fruit trees (WFP/FAO, 2011). This area is located mainly in two regions (See Table 5.2) of which 78% is situated in the Jifara Plain, located in the north west of the country and approximately 21% in Al Jebel Al Akhdar (Green Mountain), which is located in the north east (WFP/FAO, 2011; Porter and Yergin, 2006; Al-Hajaji, 1989; El-Wifati, 1987). This also corresponds with Laytimi (2002)who noted that the majority of the arable land and pastureland was in the western parts. These areas are considered the richest regions for agriculture where the average annual rainfall exceeds the minimum and is between 250 and 300 mm. Rainfall occurs through the winter months (October until February). Therefore, the greatest concentration of the population is also found in these regions (Kezeiri and Lawless, 1987; Nwer, 2005; Salhin, 2010).
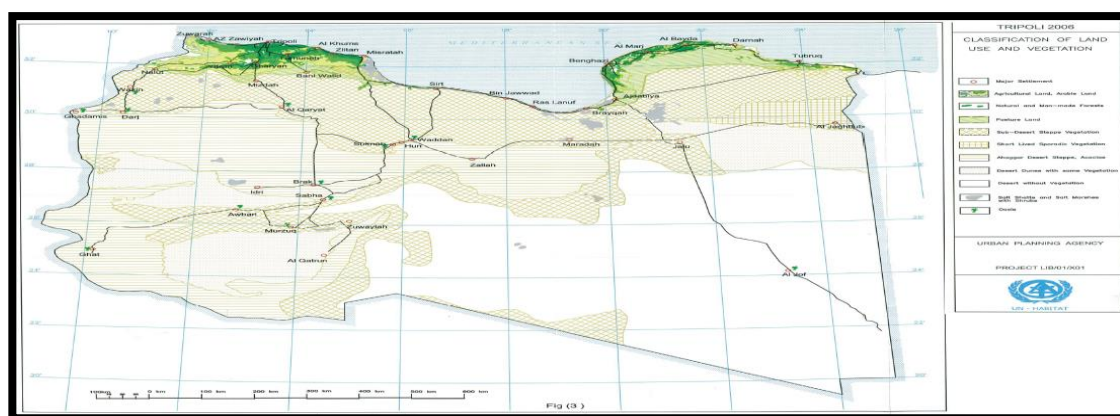
Figure 5-3: The distribution of agriculture lands in Libya. Source: UPA, 2006

Most of the agricultural land is under dry-farming (rain-fed agriculture) as just 168,000 hectares are irrigated (El-Wifati, 1987). However, huge areas of fertile farmlands has deteriorated as a result of poor water quality affected by high population increases asserting pressure on groundwater and land (resources) which in turn is resulting in saline intrusion into the coastal aquifer(Nwer, 2005; Commission of the EU, 2009; Drine, 2011). Libya is suffering from a shortage of most agricultural commodities. The Libyan economy is dependent on imported foodstuffs; between 70-80% of total foodstuffs per year is imported (Polservice and Wadeco, 2000; Ngab, 2007). As a result, the agriculture sector cannot be ignored as its production is vital to the economy of the country which provides a key source of income for numerous people. This also corresponds with Drine (2011) who has stated that agriculture plays various important roles in the lives of the

inhabitants in terms of contribution to GDP and employment. Therefore, urban areas in that region should be managed, to prevent its expansion over the expense of agriculture lands.

Table 5-2: Distribution of agricultural land by region

Region	Total ('000 ha)	(%)
Western	2,845	78
Eastern	765	21
Southern	35	1
Total	3,645	100

Source: El-Wifati, (1987)

5.5 Protection of Farmland

Libya has experienced the most marked shift in its level of economic and social development over the past period (Ben-Mohmod, 2000; Elbendak, 2008). Thus, it was necessary to increase the use of land to meet the growing demand for housing, factories, warehouses and roads etc. Unfortunately, agricultural land was considered suitable for construction building because it is flat-land, low-surface, and free of stones and rocks. As a result, the use of this land changed from agriculture to construction, resulting in a loss of large areas of farmland (Ben-Mohmod, 2000). Similarly, Saad (2011) mentioned that population growth will lead to rapid growth in the number of housing, which is usually built on farmlands. This expansion, at the expense of agricultural land due to population growth, increases the income of individuals, but construction lacks planning and development control. Consequently, agricultural land has sharply declined, in turn having an adverse effect on productivity as a result of:

- Many farmers leaving cultivation.
- Urban expansion at the expense of agricultural land (Salhin, 2010).

Therefore, the protection of current farmland, especially that which is productive, is one of the most important issues facing Libyan government; due to the scarcity of agricultural land, it requires preservation, no matter how changed are the economic conditions and the country's social status (Ben-Mohmod, 2000; Saad, 2011). Despite the existence of many strong and strict laws to protect environment and agricultural lands (see section 5.5.1). Additionally, the protection of farmland includes the protection of the basic

elements of soil and water (Ben-Mohmod, 2000). This corresponds with the third-generation schemes which have been adopted. The main objective of the National Spatial Policy 2006-2030 was the protection of agricultural land and fragile environment zones, through the balanced sustainable development in all regions (UPA, 2006).

The first and most important threat to current agricultural land is urban sprawl. This expansion, particularly around the cities, whether in residential areas, commercial or industrial, has been at the expense of good quality land such as what is occurred in surrounding of Tripoli areas for instance, Alhadaba al-Kadra, and El- Mansheya (Ben-Mohmod, 2000). Moreover, due to their favourable location and climatic characteristics, these lands have been subject to intensive development, especially during the past twenty years, and recently, increased construction-related issues (UPA, 2006).

5.5.1 Legislation for environment and Land Protection

There are several laws and regulations related to the protection of the environment in general and to the protection of agriculture landsas well as pastures, urban development, rationing water and soil use, protection of renewable and non-renewable natural resources (Saad et al., 2011). For instance, Law (46) of 1975 was to protect small lands and ban the division of possessions. Moreover, Law (33) of 1970, (15) of 1992, (15) of 1984, and (7) of 1982 were issued to protect agricultural lands. These laws prohibit the use of agricultural land for purposes other than agricultural investment especially Law No. 15 (1992) which prevents the division and fragmentation of agricultural lands for construction purposes, Table (5.3) summarises some of laws in relation to the protection of agriculture lands. In addition to this, Saad et al.(2011) stated that Libya has ratified important international agreements to protect environment such as climate change, desertification and biodiversity

Table 5-3: Highlights key the legislation in relation to the protection of natural resources and the environment in Libya:

Law & Legislation	Main Objective
Law 131 of 2006	Agricultural policy enforcement officers
Law 15 of 2003	Environment protection and improvement (replacement of 7/1982)
Law 3 of 2002	Organisation and planning of towns and villages (amendment of 5/1969)
Law 15 of 1992	Prohibits shifting woodlands and pasture lands into farms
Law 14 of 1992	Grasslands and forests protection (amendment of 5/1982
Law 15 of 1984	Protection of woodland and trees from logging
Law 1 of 1983	Agricultural inspection
Law 790 of 1982	Organisation of wells drilling operations and the preservation of water sources.
Law 7 of 1982	Protection of the environment
Law 5 of 1982	Grasslands and forests protection
Law 3 of 1982	Regulation of exploitation of water sources.
Law 1of 1982	Concerning agricultural inspection
Law 46 of 1975	Protection of small lands, banning the division of possessions.
Law 38/39 of 1975	Organisation of cities in concern of environmental protection
Law 46 of 1972	Protection of shrub land
Law 26 of 1972	The establishment of the general Water Authority and the establishment of Agricultural Development Council
Law 33 of 1970	Protection of agricultural lands
Law 5 of 1969	Organisation and planning of towns and villages

Sources: (1) General Planning Council of Trade (1996). **(2)** Saad et al., (2011). **(3)** EGA (2002). **(4)** UPA (2006).

5.6 Workforce in Agriculture

According to the report of Global Employment Trends 2011, the percentage of the world agriculture workforce is declining. In Libya, a similar situation exists where the percentage of the agricultural workforce decreased from 29.1% in 1970 to 14.7% in 1983 (El-Wifati, 1987). Similarly Lawless (1989, p. 251) stated that:

> "The large majority of migrants who moved from these less developed regions are represented by rural people who have changed their place of residence and their occupation. They have left their work in the rural sector to seek employment in the industrial and service sector. As a result agricultural production has declined. The agrarian sector now employs less than a quarter of the Libyan workforce".

Also, according to results of the 1984 census, the number of workers in the service sector reached about 63.2%, while the workforce in agriculture amounted roughly 11.6% (Alshebani, 1995). Moreover, Nwer (2005) stated that labour force in agriculture has decreased approximately 5% in 2003, compared with 37% in 1970, while the non-agricultural population increased about 63% to 96%(Figure 5-4), and declining land area farmed as well. Similarly, Laytimi (2002) mentioned, total employment in agriculture has diminished from about 25% in 1981 to about 5% by 2002. Additionally, between 1998 and 2013, Faostat (2014), has shown that both the size of the agricultural labour force and its annual growth rate has decreased. Also, El-Tantawi (2005) has confirmed that the workforce in agriculture decreased which impacted upon economically active in terms of food production as well as limited area for agriculture is declining continual. In this regard, in a recent study in the Benghazi, Saad (2011) has shown that agricultural labour has declined; the number of agricultural land holders was reduced from 6,969 in 1995 to 1,529 in 2007.
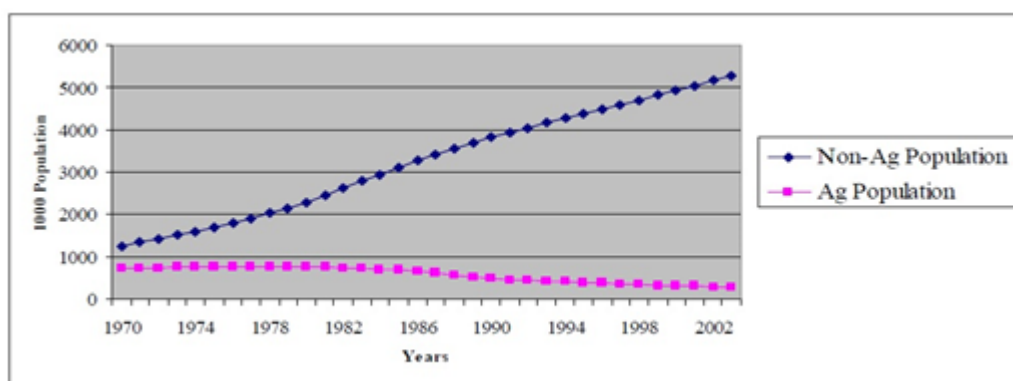
Figure .labour force in agriculture and non-agricultural in Libya from 1970 to 2003 :4 5

Although the total population is rapidly growing, the country has witnessed land area farmed has decreased radically as well as the number of farmers working in agriculture as their main source of living reduced. According to the General Authority for Information (2007), in 1987, the agricultural workforce stood at 67,199, and has continued to decline to 59,566 in 2001and then 38,129 in 2007. At the same time, a contrary movement can be observed. The number of non-farmers who work in other sectors as a main source of living grew from 108,329 in 1987, to 117,092 in 2001 finally reaching 125,147 in 2007 (See Table 5.4). This demonstrates that some farmers have chosen other jobs to improve their living standard, which reflects that they cannot rely on farming as a sole living income. In addition, as can be seen from the same table, the total numbers of farmers decreased from 175,528 in 1987 to 163,276 in 2007 (General

Authority for Information, 2007), this means that significant numbers of farmers have left agriculture and moved to urban areas to work in other employment sectors (migrants).

While the total number of farms increased between 1987 and 2001, the total area of farmland has decreased which reflects the following:

- Some farms have been divided into smaller units.
- A significant area of farmland has been appropriated for construction purposes.

Table 5-4: Number of farms owned by farmers or non-farmers with the average and total area (hectare) in 1987, 2001 and 2007

Farm	1987*	2001**	2007**
Owned by Farmer	67199	59566	38129
Owned by Non-Farmer	108329	117092	125147
Total	175528	176658	163276
Average Area (hectare)	14.3	10.9	7.2
Total Area (hectare)	2510050	1925572	1175587

* General Authority for Information, Statistics Book. 2001.** General Authority for Information, Statistics Book. 2007

Farmer is a person whom his/her farm is the only source of their living. Non-farmer is someone who has another source of living away from farming
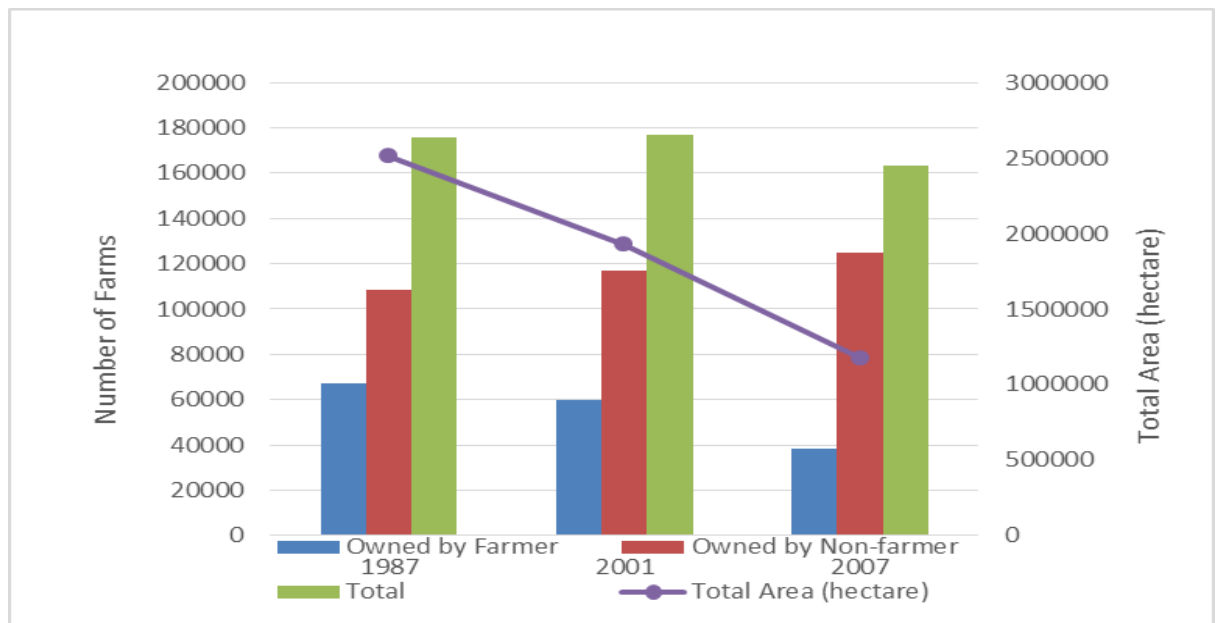
Figure 5-4: Number of farms owned by farmers or non-farmers with the total area (hectare) in 1987, 2001 and 2007.

5.7 Overview of Libyan economy

Before the late nineteen-fifties Libya was one of poorest countries in the world, it was dependent on agriculture, grazing, international aid and donations (World Bank Report, 1960; Alshebani, 1995; Saad, 2011; Allafi, 2014). After the discovery of oil, the Libyan economy witnessed prosperity and rapid growth. The exploitation of oil revenues has created a suitable environment for the financing of all development projects across Libya (Alshebani, 1995), and in particular the region of Tripoli (Saad, 2011). In other words, since the 1960s, Libya has become one of the leading exporters of oil and its derivatives in the world. The Libyan economy continues to depend on revenue generated from the oil and gas industry thus its economy remains unbalanced because is still based on oil production; the sector providing 89% of Libya's income. This situation is called a mono-economy. Oil and gas are considered one of the most important natural resource in the country (George et al., 2010; National Consultancy Bureau, 2007; Ngab, 2007; BLI Consulting and Training, 2006; Porter and Yergin, 2006; Urban Planning Agency, 2006), one which allows the Libyan population to lead a socially and economically productive life. Ninety-five percent of revenue is created by oil exportation. In other words, oil and gas sector are contributing about 95% of revenue of the country. In turn, the government uses this revenue to pay the salaries of up to 70% of the local workforce (WHO, 2007; WFP and FAO, 2011). The vast revenue created by the oil and gas industry has led to an increase of economic and development activities (Urban Planning Agency, 2006). As a

result, Libya is developing rapidly. In turn, development processes are compounded such as, urbanisation, population growth, and industrialization from which numerous environmental problems arise including, lack of water resources, soil erosion, salinization, and desertification (Masoud et al., 1998). Water scarcity and the limitation of fertile land are severely limiting agricultural production. However, some analysts believe, that water shortage is the most significant factor limiting agricultural production in the Libya (Ngab, 2007; Heemskerk and Koopmanschap, 2012). As a result, Libya imports about 75% of food requirements (BLI Consulting and Training, 2006; Ngab, 2007; WHO, 2007), while, domestic food production provides only about 25% of demand (WHO, 2007). This indicates that the country lacks the necessary investment in agriculture activities. This is further demonstrated by GDP figures. Libyan oil and industrial sectors account for 64% of Libya's Gross Domestic Product (GDP), followed by the service sector (33%). The agriculture sector contributes less than 3% (Heemskerk and Koopmanschap 2012; FAO and WFP, 2011; Commission of the EU, 2009; Sakr et al., 2008). Therefore, although the GDP of the country grows by 3.3% per year—2.6% for the industry sector and 4.6% for services sector—the agricultural sector grows by just 2.4% per (FAO and WFP, 2011). However, the world price of oil leads to a fluctuation of the GDP every year (FAO and WFP, 2011).

In relation to the services sector, George et al. (2010) pointed that while the construction sector in Libya is increasing by about 6%, other services are declining by about 8%. Moreover, average salaries in the construction services are increasing by around 5% which may lead to an increase of the demand for a migrant workforce (George et al., 2010). It is suggested that the construction sector growth will increase the process of urbanisation.

As can be seen form Table (5.5), except the oil sector, all other sectors' contributions are declining. However, since 2005 the construction sector was considered as one of the country's fastest growing sector (Commission of the EU, 2009; Sakr et al., 2008). It expected to continue with this trend for at least a decade and in 2008 it contributed to around 4% to the GDP and employed about 700,000 workers (FAO and WFP, 2011). On the other hand, the contribution of the Libyan agriculture sector is still decreasing (Commission of the EU, 2009).

Table 5-5: Shows the GDP contributions of the Libyan economic sectors, from 2002 to 2007

Sectors	2002	2003	2004	2005	2006	2007
Oil sector	50.1	57.6	64.1	69.5	72.3	71.6
Agriculture, and forestry	4.3	3.6	2.8	2.2	2.0	2.0
Manufacturing	2.2	1.9	1.7	1.3	1.1	1.2
Electricity, gas, and water	2.2	2.0	1.5	1.3	1.2	1.1
Construction	6.4	4.8	4.5	4.0	3.9	4.3
Trade, hotels, and restaurants	5.7	4.9	4.4	3.9	3.4	3.4
Transportation, communication, and storage	5.0	4.7	3.9	3.5	3.3	3.3
Financing, insurance, and business services	1.7	1.5	1.3	1.0	1.0	1.0
Housing	12.5	10.0	8.0	6.3	5.5	5.2
Public services	9.9	9.0	7.7	6.8	6.2	6.8
Other services	0.1	0.1	0.1	0.1	0.1	0.1

Source: Commission of the EU, 2009; Sakr et al., 2008; IMF, 2008

The significant earning of the oil sector compared with the small population of the country makes Libya one of the highest per capita GDPs in Africa (BLI Consulting and Training, 2006).

Following the suspension of United Nations sanction in 1999, the manufacturing and agriculture production contributions to the total GDP have fallen which resulted in the rapid expansion of the oil sector as well as the government control and rules has made a

very negative impact on the economy, which led to slowing down the progression on increasing the public and private sector contribution, along with the foreign participation (WFP and FAO, 2011).

More recently, Libya has realized that there is an over-dependency on oil revenues and the country is trying to change its policy to attract foreign investors to increase this sector contribution to the economy. Therefore, the state has sought to change its policy by participating with the foreign investor to improve the economy in all sectors (Ngab, 2007; BLI Consulting and Training, 2006; Terterov and Wallace, 2002). In addition, Libya has done the first steps to liberalize the economy by obtaining membership of the World Trade Organization (WTO), and has thus laid the correct foundation towards transition to a market economy (BLI Consulting and Training, 2006).

5.8 Summary

This chapter provides a brief overview of Libya. Previously, Libya's population primarily depend on agriculture, the main resource of the Libyan economy. Agricultural land represents about 2% of Libya's total area (1,754,000 km^2), the rest being desert (the limited availability of agricultural land in Libya is a key factor in the thesis argument). The Jifara Plain is considered to be of the best regions for agriculture in Libya, especially for Tripoli.The Libyan economic sector changed since the discovery of oil (1958), which led to an effective impact in the acceleration of development process, prosperity and creating new job opportunities, in particular in oil sector. It also includes a brief account of some factors which encouraged an increase in the population in Tripoli (the greatest concentration of the population is found in this region (see chapter seven)). Consequently, fertile farmland area has deteriorated and agricultural labour has declined. This may be for several reasons (GAI, 2007):

- The shift to other sectors to improve income (such as the services and trade sector)
- Higher prices of agricultural tools.
- Water scarcity.

Therefore, the protection of agricultural land is one of the most important challenges facing the current Libyan government

Chapter 6 : A Critical Analysis of Libya policies

6.1 Introduction

In fifties, the Libyan government adopted a method of sectorial planning. This had a profound impact on major cities (Tripoli and Benghazi), continuing the polarisation of population (the rapid population increase), investment, and urbanisation between major cities and other areas. As a result of the uncontrolled growth of the two largest cities, a severe imbalance of the population distribution between different regions was created. Consequently, there is a pressing need to assess the state of expansion at the expense of agricultural land by policy and planning. This chapter includes a brief account of the legislations concerning environmental protection highlighting, in particular, the issues surrounding limited land resources and water. Between 1970 and 1980 the Libyan government attempted to develop planning policies which aimed at reshaping the spatial distribution of the country's population, and address the urgent need for a comprehensive national plan through regional planning, sub-regional planning, and urban planning (Figure 6-1). The government sought to reduce the inequalities among the regions by channelling oil revenues into extensive development, and expanding infrastructure through a set of plans (Libyan development schemes) in different periods: the First Generation Plans (1968-1988), the Second Generation Plans (1980-2000), and the Third Generation Plans (2000-2025).

This chapter examines the planning policies adopted by the Libyan government between 1968 and 2006. According to Azlitni (2005) the First Generation Plan led to an increasing polarisation between major cities and other areas, whereby the major cities witnessed rapid population increase as a result of significant investment. Moving on, it highlights that while the Second Generation Plan contained several good ideas regarding planning (Azlitni, 2005), a lack of financing meant that it was not implemented successfully. Finally, the attempt to balance development across Libya as advocated in the Third Generation Plan will be shown as the solution to urban expansion.

National Planning Level

Regional Planning Level

Sub-Regional Planning Level

Urban Planning Level
(Sirt Master Plan 2000)
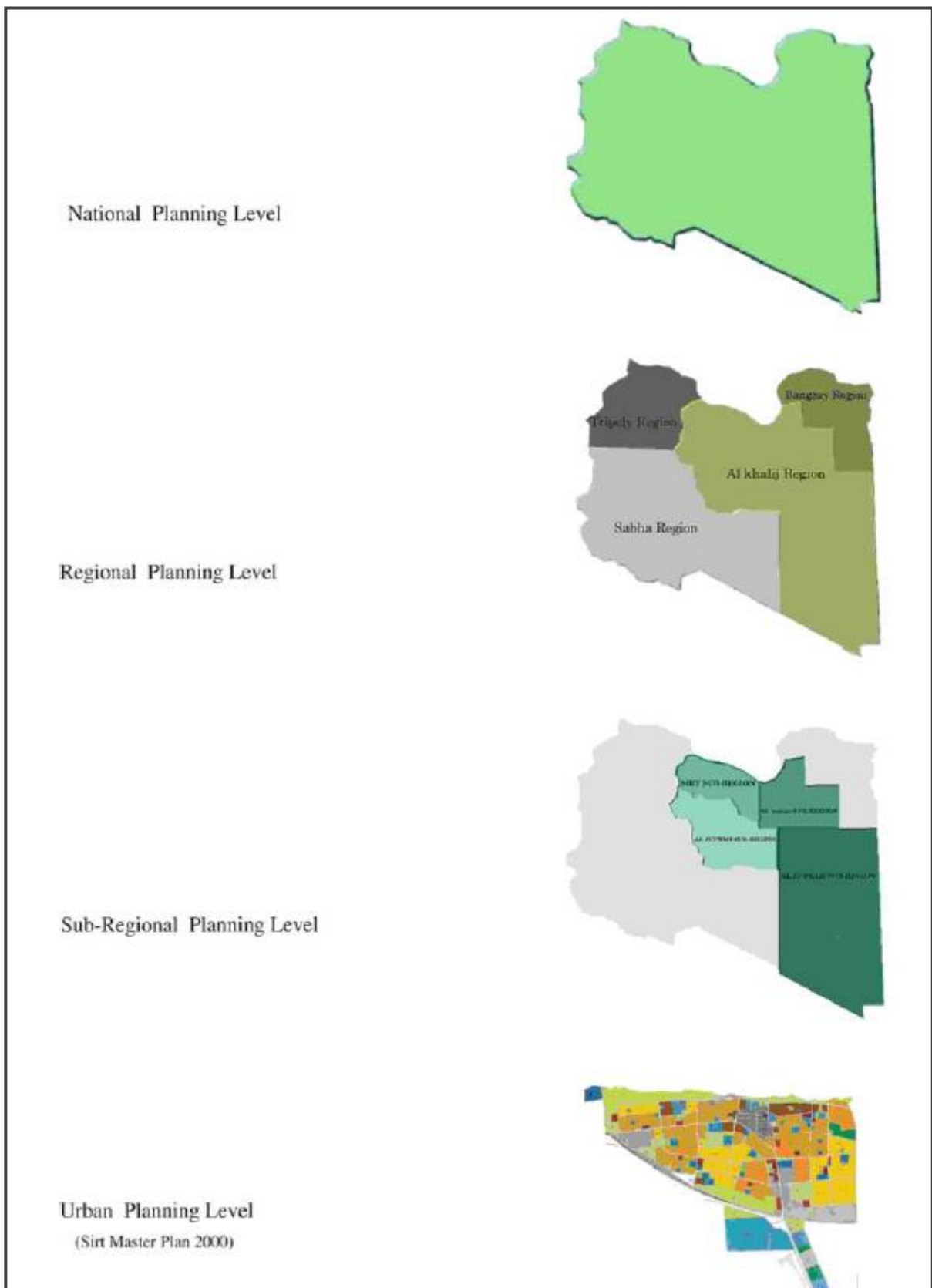
Figure 6-1: National Planning in Libya. Source: Azlitni (2005)

6.2 Urban Planning

Urban planning continually seeks to find solutions to the problems of urban growth, through the production of master plans which aim to improve future development, taking into account optimal land use and the redevelopment old buildings. Planning could provide a firm basis for future policy decisions to combat many problems such as desertification and urban expansion (Abubrig, 2012). In contrast, inappropriate land use planning leads to the deterioration environmental quality (Saad et al., 2011). Urban planning is one of the major sources of sustainable development through the ability to apply urban schemes, which can provide appropriate and affordable housing, dependence or focus on mass transportation, and preservation of the environment in the design also to take into consideration the land use, therefore can overcome rapid urban growth (Abubrig, 2012). Consequently, the integrated planning model is concentrated on the geographical database and analysis of alternatives for the future needs of new urban areas according to population projections, economy and extent of land suitable for this use, taking into account the limitations of these lands (National Consultancy Bureau, 2007). In this context, the Urban Planning Authority (UPA) is one of the pioneering agencies in using GIS technology in Libya, as well as the main owner of a project called the Third Generation Planning Project, which aims at managing urban planning for all regions of Libya (Oesri, 2006). Furthermore, the aim of urban planning in Libya is to provide urban amenities and infrastructures to all cities, both large and small (Kezeiri, 1983). However, poor planning will lead to the occurrence of negative effects of urbanisation. For example, the government has established several industrial complexes in northern Libya, particularly in Tripoli and Benghazi. This has led to an increase in the concentration of the population in these two cities. In turn, this has resulted in an unbalanced distribution of the population between the areas of Libya (Al Zanati, 2003). Furthermore, with the absence of well-studied policies and planning, the population grew rapidly and became difficult to control (Ali et al., 2011). For example, there is a severe disparity between the populations of the largest Shaabia and the smallest. With a population of 1,105 million Tripoli has a population 61 times larger than Ghadamis, which has a population of 19,000 (NRHD, 2002). This clearly highlights an acute demographic density imbalance which is the result of inadequate policy planning. As Ghanem (1987, p. 65) elaborated in regards to construction in Tripoli,

"The planning did not discriminate. Industrial projects were built with very little attention paid to their economic feasibility. Roads, ports, airports, hospitals, schools, hotels, and so on, were built at the same time; the major cities began to look like large construction sites".

Besides, stand-alone projects have a limited impact, as the lack of institutional embedding means that the project cannot mature from the project level to the institutional level and be converted into a continuous process (UPA and UN-HABITAT).

According to Porter and Yergin (2006) Libya has suffered from several issues such as addressing the key questions and it lacks the accurate definition of roles which led to a failure of establishing a practical and efficient monitoring system. They also added that Libya has issue of institutional instability which is presented in the continuity of changing the administrative boundaries of the regions and this combined with the lack of coordination between government entities which eventually led to a delay or a postpone of the public services and infrastructure. Notwithstanding this, the level of provision of services and social facilities, especially housing was less than the required level or acceptable level.

There is the significant challenge for development and urban planning through a conflict which exists between the requirement of urban development and land for agriculture which does not exceed 2%. Therefore, successful planning and implementation needs extensive coordination and data sharing between relevant authorities whether government, private sector or citizens at the local and national level (WHO, 2007). However, plan formulation has suffered which can be summarized as follows (WHO, 2007):

- Poor definition of roles.
- Lack of data information.
- It has not taken into account the requirements of economic development.

Furthermore, according to World Bank Report (1960) the most important factors that obstruct economic development and/or economic progress in Libya can be summarized as follows:

- Weakness of government regulation.
- Lack of staff (workers) experienced in planning and administration (very small number of holders of qualifications).

- Appointments in government jobs have been made on the basis of personal friendship or family relationship not on qualifications and merit.

The above has been agreed by Ghanem (1987) who has commented that Libya is lacking skills and serious management problems exist.

6.3 Urban Development

According to Salhin (2010), in the era of the Turkish administration, particularly during the period between 1551 and 1911, Libyan towns had no master plans of any kind, and as a result, the towns have expanded without any proper planning. During the Italian occupation (1911) four Master Plans for the major cities (Tripoli, Benghazi, Derna and Misrata) were prepared as well as several plans for the villages. Villages were paid attention as part of their colonisation programme. Moreover, new innovations were provided in the construction of houses, water supplies, sewerage systems, and roads (Salhin, 2010). Hence, the foundations of town planning in Libya were laid during the Italian period. This is consistent with Lloyd and Mattingly, (1989), and UN-HABITAT, (2006) who pointed out that Libya is a country with a very rich history of urban development, especially during the Italian occupation. However, over recent decades the cities of Libya have expanded rapidly and urban design has not received adequate attention, and much remains to be done. The Tripoli region, for example, has a high population density, that means it has one of the biggest populations in Libya. Consequently, there are negative consequences of population growth: the reduction of agriculture land, the lack of an urban landscape and the lack of street patterns with urban characteristics. In addition, sprawling development is increasing very quickly (UN-HABITAT, 2006).

Several concrete plans have been formulated regarding urban expansion in the past, but these plans have not been implemented. This information is supported by Porter and Yergin, (2006) who have mentioned that urban planning in Libya is focusing primarily on the plan formulation rather than its implementation. For example, Polservice (1980) offered to suggest about the best course of action to Tripoli city master plan which seeks to develop the development plans through a set of reports, especially regarding to the protection of agricultural land through the Green Belt. This corresponds with Azlitni(2005) who asserts to creating green areas around cities. But, not implemented that mean no effects have been observed for these plans (see Figures6-2 , 6-3).

There is an extensive literature on plans including a study carried out in the 1960s by the Doxiadis Association. They advised the following programme: first, to prepare urban schemes for the majority of Libyan regions, in terms of the design of housing and public buildings, engineering designs for public facilities such as roads, the water system /sewage; second, to issue legal regulations concerning the organisation of cities and their planning and standards for construction in order to develop the country and solve the problems resulting from expanding cities; third, the policies and appropriate programs to solve the problems of housing; fourth, there were plans for districts in large cities such as in 1966 the Doxiadis Association was commissioned to prepare the master plan for El Beida city, providing of 50,000 inhabitants in the first phase with a future extension for a possible 100,000 inhabitants; finally, the need to build new towns based on Western concepts—detached housing with front gardens, and neighbourhood centres with a variety of services and infrastructures; to reduce urban expansion in major cities. Although the suggestions of the Doxiadis Association and other experts were good, unfortunately, as Porter and Yergin pointed out, they were not implemented.
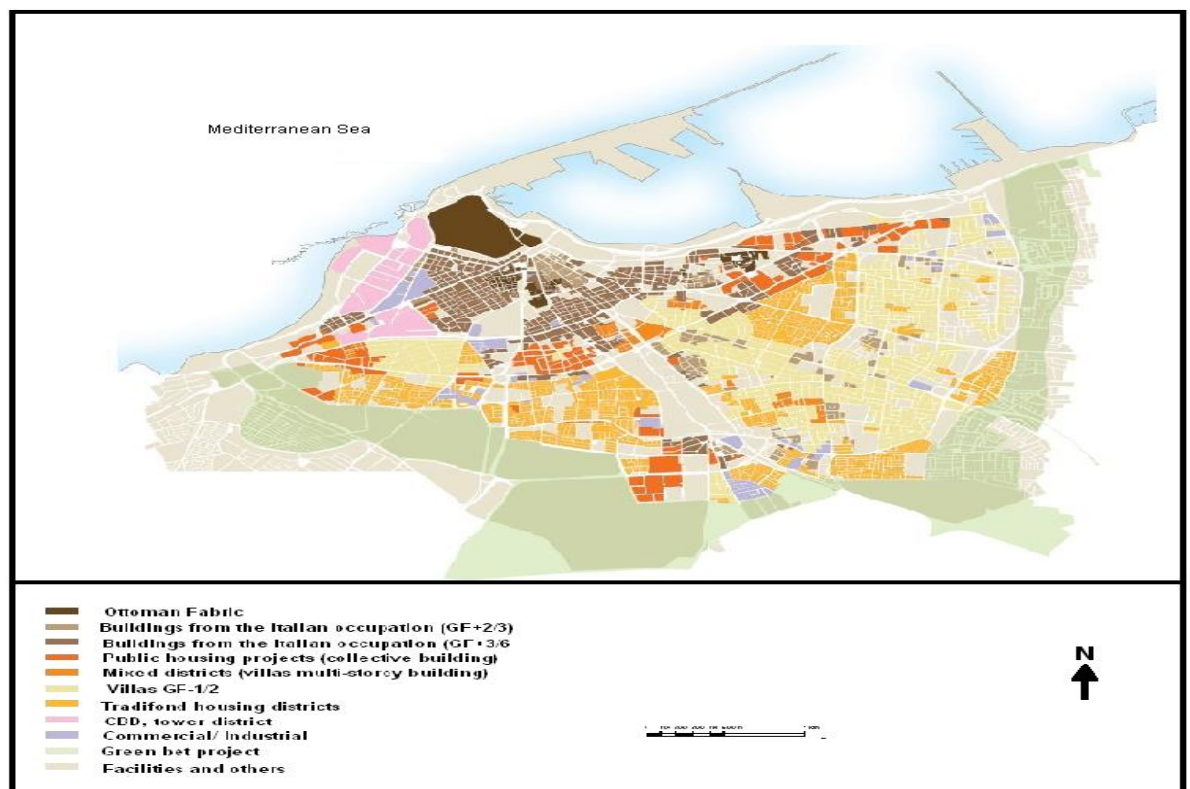
Figure 6-2: Tripoli region development plan (master plan). Source: Municipality of Tripoli (Polservice, 1980).

Major urban development sites and others to be preserved

Seashore sites
- 1 - Port 1, marina, leisure
- 2 - Port 2, commercial
- 3 - Historical coast, belvedere, rocks
- 4 - Tripoli bay, beach, marina

City districts
- 5 - Old city, architectural heritage
- 6 - Classical city, downtown, architectural heritage
- 7 - New down town
- 8 - Eastern districts, urban quality, facilities
- 9 - Al Jumhurlya street development
- 10 - Bab Al Medina development
- 11 - Green belt project

Centers
- Primary centers
- Secondary centers

Communication
- Main communication axis
- Commercial axis : urban density
- Green way
- Sea front, promenades

Figure 6-3:Major urban development in Tripoli. Source: Municipality of Tripoli (Polservice, 1980).

In 1966, the MPD began a widespread urban planning programme, which was established to regulate urban expansion and to distribute the country's wealth to citizens (to distribute the wealth made from oil across the country, and to all citizens). Foreign experts were commissioned to prepare master plans for all the major urban centres and to provide valuable data on Libya's urban scene in the 1960s. But the data available to the planners were often inadequate (Blake, 1979). This information is supported by Bekele (2005), who argues in developing countries that data is less plentiful and less reliable. Consequently, the original plans were drastically modified in many cases and sometimes abandoned. This, in turn, has had a negative impact on these master plans (Blake, 1979).

Between 1970 and 1980, economic development was attributed new political objectives and new priorities in (Kezeiri and Lawless, 1986). As stated above, one of the consequences of the Libya's urban planning was the development of the small towns outside the guidelines of the plans and outside the formal planning process (the original master plans) for economic development. In contrast, the Libyan government achieved a great measure of success in providing new housing for the growing urban population (major cities), the state provided loans for those on low income and grants for private construction, as well as in order to respond to the massive increase in demand for housing. In doing so, the government has been forced to depend on construction companies and foreign consultancies, which, in turn, has created several urgent problems. In particular, Libya has witnessed the urban encroachment on agricultural land, whereby housing has been built on fertile agricultural land (Kezeiri and Lawless, 1986). Certainly, while the action of the state might be seen as proactive, the provision of loans and grants to construction companies and foreign consultancies had an adverse effect on agriculture. As the Head of Department of Urban Planning, and the Chief of Administration Affairs of Urban Planning in Tripoli, confirmed in an interview the state, over the past 30 years, did not go far enough to provide adequate housing (low supply of housing). As a result of the lack of housing, landowners have built houses on agricultural land despite restrictions. Moreover, they expect that it will take much longer to resolve the problems of housing for financial reasons, which greatly obstruct the implementation of schemes housing.

6.4 Development Plans

The development plan differs between areas -- be that between countries or specific localities. Therefore, when preparing any development plan, the planning authority must be actively involved in discussions, opening dialogues, with related parties and institutions, such as, agricultural concerns, in order to ensure a balance between green fields and urban sites (Omar and Ruddock, 2001). Moreover, Choguill (1994) stated that appropriate policies must be adopted by governments which involve local communities in the planning process. As each sector interacts with others, comprehensiveness is required for any feasible and sustainable solution. In others words, this means the involvement the community in planning is essential. Unfortunately, although the Libyan government introduced plans which involved such discussions, at the beginning of the 1990s several factors meant that they could not be pursued.

In the 1970s, Libya sought to develop strategies which aimed at achieving a socioeconomic development policy that included every citizen (which provided services high quality services throughout the country), through a set of plans such as the Three-year Plan 1973/75, the Five-year Plan 1976/1980, and the Five-year Plan of 1981/85 (WHO, 2007).These plans determined the development programme carried out on the basis of framework of a national development plan. The philosophy of planning and the objectives of each plan are important in charting the future evolution of any given sector (El-Jehaimi, 1987). The main objective of these plans was to improve the economic and social conditions of rural areas in all regions of Libya, in general: job opportunities, housing, public transport, communication systems, education, and health institutions. It means access services to all citizens in the country. In addition, the plans also focused upon agricultural and industrial development in order to achieve self-sufficiency in the production foodstuffs, as well as gradually reducing the role of the oil sector is to be gradually reduced and limiting exports to the financial requirements of other sectors, favouring, in particular, agriculture and industry. The aim was to ensure that development took in account areas beyond major cities, providing balance between regions. As a result of improved conditions in rural areas, emigration toward the cities, in particular toward Tripoli, declined (El-Jehaimi, 1987; Alshebani, 1995; Almahdowee, 1998; Omar and Ruddock, 2001; WHO, 2007). According to Lawless and Kezeiri (1987), development plans are always seeking to achieve balance development across rural and urban areas. In other words, the objective has been to narrow the economic gap and social disparity among the areas, as well as to reduce the excessive dominance of centralization that exists in two cities Tripoli and Benghazi (Salhin, 2010). However, these plans were not adequate enough to achieve these objectives as a result of the following reasons (Salhin, 2010):

- Lack of a working relationship between urban and regional planning.
- Preference given to certain regions in development policy.
- The absence of the local development leaders.
- Regional and tribal provincialism.

Similarly, WHO, (2007) indicated to analysis of plans for environment and health sectors which are summarized as follows:

- Policies and plans that provide a long-term vision for the environment sectors (for example) are not in place.
- Plans in the main cities still need improvement.

- Absence of policy formulation and medium-term plans.
- Poor governance is some of the key issues that face the environment and health system.
- There is a general lack of coordination.

On the contrary, development plans have supported spatial disparity through the concentration of investments and development projects in Tripoli and Benghazi (Alhaddad, 1998).

Nevertheless, at the beginning of 1990s, these plans were changed in terms of mechanism, in particular into programmes of plans (Allafi, 2014). Due to, a lack of access to enough support to fulfil them by the state, as a result of the application of international sanctions on Libya due to Lockerbie case (the lack of financial resources to implement the plans). These factors, resulting in changes in policy direction has led to agricultural land being encroached upon as housing construction is increased.

6.4.1 Agricultural Development Plans

As mentioned above, these plans also focused upon agricultural development, which was adopted to protect the environment (natural resources), to achieve self-sufficiency (food security), to develop domestic industry, as well as to improve the condition of rural areas (AL-Kahlout, 1986; Alshebani, 1995; Almahdowee, 1998; Polsrvice and Wadeco, 2000). In the same context, Saad et al. (2009) have stated that then the government of Libya instituted a number of agricultural research projects to promote agricultural development in the country. However, those plans were not adequate enough to achieve these objectives (Ghanem, 1987). In addition to this, Salhin (2010) stated that the regional approach of these plans to reduce the dominance of Tripoli, especially in the economic and social sectors (disparity) was not properly achieved for several reasons:

- The absence of local development leaders.
- Regional and tribal fanaticism.
- The lack of a relationship between regional and urban planning.

6.5 Organizational Policy and Planning Structures, and Scope Responsibilities for Urban Legislative Process

Previously, the preparation of any legislative proposal of public policies in relation to urban planning was the responsibility of the Urban Planning Agency, which was mainly responsible for:

- Urban planning at the national level.
- Implementation of policies in relation to urban planning and development.
- Responsible for planning Third Generation Plan.
- Preparing the proposals of any urban plan in national, regional and sub-regional level.
- Preparing the proposals of any legislation in relation to implementation of public policies in the field of urban planning.

At that time, any proposed plan had to be approved by the General Planning Council (GPC) which it will be passed to the General People's Congress which was the highest legislative authority in the country (National Consultant Bureau, 2007). However, the planning process in Libya depends on a complicated decentralized structure. The national environment plan is formulated through several steps, which involves different groups (see Figure 6-4). The first phase develops the outline of the plan, and then sends it to the Basic People's Congresses for their comments, suggestions and approval. Then the plan will be sent to General People's Congresses, which, after incorporating the suggestions of BPCs, compile the plan and send it to the National Planning Council. In turn, the National Planning Council reviews and discusses the plan from a technical perspective, and considers the feasibility of it. In addition, the NPC contemplates whether the plan is in line with government environment priorities. It consults all relevant stakeholders including research centres and universities, approves it technically and forwards it to the Secretariat of Environment, who finalizes the plan, then sends it to the General People's Committee for Planning. The GPCP consolidates and integrates the plan with other sectors to make a comprehensive national plan. The final stage is to send the finalized plan back to the Basic People's Congresses for implementation. As a result of this process, with plans being sent to various groups for consideration, the implementation of policies is complex and lengthy.
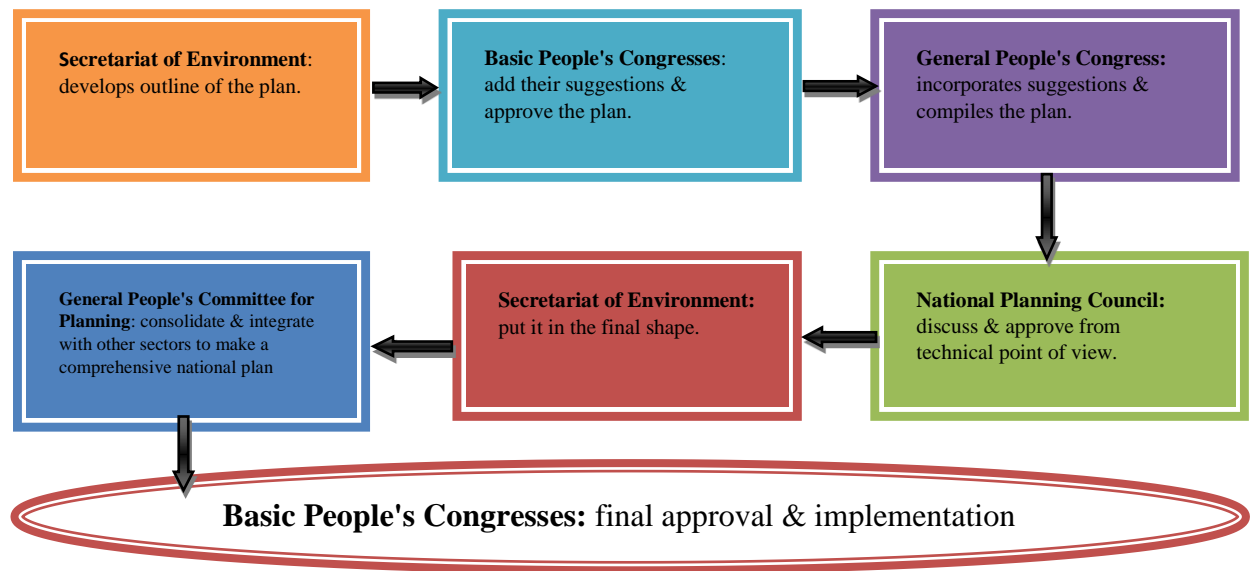
Figure 6-4: Environment planning process. Source: WHO (2007).

6.6 Previous Changes in Administrative Structure, Implications for the Implementation of Policy

The administrative regions have been changed several times, which has affected the implementation of urban planning policies. In 1970, Libya was divided to 10 Provinces (Mohafada) with different boundaries. In 1979, it was divided into 44 municipalities (Baladiyas) and 173 branches. In 1984, the municipalities were reduced to 24 municipalities with 134 branches. Nevertheless, after two years decreased into 13 municipalities and 52 branches (Salhin, 2010). During in 1990, the municipalities were divided into 7, and 44 branches. In 1992, there was a new classification appeared where were divided Libya into 1455 districts (Komouna) and then reduced to 295 districts (Komouna). In addition, in 1997, the country was first divided into 34 Shabyias (municipalities) (Salhin, 2010). Furthermore, in 2000, Libya has been divided to 22 municipalities (Shabiat), every municipality, has divided many small Basic People's Congresses (BPC), which reached 468 BPCs. In these Congresses, the people's views are taken, and delivered into the top legislative body (WHO, 2007). Additionally, each municipality has its own People's Committee which is the major executive body within the municipality (city) (WHO, 2007). Continual changes to the administrative structure of Libya has meant that there is a lack of continuity in the implementation of policy, especially urban planning. In 2006 the UPA defined the boarder of cities, with special attention focused on northern Libya. This has been a positive adjustment which will help

safeguard agricultural lands, forest, and green space from encroachment of urban development, if it is implemented.

6.7 Spatial Disparity between Principal Cities and Other Regions

In the past three decades, the Libyan government has tried to achieve demographic balance by using the standards of spatial planning. When formulating these plans, however, they found a significant difference in population growth between main cities and other regions. This distribution reflects the severe spatial (natural) disparities between cities and regions. For example, in Tripoli, there is a structure for balanced natural planning which is absent in most of the other Shaabiat. Thus the Shaabiat of the Gharian region highly depends on referral service centres on the Shaabia of Tripoli despite its relative remoteness (NRHD, 2002).

This explains the nature of the severe imbalance in the urban regions that attracted migrants. Between 1973 and 1995, the rate of population growth was five times higher than between 1964 and 1973. This has resulted in rapid urbanisation; Libya is one of the fastest among all developing countries (NRHD, 2002; Elbendak, 2008). However, it should be considered that this process did not take place in the context of a gradual improvement of the national economic structure, which would produce positive outcomes. Instead, this pattern of urbanisation has been the result of rapid rural-urban migration, which has produced spatial imbalance. Hence, when preparing plans, the significant spatial disparity between major cities and other regions must be taken into consideration (Alshebani, 1995; NRHD, 2000; Al- Sanusi, 2005).

6.8 Development Comprehensiveness: ensuring balanced development

Responsibility of the planners, is to resolve problematic issues of development in all regions through the framework of the national natural plan (comprehensive), which is being prepared by the Urban Planning Agency (it is later became known as the National Spatial Policy 2006-2030). Their purpose is to identify regions which need development and to promote equality in public services among all areas, as well as apply the environmental sustainable criteria (NRHD, 2002). In turn, this will create sustainability (development), and provide regions with the facilities to attract the population and thus achieve the required spatial balance (NRHD, 2002).

The problem is that the government does not communicate plans to all levels of developmental planning (national, regional, sub-regional, and local). Financial resources

are made available to local planning levels, without considering the effects of local plans on the other planning levels. As a result, planning is comprehensive. Rather, it is disorganized and leaves major gaps in planning between local and national levels. The National Report on Human Development, (2002) has confirmed this (NRHD, 2002). Future planning requires consideration of the effect of development at each planning level. Communication is required between each level to ensure balanced development.

Therefore, the third generation is seeking to rebalance social and economic development across Libya. It will achieve this by integrating different sectorial policies through spatial development across the country, taking into consideration and implementing plans at national, regional, sub-regional and local (urban) planning levels (Figure 6-5), utilising the National Spatial Policy 2006-2030 (UPA, 2006). The guiding principle of the National Spatial Policy is to strive to develop spatial quality at the various planning levels through economically viable activities, and applying environmental sustainable criteria (UPA, 2006).

6.9 Decentralisation as a Solution to Urban Expansion

In a previous study, the WHO (2007) has noted that government policies have focused upon two main cities. Other cities have been neglected, particularly in regards to finance, services, procurement and logistics. Therefore, in 2000, Libyan government policy decided to dismantle the centralized structure, in order to allow decentralization of authority at municipalities (Shabiat) level (WHO, 2007). Before 2000, due to the use of sectorial planning to promote overall economic growth, policies of Libyan government concentrated upon Tripoli and Benghazi. As a result, of the concentration of economic activities in these two cities, their populations increased rapidly (Salhin, 2010). Hence, this focus created several problems related to the consumption of natural resources such as water and land, and also engendered a migration pattern towards these cities, which has created further problems relating to urban expansion. In this context, Salhin (2010, p.161) stated that

> " There had been an increasing awareness on the part of the government about the importance of spatial dimension in the development process, such as the negative aspects of the continued polarisation of the population and investment and the need for achieving greater urban-rural and inter-regional balance".

Here Salhin advocated the rebalancing of development policies across Libya. Certainly, a solution to reduce or eliminate these problems would be to follow a policy of

decentralization as advocated in the Second Generation Plans (1980-2000) and the Third-Generation Plans (2000-2025); using a policy of 'balanced sustainable development'. (See Figure 6.5).

6.10 Policy Framework for Urban Planning

The NSP (2006-2030) is the adopted framework, shaping future vision over the period of the next 25 years, outlining the management and planning of residential areas, services, infrastructure, and land use into throughout Libya (UPA, 2006). The purpose of this policy is to achieve the following significant objectives:

- Provide the related authorities with basic information and future expectations of planning and development.
- Provide suggestions which are appropriate; taking into account the natural conditions of each region when preparing development plans until 2030.
- Supply a framework and outline preparations of urban schemes, and policy distribution of human settlements on the regional, sub-regional and the local planning (urban planning) level until 2030.
- Protect the environment
- Preserve, what remains of agricultural land in the face of urban expansion.
- Obtain data using modern technologies such as, remote sensing and geographical information systems, in order to facilitate operations of Urban Planning.

The NSP (2006-2030) on Balanced Sustainable Development has now taken into account areas including, amongst others, Agricultural, Housing, Water, and Environment. Consideration of these different areas is evident in the principles governing Balanced Sustainable Development. Figure (6-5) below illustrates the summary of the NSP (2006-2030) whereby balanced sustainable development.

Balanced Sustainable Development (2006-2030)

Agriculture

- Protect farmlands

- Avoid soil erosion & desertification

Housing

- Need for 35,000 - 50,000 units per year

- Need for implementable land policies

Water

- Protect groundwater resources

- Rational water consumption

Environment

- Limit urban expansion

- Coastal zone management

- Pollution control

Population
demand (6 million inhabitants)

- Protect agricultural land and combat desertification.
- Reduce internal migration (rural-urban)
- Develop existing settlements to accommodate expected population growth.
- Create buffer zones around Tripoli to avoid further sprawl expansion.
- Assess the need and viability to develop new towns in the greater Tripoli regions.
- Restructure urban land use and efficient use of land.
- Develop efficient public transport systems in Tripoli.

National Policies

- Raising living standards.

- Spatial and demographically balanced country.

- Equal development in throughout of Libya.

- Support private sector.

Figure 6-5: The National Spatial Policy (2006-2030) whereby Balanced Sustainable Development. Sources: UPA (2006).

6.11 Contemporary patterns of urbanisation and spatial development

Libya, a country with a very rich history of urban development, witnessed the beginning of modern economic activity during the period of European colonization. This saw the

creation of new urban settlements, which, in turn, changed the functions of many old towns, and encouraged the process of urbanisation which has accelerated markedly in recent years (Miasllati et al., 1990; UPA and UN-HABITAT, 2006). In the era of Turkish rule (1551-1911), built-up regions in the Libyan towns were expanded without any proper planning, because of the lack of any kind of master plans. The roots of town planning in Libya were established after the Italian occupation in 1911, where master plans were prepared for Tripoli, Benghazi, Derna and Misurata. Furthermore, much attention and many layout plans were prepared for the villages (Salhin, 2010). During the period of Italian colonization, new styles of houses and building were devised and the water supplies and sewerage systems. The planners successfully worked out how to increase the water supply from outside the city (Fuller, 2000). At that time, Italy planned to develop Libya as one part of its Empire, and through development its influence would be spread throughout the city. Influence was to be concentrated in the city of Tripoli, as it was the capital of the colony of Libya (Rghei and Nelson, 1994). Consequently, the authorities constructed modern streets and residential quarters in Tripoli (Polsrvice and Wadeco, 2000). In addition, large residential villas were introduced into cities. The Italians achieved their aims by building new areas based on urban master planning (World Bank Report, 1960; Miasllati et al. 1990; UPA and UN-HABITAT, 2006).The area reveals a carefully developed urban pattern (UPA and UN-HABITAT, 2006). In that time, the core area of Tripoli emerged as the central business district for the first time in the history of the city (Miasllatiet et al., 1990).

During the British occupation, 1945-1951, there were no significant changes in Libya's urban system (World Bank Report, 1960; Miasllati et al. 1990). During the 1950s, Libya received extensive assistance from the United Nations, and numerous international consulting firms, which were commissioned to prepare plans for the country's five planning regions. The result was 30 comprehensive master plans and 154 outline plans (Awotona, 1990). Between 1960 and 1965 natural population increase and migration to towns have resulted in accelerating rates of urban growth in Libya. The urban population, which accounted for 18 percent of Libya's population in 1955, increased to 25 percent in 1965. In 1973, half of Libya's total population lived in urban areas (Miasllati et al., 1990). In addition, Planet (2010) has pointed out that up to 90% of people live in urban centres, in stark contrast to Libya's pre-oil days, when less than 25% lived in cities.

Miasllati et al. (1990) have indicated that the levels of urban and economic development in Libya show extreme spatial and regional imbalances. The two coastal regions: Tripoli

and Benghazi, with less than 10 percent of the total areas of the nation, which represented in 1973 for over 90 percent of the total population. Most of Libya's little urbanised and less developed areas are located in areas to the south; the Tripoli region dominates the country in terms of urban and economic development. The Benghazi region is smaller in term of the base. The Sabha region lacks a well-developed industrial infrastructure, while Al Kalij region, and is poorly developed in all aspects of infrastructure development, particularly in terms of water, electric supply and adequacy of roads. As a consequence, a spatial strategy was prepared for the whole country, including both urban and rural communities. The idea was to achieve balanced development for all areas. The spatial planning policy aimed to find different solutions and strategies compatible with the geographic and demographic situations in each region; this was in order to determine the factors that increase the rates of economic growth and production, taking into account the development of vital facilities and to conserve an environmental space in each region as one of its main goals.

6.12 Tripoli region and urban dominance

Tripoli has shown a continuous increase of land consumption per capita (Alsharif and Pradhan, 2013). Consequent on the city's dominance in regional development, it has witnessed a significantly higher growth rate of population than other regions. In other words, Tripoli has the highest spatial development levels compared to all other regions (Miasllati et al., 1990; Polservice and Wadeco, 2000). As a result, in 1973, Tripoli was the largest urban centre in Libya which reflects the enormous social and economic importance of the region. By the early 1970s, Tripoli's attraction was already powerful and gaining momentum. All of these are signs of a higher degree of spatial development (Miasllati et al. 1990). Moreover, there is a heavy line connecting Tripoli with the rest all regions, which reflects the high volume of air passenger traffic to the capital city (Miasllati et al., 1990). It is also set on one of North Africa's best natural harbours (Planet, 2010). Furthermore, most of the small and medium settlements depend directly on the major settlements such as Tripoli for their commercial and administrative needs (Miasllati et al., 1990; NCB, 2007).Tripoli city currently dominates the entire region hinterland. This has resulted in the concentration of population and economic activities in and around the city. Therefore, the second generation planning indicates that all regions need to developed (Tripoli, Benghazi, Alkhalij, and Fezzan or Sebha) (see Figure 6-7). This would identify the various environmental problems, the social and functional factors as

well as the economic potential of each region to be developed (Salhin, 2010), which described as follows:

1. The Tripoli region is located in the west. Tripoli is a historic agricultural region, as Figure 6-6 illustrates, a significant proportion of crop production is located here, one of the highest in the country. It is most important planning region, and the main engine of the country's growth. In 2006, the region represented about 12.7% of Libya's total area and 61.3% of the national population. Indeed, the population is still concentrated too much in this region, especially in/around the city of Tripoli (the coastal area). As a result, there was a heavy demand on the planning authorities to manage and control the settlements and land use development in this region due to the continuing spatial concentration of the population and economic activities. There is an increasing concern about the adverse developmental impact on the surrounding agricultural lands. For example, Alsharif and Pradhan, (2013) have indicated that the city of Tripoli, needs to implement an effective urban plan and strategy for rapid urban development, which must be applied effectively and with strict control. This will result in the preservation of fertile agriculture lands, protecting the fragile environment.
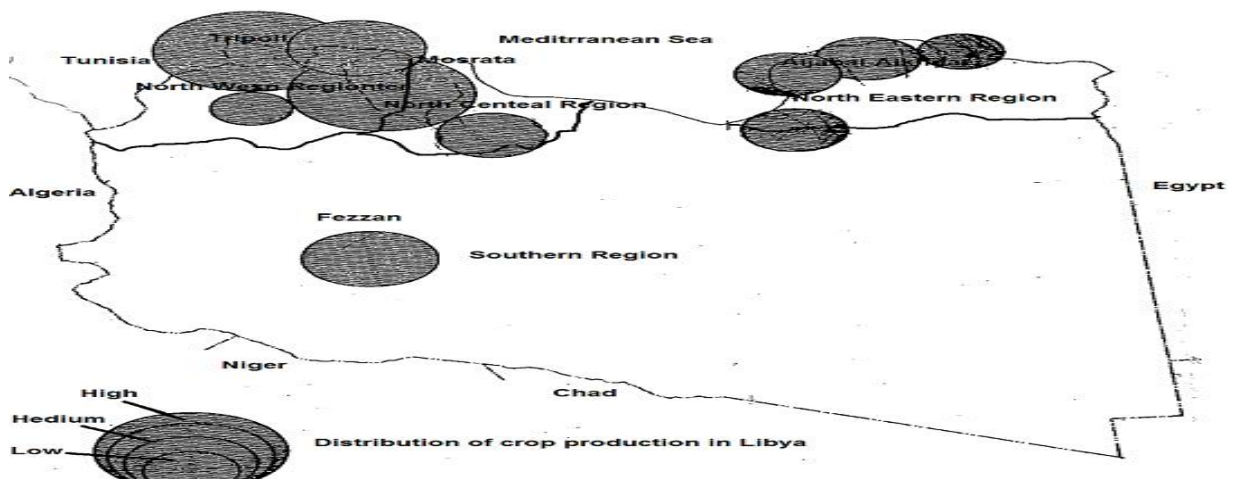
Figure 6-6: Distribution of crop production. Source: Almehdawi, (1998)

1. **The Benghazi region** is located in the east of the country. Benghazi is the second largest city. The region has good potential for future development.
2. **The Khalij region** is one of the most important areas in terms of natural resources, since most of the national oil exports originate from this region, in addition to the underground water resources in the Kufra and Sarir. It also has plentiful natural gas and mineral resources.

118

3. **The Fezzan region** is located in the south, away from the coastal developed areas, the most famous city is Sabha, and has a harsh desert climate, is sparsely populated thus natural factors play their role in the demographic concentration.

Therefore, the second generation planning seeks to encourage the process of decreasing growth population in Tripoli gradually because of social and economic development across the country (Polservice and Wadeco, 2000).
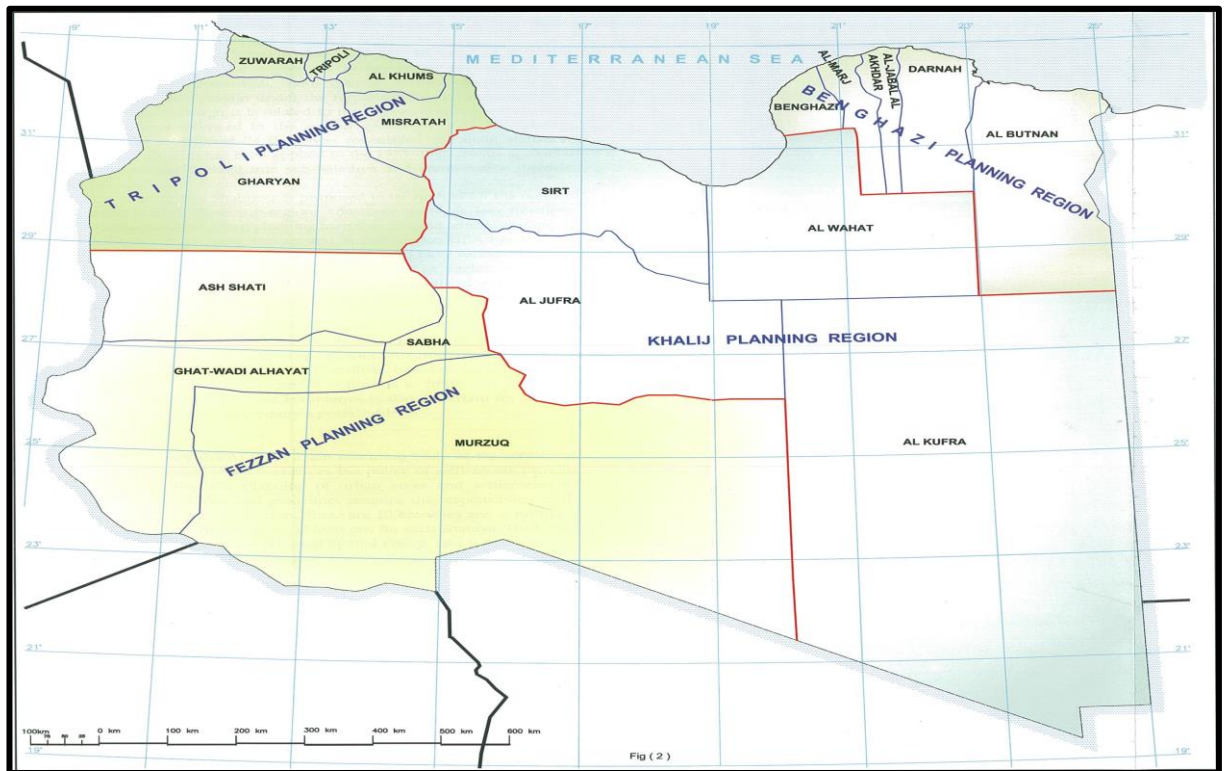
Figure 6-7: The main planning regions. Source: UPA (2007).

6.13 The role of the population density in expansion

Alsharif and Pradhan(2013), demonstrated that Tripoli had a high population density which meant that further increase in population would result in urban expansion. Indeed, Tripoli has witnessed rapid population growth in recent decades resulting in uncontrolled urban expansion at the expense of fertile, green lands, and environmental reserve areas. Porter and Yergin (2006) have reached similar conclusions, their study also indicating that urban development encroaches on agricultural regions in the country. UPA (2006) also confirmed this, stating that residential property accounted for over 67 per cent of land in Tripoli. The Libyan government's spatial development policies did nothing to control population growth in Tripoli in regards to balancing the Libyan populations between regions. Therefore, uncontrolled growth has increased (Salhin, 2010). The

driving factors behind urban expansion can be summarized as follows (Alsharif and Pradhan, 2013):

- The absence of a clear policy on urban planning.
- The lack of analyses regarding urban growth patterns of the city.
- Corruption, political unrest, and poor budgeting.
- The centralisation of services and functions in Tripoli has led to the city dominating political and economic life, as stated by Alsharif and Pradhan (2013) and Salhin (2010).
- The worsening economic situation in rural areas (Misrati, 1983).

For these reasons, Tripoli has attracted many people from other cities, towns and rural areas. As a result, the Ministry of Planning has sought to solve the problems of urban growth especially in big cities through a set of generation-planning schemes such as:

6.14 The First Generation Plans (1GP)(1968-1980)

The first generation plan (Figure 6.8) concerns period from 1968 to 1980. However, it ended in 1980 due to economic and social changes (Azlitni, 2005; NCB, 2007). Before 1969, the scheme was prepared just for few cities, mainly Tripoli, Benghazi, and Derna (Lawless, 1989; NCB, 2007). This information has been confirmed by Blake (1979), when in 1966 the Ministry of Planning and Development prepared the original master plans for all major cities; the was the beginning of the process leading to urban expansion in Tripoli. As it focused on major cities only, it was criticised for not being a comprehensive plan (Lawless, 1989; NCB, 2007). In turn, (Salhin, 2010) mentions that in 1965 Libya adopted a method of sectorial planning which has resulted in the creation of bigger spatial differentials between districts or cities in terms of the concentration of state institutions, productive projects, and investment programmes into a limited number of the cities such as Tripoli and Benghazi that led to attract numerous of inhabitants and business activities more and more. Similarly, Lloyd and Mattingly (1989) have stated that before 1973, the Libyan government used sectorial planning as a tool for overall economic growth, which focused on some of the major cities, in particular, Tripoli and Benghazi. Consequently, the Spatial Planning Department was established in the Ministry of Planning in the early 1970s. In this way, the late 1970s and the beginning of the 1980s, had witnessed a new generation of master and layout plans such as the second generation Plans and the third-generation plans (UPA and UN-HABITAT).
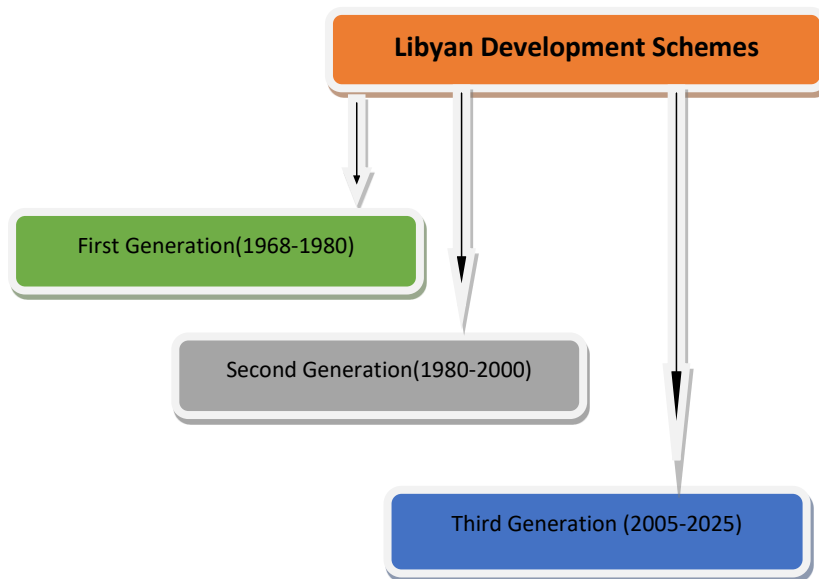
Figure 6-8: The main Libyan development schemes

(A) -1911
(B) 1911-1952 F.P
(DC) 1970s S.P
(E) 1980s T.P

(1) The first urban nucleus. (1/2) Modern city. (2/2) border settlements
(3/4) Random urban expansion (5) Urban areas after the first planning
(6) Urban areas after the second planning (7) Urban areas after the third planning(1E)
Random housing areas (2E) Industrial expansion areas
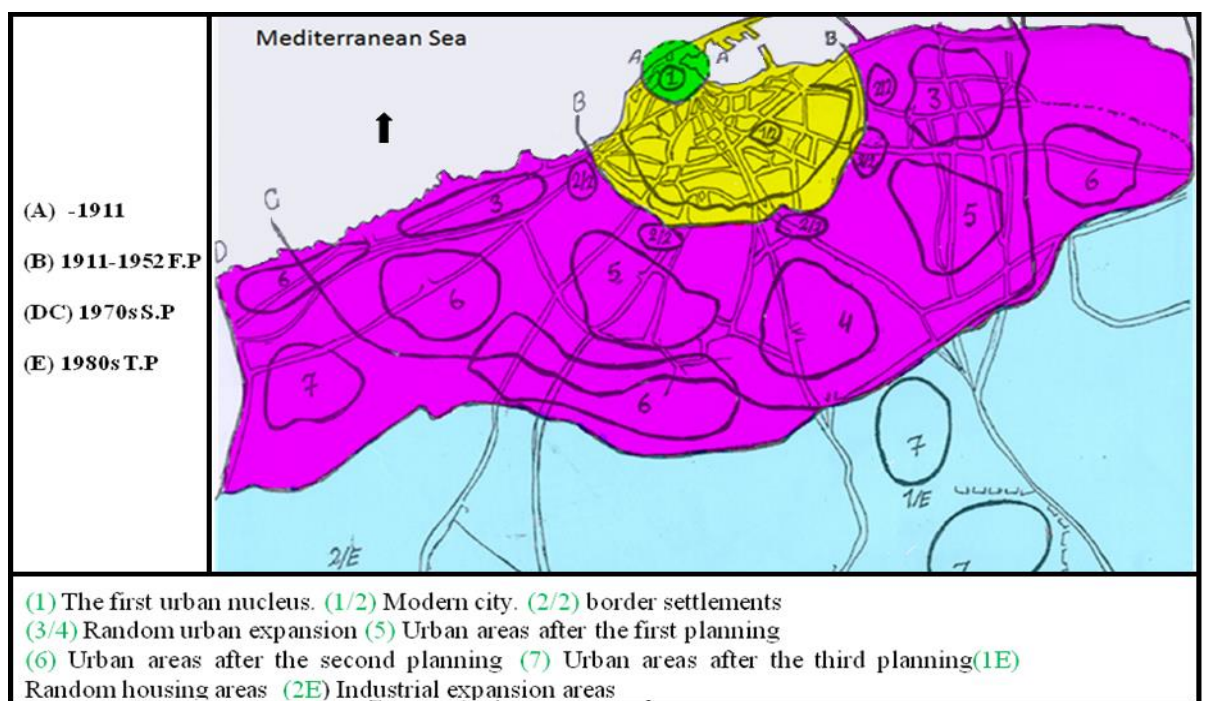
Figure 6-9: The development of Tripoli regions. Source: Urban Planning (1988).

6.15 The Second Generation Plans (2GP) (1980-2000)

The second generation plan was intended to cover the period from 1980 to 2000. It has four regional plans, 13 sub-regional plans, 37 urban master plans, and 176 urban layout plans (UPA, 2006). In addition, Kezeiri (1983) has pointed out that in the Middle East, Libya is considered one of the few countries which had full coverage of urban plans and two generations of master and layout plans. Presented by foreign consultancy companies,

121

these plans aimed to provide urban amenities, infrastructures to all towns large or small and an environmental protection.

According to Helmi et al.(2010) the second generation plans was successful in theory, as it planned to limit the expansion of Tripoli and to promote other cities and town to develop and to improve the living standard for its population. In other words, they stated that the two main weaknesses of the second generation plan are the development and the implementation. At the same time, Salhin (2010) stated that the government has become increasingly aware of the importance of the spatial dimension in the development process when aiming to achieve greater balance between urban and rural areas; this was considered crucial in eliminating many of the negative aspects such as continuous polarization for the large population and investment in megacities (Tripoli and Benghazi).Figure 6-10 shows the current planning process in Libya, especially in terms of socio-Economic changes. These changes are basic inputs in the development of sectoral polices for spatial planning for all sectors, whether agriculture, fisheries, industry, tourism, housing, transport, communication and water supply through an analysis is made of their potential, current and future issues and their expected development direction (Helmi et al., 2010).

Current Situation in Libya

Natural Resources & Infrastructure

Socio-Economic Trends and Changes

Implementation,

Control Evaluation Adaptation and Regular Updates

Sectorial Spatial Policies and Demand for Space

Environmental Management

Spatial Development Strategy 2005-2025

3rd Generation Planning Process
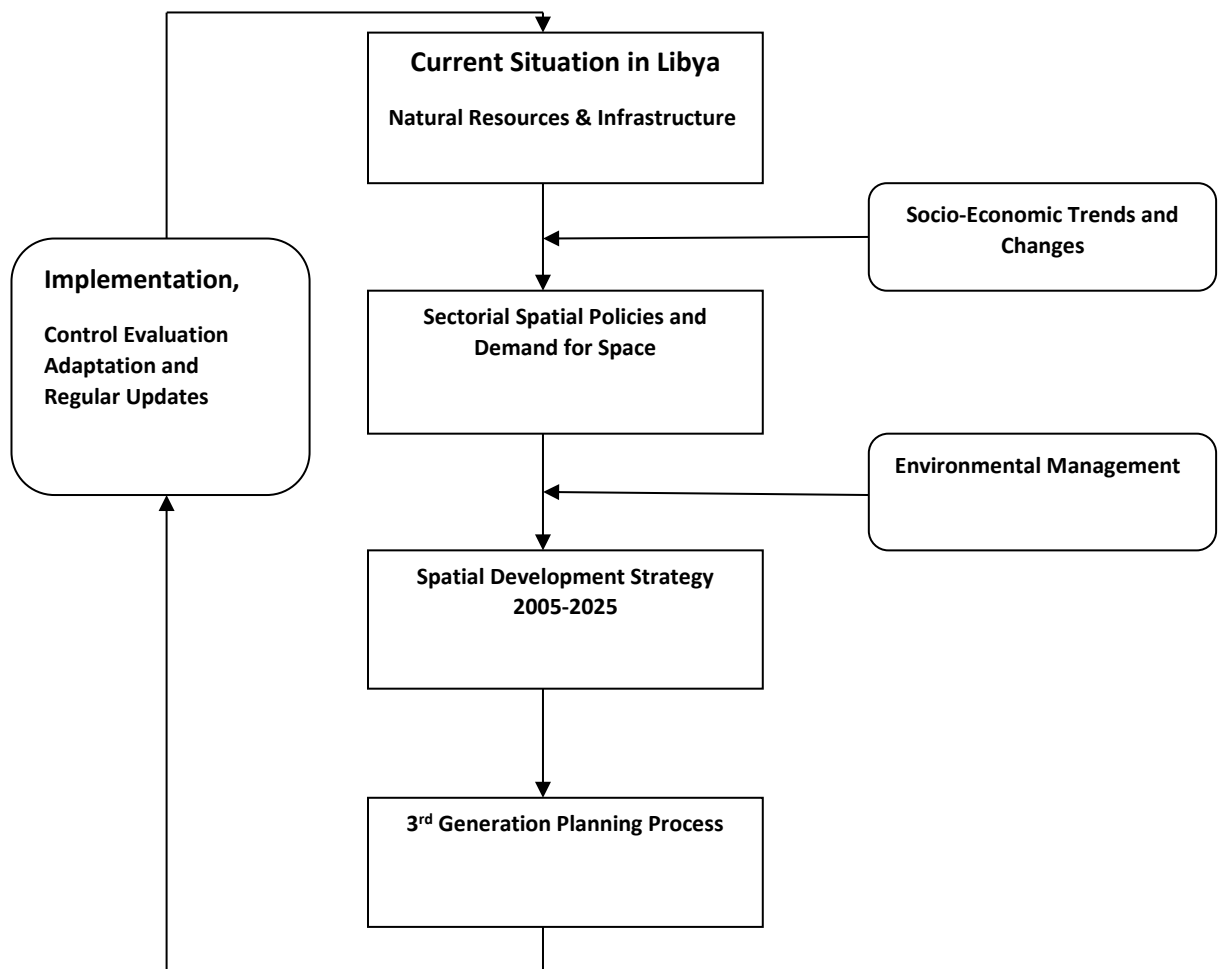
Figure 6-10: Spatial planning process in Libya. Source: Helmi et al. (2010).

As mentioned above, the second-generation schemes are characterised by considerations about the regional and spatial dimensions in preparing the plans. However, Helmi et al. (2010) described the plan as ineffective and summarised the main reasons as follow:

- Static. As it does not respond to the rapid change of socioeconomic circumstances and the fast growing population.
- Expensive to implement and takes long time to development of these plans.
- Poor understanding of local planners to the impact of the projects constructed by companies and investors on environment.
- The plan was designed by urban planners with good engineering background but they lack understanding on the environmental consequences.
- Implementation of the plans is increasingly depends on the view of the investment behaviour of the private sector and the acceptance by the population and this is resulted from the separation of plan making and decision-making in investments (public and private).

6.16 The Third-Generation Plans (3GP) (2000-2025)

88% of the population of Libya reside in urban centres (Sultan, 2004; Elbendak, 2008). Libya is a fragile environment and there are limited water resources available. These areas require special attention (UPA and UN-HABITAT, 2006), given the concentration of the population in major cities. Cities like Tripoli and Benghazi have grown rapidly during the last four decades as a result of a series of deliberate strategies and policies (Elbendak, 2008). For example, during the period 1968-1988, the Libyan government used sectorial planning as a tool for overall economic growth. Investment programmes and productive projects benefited these cities. In turn, due to the improved living conditions and opportunities, these cities witnessed a concentration both population and economic activities (Salhin, 2010). This concentration of people and economy resulted in many serious issues, including: deterioration of environment at the local level (urban expansion at the expense of agricultural land), pollution, and desertification. This in turn has had an impact upon the government's ability to realize the planning goals it had set. Although it sought to improve the quality of life and raise the standard of living of all Libyan citizens to access higher levels to the modern facilities, the concentration of population has hindered this (Sultan, 2004).

Sultan (2004) has mentioned that the weakness of urban planning practice was attributed to the application of the traditional planning approach (underdeveloped), though the international urban planning level has been progressed. There are many constraints which are hindering planning institutions from playing their role in the planning process, specifically through the official executive authority, i.e. decision-making by the central authorities. In other words, urban planning attempted to function independently of politics, and separately from the administration process. This, however, does not work. Other factors which hinder the planning process include: a lack of a good understanding of urban planning practiced in the country (the local capacity), the centrals role of planners are limited, and the absence of planning review processes and stalling of economic reforms, plus contradictory legislation. Therefore, planning was unable to play an effective role in tackling urban problems at the expense of farmland. This is in part due to limited supply of housing from the Libyan government, leading to inefficient patterns of land use and deterioration of the environment.

The rapid growth of the population and economic sector, with the increasing role of private sector activities in those cities, required a shift from conventional planning

towards contemporary planning, which comprehensively covered all the villages and cities (UPA and UN-HABITAT, 2006). Certainly, the government has had an increasing awareness of the importance of the spatial dimension in the development process, in terms of the need of achieving greater urban-rural balance for the purpose of eliminating many of the negative aspects of urbanisation, in particular the continuous polarization of population and investment for major cities from other regions (UPA and UN-HABITAT, 2006). As a result, there was an urgent need to reconsider and update the spatial strategy by preparing and designing schemes for other areas as well as major cities (Salhin, 2010). Therefore, in the 1990s and 2000s, schemes were established by the Ministry of Planning in Libya, that are called the second-generation and the third generation regarding the needs of human for infrastructure, in particular, housing which are represented in all services to create appropriate life, while preserving the natural environment and agricultural lands and forests. It is based on the idea of systematic plans and strategy for urban evolution at present and future especially, in Tripoli and Benghazi as well as to create alternate solutions to important urban issues such as non-regulator urban expansion into a many areas (Abubrig, 2012). Hence, the Libyan government sought, in co-ordination and co-operation with the Urban Planning Agency (UPA), which is the main owner of a project called the Third Generation Planning Project, and UN-HABITAT, to develop national spatial policy (2006-2030). This plan aims at managing urban planning for all regions of Libya (National planning) at different scales, such as regional, sub-regional, and detailed. The project covers the years between 2000 and 2025, and centres substantial studies on social and natural resources (Oesri, 2006). Moreover, this has led to macro planning being adopted. This macro strategy involves top-down planning, beginning from the national level, then the regional, sub-regional, and so on ending with the urban plans level or master plan for the city (Azlitni, 2005). The third generation plan demonstrates a rethinking of planning, which encompasses other regions as well as major cities through designing plans from a macro level.

The 3GP process is evolving innovative planning approaches in regard to spatial development, in order to have balanced development of existing cities across Libya. This is achieved through the development of regional plans and the coordination of sector plans (e.g. transport, agriculture, housing, tourism and environmental management) (UPA and UN-HABITAT, 2006). Furthermore, one of the goals of the national spatial policy (2006-2030), has been to provide a framework and guidelines for the preparation of regional, sub-regional, and urban local plans for the different planning regions such as Tripoli,

Benghazi, Al Kalij, and Fezzan. This involves a comprehensive effort to speed up the drafting of plans, and to improve the spatial planning in Libya through the on-going preparation of new plans, and updating expired second generation plans (revision and reviews of the natural national plan for the second generation plans). In addition, the third generation plan emphasises supporting the administrative processes related to land use and land management, such as licensing, taxation and utility provision (UPA andUN-HABITAT, 2006). The third-generation project has become increasingly important for several reasons (UPA, 2007):

- High population growth rate in Libya, which amounted to some 5,657,692 million in 2006, and was, expected to reach between 9 and 12 million people by 2025.

- A complete shift towards coastal cities, which created several problems such as urbanisation.

- The polarised growth of Tripoli and Benghazi had suggested the need to limit their excessive expansion, and to direct the population to smaller and secondary cities.

- The transfer of water from the south to the north cities (through the Great Man-Made river), it has had a clear impact on creating new growth centres, and, in particular, developing population settlements.

- Change in the priorities of economic and social policy of the Libyan state through development of the economic bases of cities, in particular, small and secondary ones; as well as the need to focus on developing these cities with a growth potential.

- There is an urgent need to diversify the economic base of all the cities (industrial cities, tourist cities), to encourage, and to move to these cities and reduce the migration of major cities.

- The optimum use of space within the cities, and reducing urban growth towards the agricultural lands.

- Mitigate the dominance of the state as regards all sectors (economic, social, and service).

The 3 GP were supposed to be implemented in 1996, but they were delayed for nine years, despite the efforts that sought by UPA to implement them. Unfortunately, the support was not available, nor was the necessary financial resources. This resulted in haphazard construction and many irregularities in the schemes (Salhin, 2010; the head of the Urban Planning Agency, 2014). Similarly, Al Shawish (2004) pointed out between 2000 and

2005, the Libyan government had not witnessed any preparation of the schemes; this created a big gap in planning. As a consequence, urban development spread randomly and without any controls, in particular, in major cities. This is a very small percentage compared to the rapid growth population, particularly in Tripoli, which resulted in indiscriminate urban expansion without any regulation with the relevant authorities, in particular, Urban Planning Department. In other words, this contradicted the standards and regulations of imposed planning as well as it were incompatible with the development systems and the proper use of the areas, which reflected negatively on the fragile environment in Libya.

To illustrate this further, the 3GP was intended to cover the period from 2005 to 2025 and took into consideration the National Spatial Policy (NSP) that was adopted by the Council of National Planning (aka General Planning Council). In order to consider the implementation of National policy, the 3GP examined it from the perspective of regional, sub-regional and urban planning contexts. In doing so, the Third Generational Plan not only considered the macro level but also the micro level.

Before the introduction of the 3GP, Law (3) of 2002 was issued to organise the national development projects, by adopting a series planning system (following the approach planning from all to part), where it starts with a cycle plan every twenty years. This cycle begins from the national plan level then regional plans then the sub-regional plans and so on until the urban plans (respectively). In this system, every level of implementation of the plan was to be assessed before the new stage starts.

In 2006, UPA criticized this approach arguing that it is difficult to achieve sustainable development and distribution of the population between all regions through a long-term national scheme. Moreover, the previous assessment for the development integration perspective has confirmed the existence of a very dangerous planning gap between the national and local levels without followers of the central planning cycle (regional plans). The planning process for the Third Generation Planwas built to be subjected to regular updates by considering the natural resources, the existing settlement's infrastructure and socio-economic changes before drawing any new plan or policy (Helmi et al., 2010).

According to National Consultant Bureau, 2007, the Third Generation Plan was created to protect the farmland, environment and natural resources from urban expansion. Furthermore, the third-generation project has provided a great opportunity to control urban planning in Libya, by placing the foundations of urban development for all regions in particular next stages (UPA, 2006; WHO, 2007; Salhin, 2010). Also, it provides comprehensive strategic plans for land-use decisions and urban planning for Libya. Such

plans offer guidance to decision makers, the planning commission, and the city councils in planning-related activities and provide a readable and handy reference to the development community and the general public (Oesri, 2006). Porter and Yergin (2006) believe that the third-generation project provides a greater opportunity to control the planning in Libya, and lay the groundwork for the next stages of urban development in the country. Thus, they argue, it must be followed to achieve development for covered all regions for covered all regions.

6.17 Spatial planning and the Libyan settlement system: examples of successful plans

Before 1973, the Libyan government used sectorial planning as a tool for overall economic growth, which focused on some the major cities (Lloyd and Mattingly, 1989). Between 1970 and 1975 there was no idea of the importance of the spatial dimension in the development process. Therefore, the Libyan state mandated Italconsult to prepare a study of the Libyan settlement system for all regions in 1976. This study and the subsequent reports have had a major influence on the entire settlement system. After the situation was appraised, the study suggested the creation of new settlements like Assarir, Gaser Ahmed, Ras Lanuf, El-Bregah, El-Gwarshah, Hrawah and Az-Zintan (mitigate population pressure particularly in major cities), and established priorities for future development of economic, social, technical and infrastructural programmes throughout the country. These measures were considered to alleviate the housing problem in cities engendered by migration.

By analysing trends, the study also indicated the necessary policies and problems of spatial development in the two major cities. For example, they found industrial projects tended to polarize growth (due to higher-paying of salaries) when compared with other occupations. Furthermore, port traffic had been excessively centralized on the two congested main harbours of Tripoli and Benghazi, which has created serious gaps in terms of the distribution of social services compared with the rest regions which means the social development are often obvious in Tripoli. This also corresponds with Omora (1998) stating that there was a clear bias in terms of prepare the plans to Tripoli and Benghazi regions, in particular in the second planning stage, which reached about 67.2 percent of all these plans that meant the spatially unequal pattern (levels of utilities and disparities in the living conditions) and thus the dominance those cities, was increased. ITALCONSULT and Omora analysis dovetails with Polsrvice and Wadeco's study,

showing that social and economic development have been improved in Tripoli, especially in recent years. As a result, a dramatic increase for urban expansion (spatial expansion) occurred at the expense of agricultural land. During the period 1966 to 1980, urban space has increased at a five-fold rate, from roughly 1650 to 8513 hectares. At the same time, the population has nearly increased three-fold, 238,000 to 784,000 people. This process refers to the increasing growth of the consumption of land for urban development and also to improve the living conditions (Polsrvice and Wadeco, 2000). As a result, it has given some recommendation which were incorporated in the National Physical Perspective Plan (NPPP), which was adopted in 1979 as the guide for future development at the national, regional and local scales as a means of securing coordinated spatial planning in all regions (Kezeiri and Lawless, 1986). These recommendations can be summarized as follows:

- Supporting the secondary cities (the regional capitals), through a policy of decentralising in all fields, such as: industrial, administrative, commercial, and social facilities.

- Balanced development throughout the country for the small, secondary, and large cities through the provision of social and infrastructure facilities, so that even rural settlements will be assured access to employment and social facilities.

- The creation of new cities, which are integrated in development plans. At least twenty-four of these growth centres should be created to exploit untapped resources, absorb excess population, and settle new lands.

- The reduction of villages (around 159), which lack the natural, economic and physical resources essential for future development. This policy will help improve living conditions for these village populations as they will eventually be resettled in developed areas (Italconsult, 1976).

Due to those the recommendations, the Libyan government has decided to implement the NPPP 1980-2000, which presented a national framework for short-term plans (five years) and long-term plans (20-years). These plans cover four regions: Tripoli, Benghazi, Khalij and Fezzan as the researcher stated above. The government commissioned some companies to do that such as: the Tripoli region, Polservice was commissioned to prepare 33 master plans and 46 layout plans such as schemes development for Tripoli region IN-1, IN 20, IN 21, IN 22, IN 23 Volume 1, and 2, IN 24 and 25. In the Benghazi region, Doxiadis Associations International was commissioned to prepare eleven master plans and fifty-five layout plans. In the Alkalij Region two companies were commissioned,

Speerplan of Frankfurt (West Germany) and Finnmap CY of Helsinki, which undertook the study, planning and mapping of all the settlements. Also, Finnmap carried out work in the Fezzan region, in particular Sabha city.

In the context of regional planning, Master Plans and Layout Plans were formulated and designed up to the year 2000 (see, Figure 6-11) by preparing inventories of the existing conditions within each region. A series of reports were prepared covering the developments of the respective regions up to the year 2000, which included the preliminary and final regional (master and layout) plans. During the preparation, particular settlements in each region combined with delivering associated aerial photography and maps.

Therefore, the NPPP seek to strengthen the economic base in smaller towns and to prepare master and layout plans for each town, complete with their development potential through the philosophy of the spatial planning and its strategy, which represents five variant physical models as alternative strategies to meet the development needs of the country (see, Figure 6-11). These are considered below.

I. Extrapolated Trends Model

The NPPP suggest that this would be a solid model for the government to implement. Following this model, policies would seek to increase continuing developments, distributing economic activities and employment opportunities across all sectors—such as: agricultural, industrial, housing and manpower—for the benefit of all regions both economically and socially. Furthermore, it would seek to progressively develop the existing network of settlements and agriculture. An effective programme would be applied (hierarchical system) to stimulate different growth rates and the development trends of the settlements.

II. Intensive Regional Development Model

The NPPP indicated that this model would also be a solid one for the government to follow. The inventive regional development model would focus on the development of underdeveloped regions, particularly in the southern and central areas of the coast. The aim of this model is to balance population distribution and employment opportunities across the country. This would have a positive impact on Tripoli and Benghazi, as it would restrain migration to these areas from southern and central regions. However, the NPPP noted that this policy of decentralisation would be difficult to achieve due to the environmental and natural constraints in the interior and central coastal regions, and the

inevitable attraction of existing major cities. The structure of this model consisted of one primary line of economic activity along the coast and two secondary lines - one from Misurata to Hoon, Sebha and Ghat and another from Ejdabyiah to Jalu, Sarir New Town and Kufra, with new growth centres in Hoon, Brak, Ghat, Sarir and Kufra.

III. Coastal Belt Model

The third solid model suggested by the NPPP, would focus economic and physical activates along the coastal region due to the appropriate climate conditions here, particularly in the central area of the coast. In other words, economic activities would be focused on coast forming a continuous belt of activity. In doing so, it would secure the maximum benefit from the infrastructure developed, especially the underground water existing in those areas.

IV. Metropolitan Model

This model would focus on the development of the two metropolitan areas of Libya, Tripoli and Benghazi, and some select larger cities. A policy of rapid, unrestrained growth of these large cities would be adopted, concentrating economic and human activities in these areas. The remaining areas would be developed primarily for agricultural production and food processing. The advantages of this model are out-weighed by the disadvantages. The main disadvantage of this model is the accentuation of regional disparities, leading to several environmental problems.

V. Bi-Polar Model

Similar to the metropolitan model, this model, would focus economic and physical activities in two regions: Jifara Plain, located in the north-west, and Jebel Al Akhdar (Green Mountain), located in the north-east. It would also transfer water from interior underground reservoirs to agricultural areas. Development and employment would be focused in these two regions, limiting that of the interior and central coastal areas.

6.18 The model to follow

All five models were analysed and evaluated by the NPPP, they found to have advantages and disadvantages. Considering all five models, there are three which the government would do well to follow. The first three models discussed above, are recommended as a basis for future development. Each would promote balanced development across all

regions of Libya. The other two should be avoided. Both the metropolitan and bi-polar model would increase the domination of the main cities (Tripoli and Benghazi), by continuing to focus development here. While these cities would prosper, other small and medium-sized towns, as well as secondary cities, would grow weaker economically and socially. NPPP rejected these two models as they were in conflict with official policies and development trends. All five plans, it must be considered, would face problems. As the NPPP noted, the concentration of the small Libyan population in two major cities is leading to numerous economic, social, and environmental problems. All five plans would face this stumbling block in their endeavour to promote growth and development of major and other cities.
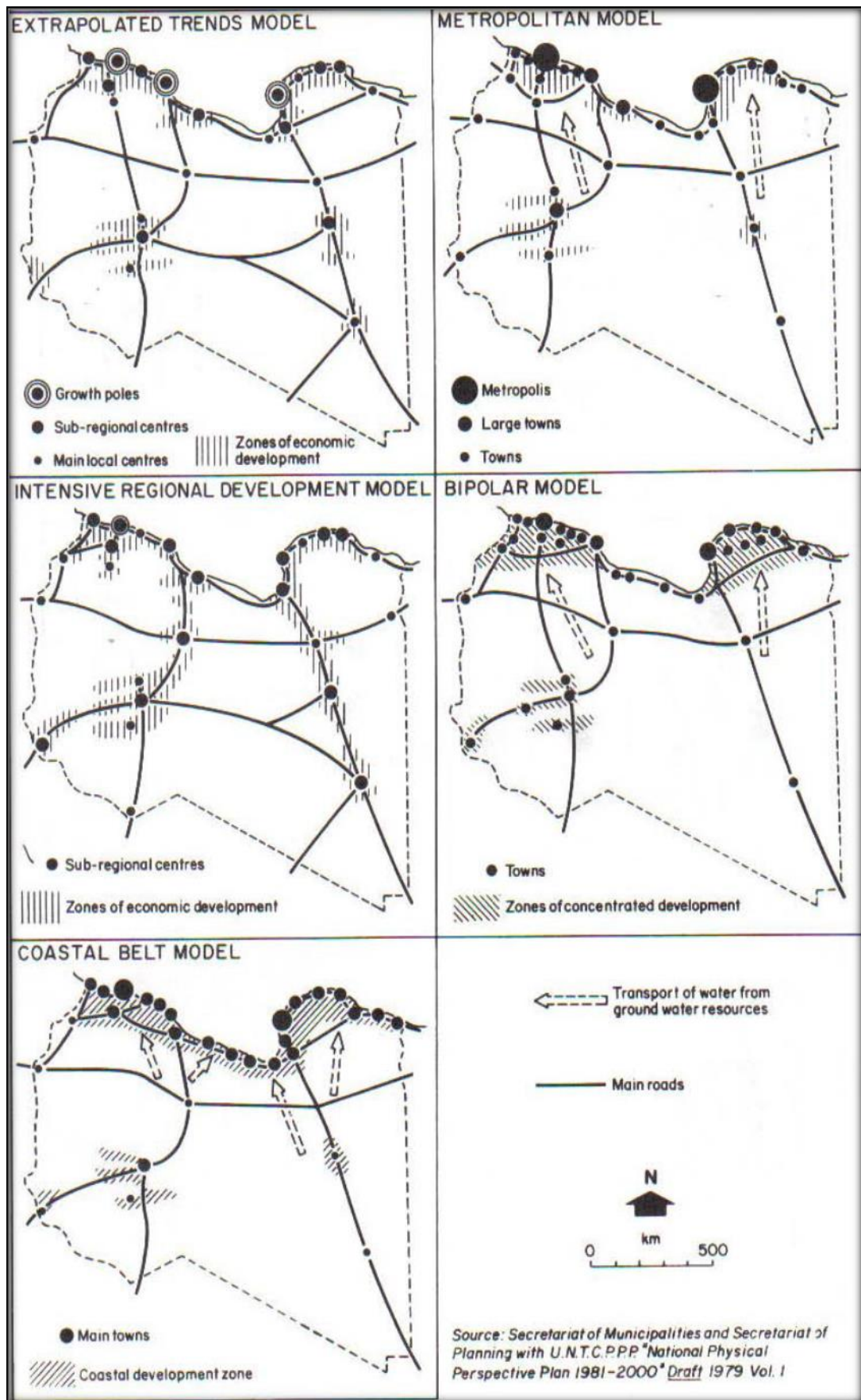
Figure 6-11: Variants of spatial development models. Source: taken from Kezeiri and Lawless (1987).

Consequently, a new model was constructed on the basis of the first, second and third models. The features of this model (see Figure 6-11) may be summarized as follows:

1) The establishment of new sub-regional centres along the central part of the coastal belt, especially between Misurata and Benghazi, where a primary coastal line of economic activities is established.

2) A secondary line of economic activity linking Misurata, Hoon and Sebha.

3) A secondary line of development, linking Ejdabyiah, El-Bregah, Sarir New Town and Kufra.

4) The piping of water from underground reservoirs in the interior to the northern agricultural areas.

5) A strengthening of the regional and sub-regional centres. These centres are defined as follows:

- Regional centre: the major urban centre which has a concentration of economic, administrative, social and cultural activities.
- Sub-regional centre: the urban centre where social and economic activities serve the towns and villages within sub-region.
- Main local centre (towns): centres of local activity, which coordinates and implements local economic, social and physical planning and development.

In addition, the plan defines the rank of every town over 7,000 inhabitants by the year 2000, and assumed that if the strategy of spatial planning proposed by NPPP was implemented, the settlement network would accordingly form a hierarchy depend on the size and function.

1) First rank: cities with the largest concentration of urban populations, that being over 1,000,000 inhabitants. Such cities include the Tripoli agglomeration (with a projected population of between 1,600,000 and 1,900,000) and the Benghazi agglomeration (with a projected population of between 700,000 and 900,000). Three other cities could also be considered first rank: Misurata city as it is an economic centre and has a high population growth rate, between 250,000 and 350,000 people by the year 2000; Al Zawyia as its development is closely to Tripoli and as it also has a high projected growth rate in

population, between 150,000 and 200,000 by the year 2000; and, Sebha, which has a projected population by the year 2000 of between 110,000 and 130,000.
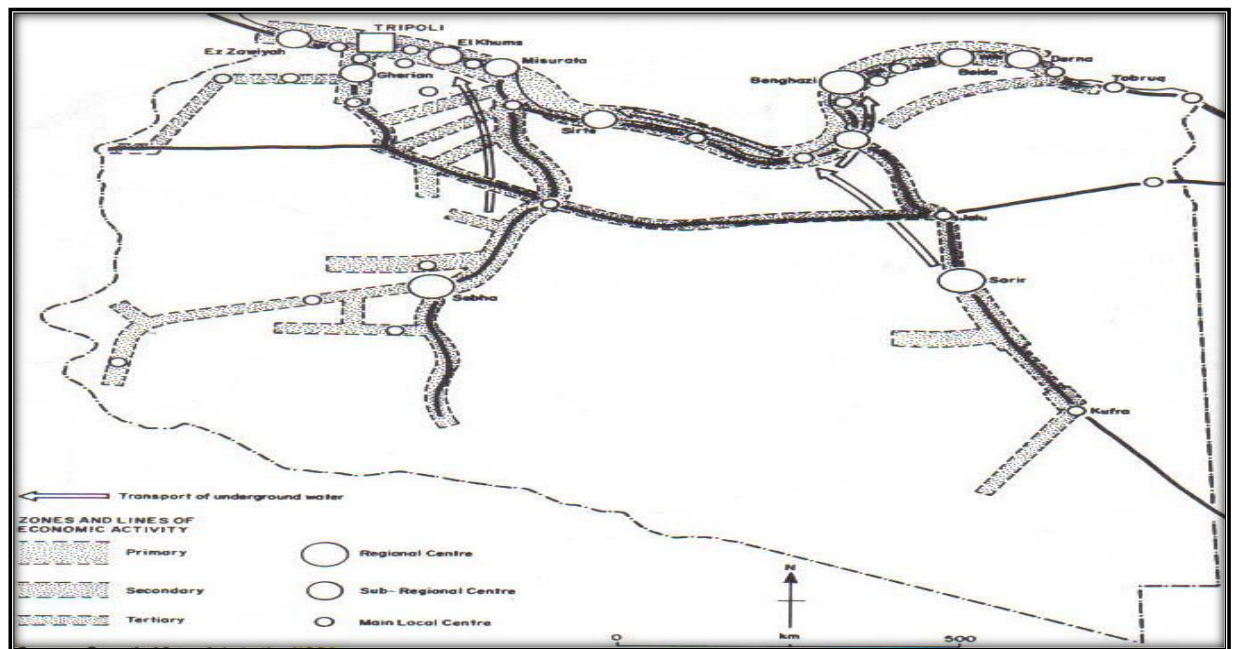
Figure 6-12: The Spatial Development Model Recommended by the NPPP. Source: taken from Lawless and Kezeiri (1987).

2) Second rank: urban centres with a population of between 50,000 and 100,000 inhabitants, such as Zwoara, El Khums, El Garabulli, Zliten, Gherian, El Beida, Derna, Sirte, Ejdabiah, El Bregah and Hoon.

3) Third rank: towns with a population of between 20,000 and 50,000, such as El Aziziah, BouKamash, Sorman, Sobrata, Tarhuna, Bani Walead, Al Gobbah, Tolmeitha, Tobruq, Ben Jawad, Hoon, Sarir, Waddan and Brak.

4) Fourth rank size towns: small towns with between 7,000 and 20,000 inhabitants.

5) Fifth rank size towns: small towns with a population of less than 7,000 – with towns and villages serving the rural population.

Moreover, the NPPP proposed that intermediate towns including, Ejdabiah, Derna and El Beida, are to become sub-regional centres. Furthermore, eight small towns— Zwoara, El Khums, El Garabulli, Zliten, Gherian Sirte, El Bregah and Hoon—were also selected for development as second rank centres. The major features of the proposals incorporated in the new spatial model recommended by the NPPP are now being implemented.

The development of the coastal area between Misurata and Ejdabiah has already begun with the location of the major industrial development at Albraigha, and also in the new towns of Ras Alounof and Gasr Ahmed. As a result of the focus of economic development, Albraigha is witnessed a dramatic transformation from a small dormitory settlement for workers at the oil terminal to a major heavy industrial centre, as well as the Libya's latest technical university. Ras Alounof, the site of Mobil Oil's crude petrochemicals centre is a new town constructed 17 kilometres west of the petrochemicals complex, and was planned to house 15,000 people while the new town of Gasr Ahmed as located 9 kilometres to the east of Misurata and 3 kilometres from the harbour, has been built to house workers from the nearby steel complex. In this context, General Authority for Information (2008) pointed out that the total population of Albraigha and Ras Alounof are contributed only 0.7 percent of the total Libyan population in 2006.

As the NPPP stated any plan for spatial development should work on developing all settlements according to their growth potential and resources, with special focus on some of them. Therefore, the NPPP has confirmed the fact that the development policies trends may be used to develop all the areas in Libya. This finding has important consequences for the broader domain of the spatially unequal pattern for the distribution of the urban and rural settlements, and the disparities in the living conditions and levels of utilities. Thus, a continuing focus on Tripoli and Benghazi would affect the development of the other small and medium-sized towns in a massive negative way. Salhin (2010) holds the same view, small and secondary cities suffer from the lack of a sufficient economic base for survival.

Unfortunately, the recommendations for growth set out in the new set of master plans for many towns differ substantially from those incorporated in the NPPP. As a result, this led to trend towards polarisation of population in the two major cities, Tripoli and Benghazi, which seems likely to continue (Lloyd and Mattingly, 1989).

Due to the domination of big cities, which have monopolies on services, jobs, investments and projects, they will continue to attract people from other regions, more so than other settlements and cities. This contributes to the dimension of migration (Attir, 2005). As a result of the concentration of the population in Tripoli, the city witnessed extensive construction, much of it at the expense of agricultural land. There is clear evidence the imbalanced spatial distribution of the population within the Libyan urban system and lack of urban planning. This, in turn, has increased Tripoli's population size, and contributed

to an increase in construction, which was brought about by an increase in the number of settlements due to uncontrolled growth. This could be attributed to the underlying problems of the urban planning programme, as confirmed by Al Zanati (2003).

Therefore, Salhin (2010) suggested that one of the most important solutions to address this phenomenon is to ensure balanced development between cities, especially in regards to infrastructure which facilitates social and economic activities. Moreover, to relieve pressure on the city of Tripoli, while addressing many problems existing in the city, sustainable development must be considered. This information has been confirmed by the Secretariat of the General People's (2006).

In addition, as Brebiush (2006) pointed out, the Consultative Office of Facilities recommended, in 1988, the equitable distribution of development among all regions in order to protect agricultural land and restrict growth of Tripoli.

Scheme for development 2000 presented by Polsrvice and Wadeco (2000) sought to protect fertile agricultural land in and around Tripoli by removing the adverse consequences of the dense concentration of population and various economic and social activities within the city. The main aims of the schemes of development 2000 can be summarised as follows:

- The reduction of the speed and pace of development of Tripoli in favour of other cities.
- Applying policies to actively control immigration into Tripoli, focusing on push factors away from the city in an attempt to balance net immigration. This would reduce urban expansion by reducing population.
- Transferring some 170,000- 200,000 inhabitants from Tripoli to other cities.
- Reducing the non-Libyan population. Without measures, the non-Libyan population will reach about 60,000 by the year 2000.
- The possibility of developing and protecting the city of Tripoli through the creation of new cities, such as Valley East city, where the estimated population would reach about 400,000 inhabitants by the year 2000. Also, in the same year, economically active population was expected to reach around 87,000 people. Along with Tajoura city and Janzour city, Valley East city will provide functions and facilities to their populations, lessening the dependence on Tripoli. Therefore, there is no doubt that the new cities a strong incentive to provide services and jobs,

which leads to able to achieve results and secure stability (Polsrvice and Wadeco, 2000).

These schemes seek to maintain a suitable level of land, in particular agricultural, protected from urban expansion. They were approved by several researchers and companies, also by the relevant authorities. The schemes aimed to introduce several radical and fast reforms to the planning sector in particular in spatial strategies in terms of environment, population and development, can be determine the future splendid success as mention above. However, as the implementation of these schemes was under the direct influence of the state, they were not implemented and remained theoretical. Unfortunately, the Libyan government did not take any attention of this. Consequently, huge growth rates contributed significantly to construction has expanded around 50 % of the total fertile agricultural land in 2000. Also, in 2012, the Urban Planning Agency carried out a project for the management and evaluation of the poorer settlements and slums. The aim of the project was to control the growth of poor settlements through the National Plan for the reduction of indiscriminate construction. But unfortunately, it was activated only recently (Saad, 2012).Kezeiri and Lawless (1986) argue that the success of the strategy for selective development of Libyan towns depends on the government's ability to achieve a high level of coordination between sectorial and spatial strategies and between national planning and planning at the level of the municipality. Recently, the Libyan government has sought to issue national spatial policy 2006-2030 to achieve that. It means balanced and sustainable development for all areas of Libya (UPA, 2006). The Libyan government did not apply the above mentioned appropriate plans and policies or the Third-Generation Plans (2000-2025) and National Spatial Policy (2006-2030), which are aiming to develop all the areas in Libya.

6.19 The strengths and weaknesses of governance and planning

Surveying previous literature on urban planning and policy several strengths and weaknesses of Libyan government policy can be highlighted (Table 6-1).

Table 6-1: Summary of the strengths and weaknesses of Libyan government planning.

	Strengths	**Weaknesses**
Policies	The previous policies of the monarchic regime and the Gadhafi regime have encouraged the expansion of the cities in particular Tripoli and Benghazi, through granting loans to the private sector for housing construction and government sponsored building. National policies based on the Balanced sustainable development 2006-2030, aim to raise living standards, and promote a spatially and demographically balanced country with development equally spread across all regions of Libya.	Economic policy has focused on Tripoli. The concentration of the population here has led to the increasing expansion of the city. In turn, urbanisation has encroached on agricultural land. Efforts have been concentrated on the Man Made River and housing construction without planning; the issue of urban expansion has been neglected.
Urban planning	Three schemes have been formulated to tackle urban planning: the first, second, and third generation plans. These were adopted the environmental, economic, and social problems in all regions.The Third Generation Plan (Balanced sustainable development 2006-2030) aims to protect agricultural land and reduce internal migration. These plans are flexible, and are continually revised, based on current socio-economic conditions.	Urban planning was not systematic; industrial projects were built with no attention paid to their economic feasibility. Furthermore, lack of finance and expertise meant that the three generation plans were not successfully implemented; also there are no plans to revise them despite them being obstructed.Urban planning suffers from lack of data, and from coordination difficulties between central institutions, local committees and other agencies. There is widespread contravention of the plans in place, and a lack of serviced urban development land.Moreover, the first generation plan has focused only upon Tripoli and Benghazi(method of sectorial planning); others areas were neglected. Additionally, the third generation plan is still not applied yet (Delay in execution of plans). No consideration of the environmental impact of construction projects.
Management (ministry of agriculture and urban planning agency)	The institution can potentially coordinate and cooperate internally and with other institutions to overcome issues, such as urbanisation and the loss of agricultural land.	First, administrative institutions are unstable, caused by continual restructuring of state institutions. Moreover, government perspective on solving issues is narrow and controlling, thus intervention in policy management is harmful. Second, administrative procedures are complex and there are delays in obtaining transaction. Third, there is a lack of co-ordination and co-operation between local institutions regarding urban expansion. Finally, there is a lack of skilled labour, capable management, and expertise.In other words, poor management.
Laws and regulations	The laws and regulations are sufficient to reduce urban expansion upon farmland.	Laws are continually violated. Thus, cities have expanded due to unplanned/random construction onto farmland. Laws have not been enforced for numerous reasons such as, corruption of the official executive authority which is responsible for enforcing these regulations.
Policies of agricultural development plans	Aimed to protect and improve the environment and natural resources, in addition to promoting self-sufficiency in foodstuffs. It attempted to re-balance policy to focus on all regions.	The policies were not effective in any region, and did not protect the environment or natural resources from urban expansion. Only a small number of farmers were helped to maintain minimum agricultural production. Therefore, foodstuffs had to be imported. Consequently, the agricultural policies in Libya need to re-evaluate in order to be more effective.
Natural resources	Although limited, there are natural resources such as farmland and ground water.	Natural resources are not used efficiently; farmland has been lost to urban expansion, and a large quantity of groundwater has been consumed (due to the drilling of wells). This results in decreased water levels and seawater intrusion, in turn, creating many environmental problems such as, desertification and the reduction of agricultural and forest areas. This has occurred especially in Tripoli.
Awareness	There are schemes to educate citizens and farmers on the problems of urban expansion, especially its effect on farmland.	Programmes are limited and do not reach a significant audience to be effective.

6.20 Conclusion

The move towards balanced development across all regions of Libya, first advocated by It AL consult and outlined in the national spatial policy 2006-2030, would help protect agricultural land around Tripoli. By financing the development of small towns, secondary cities, and rural areas, and not focusing on the development of major cities (Tripoli and Benghazi), rural-urban migration would be lessened as facilities and services, previously only available in major cities, would be available in other regions. Therefore, the rapid population growth and resulting housing crisis in Tripoli would be addressed as population growth as a result of migration would decrease. In turn, impetus to build on agricultural land would vanish. In other words, in order to realize the urban planning objectives the government needs to implement the third-generation plans to cover socioeconomic, environmental national developments based on a balanced sustainable development process for all the country areas. It is, therefore, necessary to implement the national spatial policy (2006-2030) which pursues laws and legislation in relation to the protection of natural resources, such as farmlands, forests, and groundwater, and to increase public awareness, capacity building and technical and financial support. This policy may shed light on questions about the urban expansion at the expense of agricultural land. In this case, it may be an effective way to reduce urban expansion.

Chapter 7 : A Libyan case study - Tripoli

7.1 Introduction

Urbanisation in Libya is not a modern phenomenon; it can be traced back to the Phoenician and Roman eras while nations who occupied Libya such as, Italy encouraged it. The discovery of oil led to economic development and improvement, particularly in Tripoli, which witnessed greater economic prosperity compared with other regions, Tripoli, as a result, provided important economic opportunities, and a better living standard than other regions. In turn, the disparity in opportunities between Tripoli and other regions in Libyan has led to the drastic increase of population in the former. The lands surrounding Tripoli face the problems of rapid population growth, which have resulted in increased changes land use. The rapid rate of urban expansion has led to a number of environmental problems which are still impeding the sustainable development. This chapter focuses on the changes in land use through Remote Sensing Systems and will attempt to identify a true image of the causes of increasing the population as mentioned above.

7.2 The Historical background of Tripoli

Tripoli has a rich and profound history. A historically important city from antiquity, primarily due to its location, Tripoli linked Africa, Europe, and the Middle East, as well as the western and eastern part of the Arab cities of the world. It was known as a cross-road because of its strategic, geographic location which enabled it to flourish as a centre of trade, which, in turn, promoted economic growth (World Bank, 1960; Sibley and Fadli, 2008). In addition, Tripoli has remained an important centre for traders and camel caravans that travel across the African desert at that time (Al-Kohary, 1968; Amer, 2007). Indeed, Tripoli controlled much of the caravan trade, which brought numerous goods such as ivory and gold dust, ostrich feathers and gums, wax and tanned leather, sometimes mats and henna, into the Mediterranean (Cachia, 1975). Over time, many different nations have sought to occupy Tripoli and exploit its strategic location and natural resources such as, the Phoenicians, Carthaginians, Romans, Muslims, Spanish, Ottomans, Italians, and British (World Bank, 1960; Amer, 2007; Sibley and Fadli, 2008). Each of these civilisations has left its mark on Tripoli, which has progressed and developed through these eras.

7.3 Population and population density in Libya's most populated areas:

Libya's population density (fewer than three people per square kilometre) is one of the lowest in the world (planet, 2010). It should be noted that the cities located in the north have a higher population density, particularly those areas located in the north-west, and, to a slightly lesser extent, those located in the north-east (in the coastal areas) (planet, 2010). As a result, natural factors influence demographic concentration (Salhin, 2011). Moreover, the economic situation in Libya differs from one area to another, significant variation in development can be found between regions, particularly in the major cities. Due to this uneven development favouring large cities, personal income is significantly higher here than in other regions. Indeed, the emergence of several economic sectors in these cities, including commercial, industrial, and administrative, present opportunities which provide greater sources of income (World Bank Report, 1960; Ghanem, 1987). As long as there are differences between the major cities and small cities in terms of wages, it will continue to be in the best interest of individuals to move to those cities. The process of migration towards the highest revenue areas will continue; this information has been confirmed by McCatty (2004). As can be seen in Table 7-1, Tripoli has the highest population and population density in Libya. Population density for Tripoli is at least seven times greater than the second densest region in Libya, Jafara. The irony here is that Tripoli, which is considered to be the smallest in terms of area; it has the highest population as shown in table 7-1. In addition, the demographic distribution between the cities has shown around 50% of the inhabitants of Libya live in five main cities: Tripoli, Benghazi, Misrata, Jafara, and Al-Margheb (NRHD, 2002; Abubrig, 2012). This is mainly due to the development of these areas, especially Tripoli and Benghazi.

Table 7-1: Population and population density in five different regions in Libya in 2008.

Region	Area (km²)	Population	Population Density Per square kilometre
City of Tripoli	835	997,065	1,194.09
Benghazi	11,372	622,148	54.71
Misrata	29,172	511,628	17.54
Jafara	2,666	422,999	158.66
Al Margheb	6,796	410,187	60.36

Source: General Authority for Information, Statistics Book (2008).

7.4 Economic Development and Urban Expansion:

Tripoli is top of the five cities with the highest rate of personal income in Libya (Figure 7-1). This reveals the highest per capita income (averages from GDP)is in Tripoli, compared to the rest of the cities (Tripoli, 2,429 Dinars, and Zawia, 2,283 Dinars). Average personal income has a very important role in attracting people to areas. Similarly, Ali et al., (2011.958) have stated that:

> "In Tripoli region higher income households move short distance without worrying the illegality of the construction to the semi-squatter. While low and middle income households move long distance searching for jobs and new opportunities in Tripoli region…the employers attract towards jobs that provide higher salaries. In the region of Tripoli as mentioned during 1954-2006 period around 689,656 of total population in Tripoli region are migrants, in other words, around 45.4% of population in Tripoli region are migrants and they have come to the region from the rural and other Libyan cities and towns"
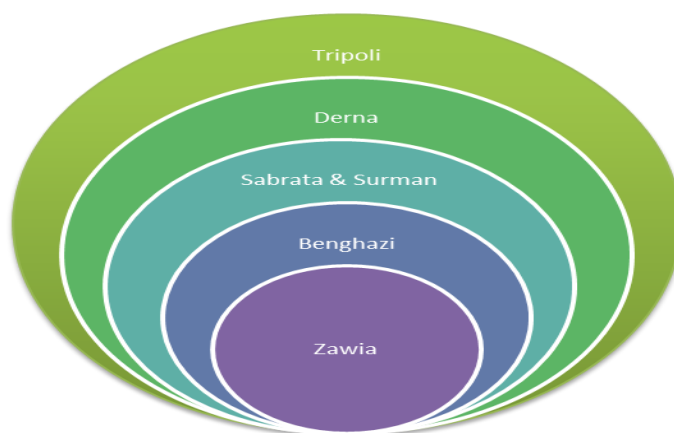
Figure 7-1: Five cities with the highest rate of personal income. Source: NRHD, 2002

Moreover, the industrial sector in Tripoli has the highest proportion of factories and employees. In 2001, the percentage of industrial workers reached 23.4% (The National Organization for Information and Documentation, 2001). In 2003, Tripoli contributed around 35.8% of the total labour force in Libya (Mohammed, 2005). Furthermore, between 2007 and 2009, just over half the companies working in industrial production, export, import and higher education sectors were located in Tripoli (General People's Committee, 2009). In this city, trade is concentrated; both retail and wholesale trade are the most significant economic activities in Libya. In Tripoli, 45.2% of labour is engaged in retail and wholesale trade (Mohammed, 2005). As a consequence of the concentration of development and economic activity in Tripoli, the percentage of the total workers in the city's service sector has increased dramatically from 48.7% in 1980 to 65% in 2001(The National Organization for Information and Documentation, 2001).

This has had an impact on attracting the population to this city. Elbendak (2008) argued that 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. Therefore, most capital cities in developing countries are considered the central business area; similarly they are the cities with most clusters of public and private institutions such as administrative, commercial and cultural establishments and other services (Abubrig, 2012). Hence, the rapid growth of cities and urban areas is faster, particularly in the large cities where the administration services, economic growth and social services are over concentrated. This has caused extensive migration from small and medium-size towns which offer les job opportunities, less social needs and less availability of infrastructure (Amer, 2013). Signs of the level of development in Tripoli are demonstrated in the following figures (from Figure 7-2 to 7-8).

Figure 7-7-2: High towers schemes under construction in Tripoli. Source: Municipality of Tripoli, 2012

Figure 7-3: Traffic congestion at Umar Mukhtar Street, Tripoli. Source: Municipality of Tripoli, 2012.

Figure 7-4:Dat El-Emad Towers, Tripoli. Source: Municipality of Tripoli, 2012

Figure 7-5: Port in Tripoli city. Source: Municipality of Tripoli, 2012

Figure 7-6: Al Shat Street, Tripoli. Source: Municipality of Tripoli, 2012

Figure 7-7:Boulayla Tower, Tripoli. Source: Municipality of Tripoli, 2012

Figure 7-8: Municipal Beach Resort in Tripoli City.
Source: http://www.temehu.com/tours/zuwarah_beach_holiday.htm

Table 7-2 shows changes in economic activity that occurred in the city of Tripoli in 1954, 1964, 1973 and 1980, including agriculture, construction and services. Economic activities for agricultural use declined from about 27.3% to 2.0% between 1954 and 1980. In contrast, construction activates increased significantly, roughly 3.6% to 25.1%. Service activities have also increased from around 43.6% to 50.7%. The table demonstrates that the greatest increase over these years has occurred in the construction sector (Polsrvice and Wadeco, 2000).

Table 7-2: Shows the proportion of transformation in use activities: agriculture, construction and service.

Year	Agriculture %	Construction %	Service %
1954	27.3	3.6	43.6
1964	13.7	8.2	53.4
1973	5.4	19	58.4
1980	2	25.1	50.7

Source: Polsrvice and Wadeco, 2000.

As mentioned above, there is a clear disparity in income levels between regions of GDP. Cities which have the lowest income rates per capita are the rural areas, in particular those which have pastoral production patterns such as, Ajdabia, Mizda, El-Kufra, El-Ghobba, and Wadi EliShati. Cities which have higher incomes rates per capita such as Tripoli generate their income from service activities in the individual and cooperative sectors (wholesale and retail trade, restaurants, hotels, transportation, storing and transportation sectors) as well as the economic services sector such as finance, insurance and managerial services (these economic activities have increased of the phenomenon of migration). This, in turn has influenced changes in land use, in particular agricultural land. In other words, the haste with which agricultural land has been changed to serve other purposes (housing) is due to the rapid increase in population (Al-Sharif and Pradhan, 2013).

7.5 Natural Population Growth and Migration

In the last century, the population of Tripoli grew rapidly. While, the Turkish reports show that in 1911 the population of Tripoli was about 30,000 (Alshebani, 1995; Mirkin, 2010), the population of Tripoli reached 1.5 million in 2006 (Table 7-3). Therefore, between 1911 and 2006 Tripoli's population increased by 50 fold. Moreover, as can be seen from Figure 7-8 the population of Tripoli has grown rapidly, especially in 1950s and early 1960s. This period witnessed the population of Tripoli more than double to over 400,000. As the Figure indicates, this pattern of growth is going to continue at a similar rate in the future. This pattern is consistent with Missallate et al. (1990) where they stated that the highest rates of urban growth in Libya began in the early 1960s. Moreover, between 1954 and 1966 Libya experienced a marked shift in the level of urbanisation and major towns began to dominate the country's political and economic life. Eighty percent of this increase occurred in Tripoli and Benghazi, this remarkable change in urban development in Libya was due to the discovery and subsequent exploitation of oil. This

information has been confirmed by Lloyd and Mattingly (1989) (Lawless, 1989). As a result, Tripoli expanded and surrounding regions were subsumed into the suburban areas of the city (Almahdowee, 1998). Furthermore, Alshebani (1995) has mentioned that the annual population growth rate has almost doubled, from 3.42% in 1911- 1931, to 6.1% in 1954 – 1963 (Alshebani, 1995). Conversely, the rural population decreased from 40.2% in 1973 to 24.6% in 1984 (Alshebani, 1995). Consequently, the rural population decreased and became poorer compared to the urban population (Alexandratos, 1995).

In 1959, the National Bank of Libya conducted a survey of a number of employees in an industrial establishment in Tripoli; 50 percent of 793 workers were found to be born outside the city. In 1950, 1955 and 1963, Harrison (1967) conducted three surveys on a much larger number of employees (3,290) in Tripoli. On average about 60 percent were born outside the city. In addition, after the discovery of oil (1958) created many jobs this attracted people from around the state in search of a better life (World Bank Report, 1960).

Table 7-3: Population size in Libya and Tripoli 1954-2006

Year	Population		
	Libya	Tripoli	%
1911*	-	30,400	-
1947*	-	126,000	-
1954	1,088,889	129,700	12
1964	1,564,369	375,000	24
1973	2,249,237	615,161	27
1984	3,642,576	994,136	27
1995	4,799,065	1,059,000	22
2006	5,657,692	1,519,000	27

Source: Bureau of Statistics and Census (2010); Sasd (2011); Salhin (2010)*; Almahdowee (1998)
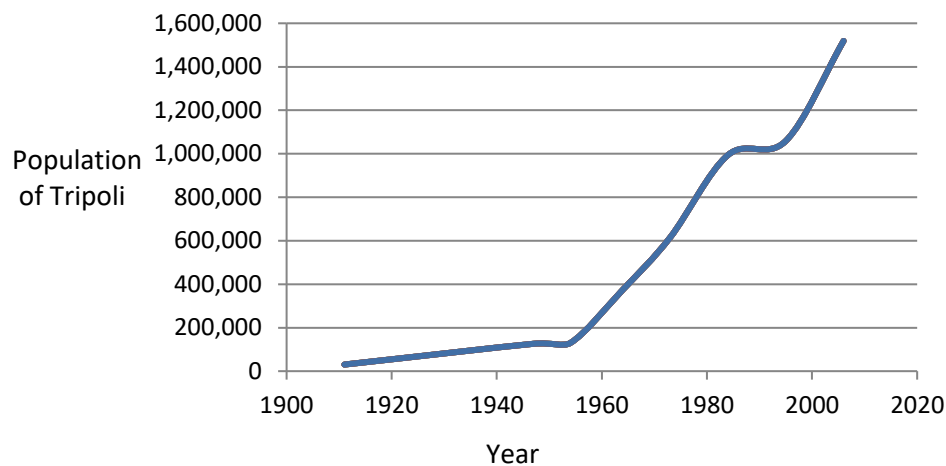
Figure 7-9: Population growth in Tripoli between 1911 and 2006. Source: Ali et al. (2011).

7.6 Population distribution and growth within Tripoli regions:

Between 1973 and 2006 the population of the Central Tripoli (Table 7-4) changed only slightly. However, the population of the rest of the Tripoli areas increased sharply; especially Ainzara, where the population has increased by four-fold. It is worth noting that agriculture lands in Tripoli are located mainly on all of these areas except the Central Tripoli. Moreover, and according the field observation of the researcher, the highest construction activities, nowadays, are occurring in Ainzara, Abuslim and Hey Alandalus. These three regions hold the largest agriculture lands which will disappear in the near future if this pattern of construction continues.

Table 7-4: Population change in Tripoli areas from 1973 to 2006.

Districts	population								Change		
	1973	%	1984	%	1995	%	2006	%	73-84	84-95	95-2006
Central Tripoli	120,701	19.6	120,542	12.1	131,245	12.4	143,040	9.4	-159	10,703	11,795
SuqAljumma	117,008	19.0	206,580	20.8	211,507	20.0	310,020	20.4	89,572	4,927	98,513
Tajoura	34,521	5.6	47,985	4.8	73,503	6.9	84,254	5.5	13,464	25,518	10,751
Ainzara	58,698	9.5	145,568	14.6	149,224	14.1	246,002	16.2	86,870	3,656	96,778
Abuslim	103,509	16.8	156,543	15.7	189,964	17.9	272,553	17.9	53,034	33,421	82,589
Hey Alandalus	150,522	24.5	271,672	27.3	251,353	23.7	391,142	25.7	121,150	-20,319	139,789
Janzour	30,202	4.9	45,246	4.6	52,204	4.9	71,989	4.7	150,44	6,958	19,785
Total	615,161		994,136		1,059,000		1,519,000		378,975	64,864	460,000

Source: Ali et al. (2011).

7.7 The contribution of immigration to population growth in Tripoli:

In Libya, the annual rate of population growth exceeds 5% annually and is considered one of the highest rates in the world (Polservice and Wadeco, 2000). At least two growth

population pathways lead to different impacts on landscapes. These are: first, natural population increase that results from the rate of births and deaths; and second, migration, which is caused by the dynamic of economic and social development. Moreover, Libyan migrants returning from abroad add to the growth of populations, in particular this has affected Tripoli, which attracts a significant proportion of the returning from the diaspora (Attir, 1995;Polservice and Wadeco, 2000). Tripoli is widely known for its remarkable economic growth. Lawless (1989), and Polservice and Wadeco(2000) pointed out that the enormous economic and social development programmes financed by rising oil revenues resulted in a considerable growth in demand for labour, which the Libyan workforce was unable to satisfy. As a consequence, Libya was required to import large numbers of foreign workers. Similarly, Abubrig (2012) pointed out that due to limited human resources in previous times, Gaddafi's policy encouraged the influx of migrants especially in the construction industry. Also, significant numbers of migrants were found in the education, and agricultural sectors (the majority from Tunisia and Egypt).In that time, the oil industry flourished and the big companies, in particular American companies chose Tripoli as an administrative base.

As a result, those companies have attracted the skilled migrants. According to National Corporation for Information and Documentation – Tripoli, (2002) there are many migrant labour forces (foreigners) in Libya, which reached around 30%, with more than 50% residing in Tripoli. Tripoli has a high level of immigration compared with other North African areas because of its programmes of economic development. The programmes entice foreign workers with a workforce of up to 40% being migrant workers. Most foreign workers move to the old city, which has seen by far the highest percentage of population emigrating out, at around 70% (Rghei and Nelson, 1994). In 1975, foreigners accounted about one-third of the entire workforce (Polservice and Wadeco, 2000). According to official sources the number of migrant workers rose from 17,000 in 1964 to 223,000 in 1975 and 286,000 between 1980 and 1985, the flow of foreign workers to Libya continued to grow rapidly. It has drawn attention to the rapid expansion of migration (Lawless, 1989; Polservice and Wadeco, 2000). The majority of migrants come from Tunisia, Egypt, and Turkey. They are concentrated in Tripoli due to increasing development projects. Therefore, Tripoli has witnessed a steady and substantial growth in population caused by the development process and economic buoyancy attracting migration (Lawless, 1989). Moreover, migrants from outside Libya tend to settle in urban areas, such as Tripoli, rather than in adjacent rural areas (Alawar, 2002).

Tripoli attracts migrants from all regions in the country and from the rural areas due to many factors as previously mentioned such as economic factor (World Bank Report, 1960; Attir, 1995). Another factor which should be considered is geography. Tripoli is noted for its coastal location, and appropriate seasonal climatic conditions (Polservice and Wadeco, 2000; Salhin, 2010). In addition, Tripoli is considered the political capital of Libya. As a result, it attracts immigrants because it is an important city for foreign companies, embassies, army units and industrial establishments (Elbendak, 2008).

Table 7-5 shows the total internal migration, from 1954 to 2006.Ignoring the natural growth within them, internal migrants account for about 45% of the total population of Tripoli. This indicates that rural to city migration is the main factor for urban expansion in Tripoli or the main engine of growth. Between 1964 and 1973, Tripoli acquired roughly under half the volume of total internal migration; this information has been confirmed by Secretariat of Planning (1979). This pattern is consistent with Elbendak, (2008) who stated that the urban population in Tripoli is increasing at an unprecedented rate; this is due to migration from the countryside rather than through internal population growth (natural growth). Also, Amer (2007) has confirmed that the population increased through the twentieth century, as a result of the strong economy in Tripoli city which engendered urban and economic growth. This increase is based on one key factor: extensive immigration. While the percentage of internal migrants has fluctuated, the percentage of external migrants has decreased over the same period (Figure 7-9). Similarly Polservice and Wadeco,(2000) stated that there was a massive investment programme, in particular after the discovery of oil, which required an increase in the number of non-Libyan workers in the first stage. Due to the lack of domestic labour in Libya, non-Libyan workers are of vital importance in development, across all sectors. In the second stage, the plan was to balance the number of non-Libyan and Libyan workers. This is one of the main objectives of the National Use Policy, which aims to reduce dependence on foreign labour gradually.

The increase of internal migrants is due to the discovery of oil (1958) which led to increase of the economic activities in Tripoli and the creation of many new jobs. The two period of sharp increase in the number of internal migrants could indicate that the country during those periods has ignored the infrastructure of rural areas. Similarly, this corresponds with Kezeiri and Lawless (1987, p. 2), who have stated that

"The concentration of new development programmes in urban centres of certain regions has been the main cause of the development differential among the regions. As a result, those regions which include the most important urban centres have become the most prosperous, while the others have remained less developed or even depressed. This explains the rapid increase in both rural-to-urban migration and interregional migration".

Table 7-5: The percentage and number of internal and external migrants in Tripoli (1954-2006).

Year	Total Population*	Number of Migrants		% of Tripoli Population**	
		Internal	External	Internal	External
1954	129,700	80,650	41,074	18	25.2
1964	375,000	139,009	39,079	17.3	13.9
1973	615,161	129,923	57,260	21.1	9.3
1984	994,136	75,376	85,923	7.6	8.6
1995	1,059,000	56,854	68,916	5.4	6.5
2006	1,519,000	207,844	57,844	13.7	5.4
Total of Internal Migrants		**689,656***		**45.4***	

Source: Ali et al., (2011) and Bureau of Statistics and Census (2010).
*: Total of population of Libyan in Tripoli.
**: Calculated from the total population of Tripoli.
***: Calculated by the researcher.
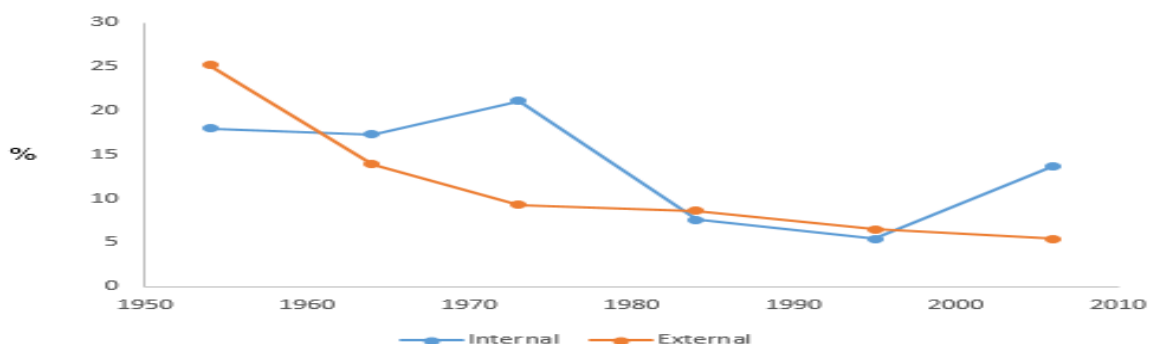
Figure 7-10: The percentage of internal and external migrants calculated to the total population of Tripoli (1954-2006).

7.8 Fertility and Natural Population growth in Tripoli:

The role and contribution of Libyan women during the last thirty years has witnessed a dramatic societal change. An increasing number of Libyan women are employed in various sectors such as education, health, journalism, and services especially in big cities like Tripoli. The number of women working in these fields has increased (Elbendak, 2008). As a result of changing roles, families are now smaller as women have more

commitments outside the domestic sphere. Between 1973 and 1984, rates of fertility have been the highest, reaching about 5.1%, then declining to 2.8%, between 1984 and 1995 (National Consultant Bureau, 2007).This may be attributed to the fact that their participation in the labour force, leading to reduce the rates of fertility. Moreover, higher educational qualifications are considered necessary by employers in big cities or urban life to obtain higher paid jobs. This is affecting social roles as well as social relations, and has played a major role in reducing or delaying marriage and child-bearing until later in life (National Consultant Bureau, 2007). Additionally, the shortage of housing leads to delaying marriage until later and similarly to low fertility rates (National Consultant Bureau, 2007).

7.9 Government Policies and Urban Expansion:

The Libyan government has adopted in the 1960s, sectorial planning as a key method of the development planning. This focuses development on major cities such as Tripoli and Benghazi, and neglects the rest. In turn, this has created spatial differentials in several of the investment programmes and productive projects.

Moreover, Abubrig (2012, p.188) noted 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".

For example, 80% of transport and road networks are concentrated in and around these two cities. They are less concentrated in the other cities and other areas; as confirmed by Salhin (2010).

Libyan planning policy was the most decisive contribution to the growth of Tripoli and Benghazi. Before 1971, the majority of the development budgets were spent on these cities, as Table 7-6 indicates (for what follows see, Badi, 1982, citied in Awotona, 1990). Tripoli and Benghazi have obtained the largest share of the state budget allocated for the year 1972 and 1973, where total expenditures reached 33.6% and 21.7% (respectively). In addition, with regard to economic infrastructures, they have received the highest share from expenditures, which reached about 31.9% and 19.5%. Furthermore, for key services

(infrastructure) both cities had the highest share from government expenditure which reached 35.6% and 24.5%. Moreover, Badi also stated that in the regional distribution of the Three-year Plan (1973-1975), development national plan budget expenditures favoured Tripoli and Benghazi. The cities which acquired the largest expenditures were as follows: Tripoli, 29.1%; Benghazi, 13.6%; Derna, 7.4%; Gebal-Akdar, 8.3%; El-Khalig, 8.9%; Misrata, 6.7%; and Zawia, 6.9%. Due to this investment, Tripoli and Benghazi have emerged as centres of high population in Libya, as Table 7-6 demonstrates: 31.4 percent in Tripoli and 14.6 percent in Benghazi, compared to this third highest region, Zwaia at 10.8 percent. Besides, in 2001, the Libyan government has adopted the highest percentage of investment and services allocations for the cities of Tripoli and Benghazi together, about 25.8 % of the services allocations, while the percentage of investment allocations was around 28.8 % (The National Organization for Information and Documentation, 2002). For these reasons, Tripoli has developed into the main political, economic, commercial, financial and business centre of Libya (Al-Sharif et al., 2013; Al-Sharif and Pradhan, 2013).

Investment over time benefits an increasing number of a city's inhabitants. Initially, investment will benefit a small circle of individuals. With further investment over time this circle which benefits from it encompasses more people. Such investment in cities inevitably leads to an increase in population as they become more attractive places to reside. As a result of population growth there will be a demand for housing. Tripoli has witnessed a dramatic rise in housing demand, but at the same time there has been a lack of government investment. Therefore, the construction of housing has been uncontrolled and disorderly, consuming excessive space, and leading to an expansion of the city boundaries at the expense of open spaces. In other words, this has led to the depletion of limited natural resources in Libya, and the environment suffers. It is therefore advocated that if these issues are to be addressed, then the government should tackle the problem.

Table 7-6: Distribution of the development budget (expenditures economic & services infrastructures) between regions (%), 1972-1973.

Region	Total/LD	Economic	Services	Population (%)
Tripoli	33.6	31.9	35.6	31.4
Benghazi	21.7	19.5	24.5	14.6
Zawia	9	11	6.6	10.8
Misurata	6.9	7.7	5.8	7.9
El-Khalig	6.3	7.9	4.4	4.8
Gebal-Akdar	6.4	5.5	7.4	5.9
Derna	4.9	4.4	5.4	5.4

Source: Badi, 1982, as citied in Awotona, 1990. Total expenditures were LD 348,789,587.
(LD=US$ 3.3).

7.10 Housing policy

As in most countries in the world, housing is a vital issue in economic and social development plans including Libya (Amer, 2007). Previous studies conducted by the Ministry of Housing (1989) have demonstrated that at that time Libya needed approximately 50,000 dwelling units annually (Omar and Ruddock, 2001). Therefore, to ensure that the required units are built in the future, housing policy must be revised (Essayed, 1981). Due to rapid population growth the Libyan government sought to devise a new five-year plan (1990-1995), the key objective of this plan was to transform the process of housing construction from government sector (public) to the private sector, which depended largely on loans granted from state institutions. This mitigated the burden on the state for actually concerning itself with the construction of housing. In addition, the plan also proposed a considerable increase in house construction (Omar and Ruddock, 2001).

This research has found that the five-year plan has contributed indirectly in the expansion of a large number of buildings surrounding the planned areas, specifically in the Tripoli area. However, now surrounding planned areas there are numerous random buildings unplanned and as field observation has shown constructed at the expense of agricultural land. Furthermore, the final report from Polservice and Wadeco (2000) demonstrated that in Tripoli, in 1980, there were approximately 86,000 houses. They estimated the deficit of housing stood at about 50,000 units. This was the result of the lack of planning on the part of the government and this encouraged the construction of individual and unplanned

dwellings. By 2000, around 78% of housing was made up of individual dwellings. Arguably, this is clearly evidence that the policy of the state was too weak to solve the housing problem. The result has been found to be that there has been an intensification of individual housing construction, including the building of random (unplanned) housing.

Figure 7-10 (below) illustrates how farmland in the Tajouraregion has changed. It shows how housing (individual dwellings), has been built upon agricultural land surrounding the city. Despite existing laws, this has occurred as urban expansion has not been effectively controlled. As a result, important agricultural land has been lost. In the future, as this land cannot be redeemed for agricultural production. The expense of construction infrastructure (water supply, sanitation, and electricity) will be considerable due to the pattern of housing being random and not planned. Moreover, the division of agricultural land into smaller plots results in them being less productive and reduced income for farmers and landowners. Overall, as the example of the Tajoura region demonstrates, the random construction of buildings onto agricultural land is highly problematic. If these issues are to be effectively resolved then it requires well thought-out policy to protect Libya's limited agricultural land from urban expansion.
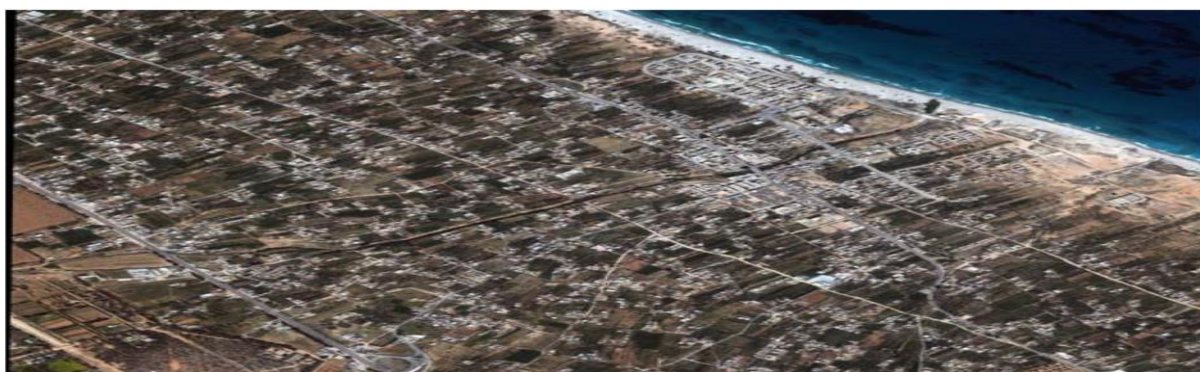
Figure 7-11: Urban expansion on farmland. Sources: NCB (2007).

7.11 Land use classification

The study does not intend to make a detailed land cover or land use analysis. It is only focusing on land classification in terms of changes in land use, which keeps in mind the objectives of the study. These images are intended to illustrate the speed of urban expansion activity. This is therefore clear evidence of loss of green spaces that mean there is a sharp decline in the area of productive agricultural land.

7.11.1 Land use change in Tripoli

Many developing countries are faced with growing problems of urban expansion. These problems are the result of urban population growth, which can be generally attributed to natural increases and incoming migration. Increasing population in urban areas creates social, economic and environmental problems for cities across the world. One of the most important elements in the process of global environmental transformation is changes in land use (Dickinson, 1995). In order to accommodate an increasing population, policy planners allow land surrounding cities to be built upon. This results in a change in land use from predominantly agricultural to built-up area. The reason this occurs it because of land prices increasing in the city centre. The price of housing in the cities including Tripoli is increasing due to a rapid growth of population, especially in the city centres. Therefore, people are moving to the suburbs, where the land is relatively cheap. Additionally, people have the strong desire to leave the city looking for a relaxing life. These conditions have generated the extension of the city into adjacent areas. This movement has a negative implication on fertile farmland (Ali et al., 2011).

Moreover, land prices are considered one of the variables that contribute to the possibility of a shift from agricultural use to urban use (Zaiat, 1999). Zaiat (1999) also found that most of the farmers prefer to sell their farm land or they used it for commercial (such as shops and small scale factors) projects to obtain high income. Others, who cannot afford the cost of land and houses in the city centre, are forced to build houses on their farm land.

In Tripoli, especially in the last few decades, urban expansion has become very noticeable. Satellite images clearly demonstrate the continued expansion of urban areas (Figure 7-11, 7-12, 7-13, and 7-14). For instance, previous studies have indicated that urban areas have increased in Tripoli by five times during the period 1966 to 1980, from about 1650 hectares to 8513 hectares (Polsrvice and Wadeco, 2000). Furthermore, the high rate of built-up area in Tripoli has increased between 1966 and 2000 from 8,011 hectares to 19,236 hectares (El-Tantawi, 2005). El-Tantawi, 2005 also pointed out that according to the analysis of satellite images (Figure 4), such as MSS, TM, ETM+, in Tripoli and surrounding regions, built-up area has increased dramatically from 10,536 hectares in 1976 to 18,064 hectares in 1989 and, again, to 26,229 hectares in 2001. In same context,Attwairi (2015) noted that urban expansion in Tripoli has increased from 10% in 1988 to 22% in 2003, and to 40% in 2014.
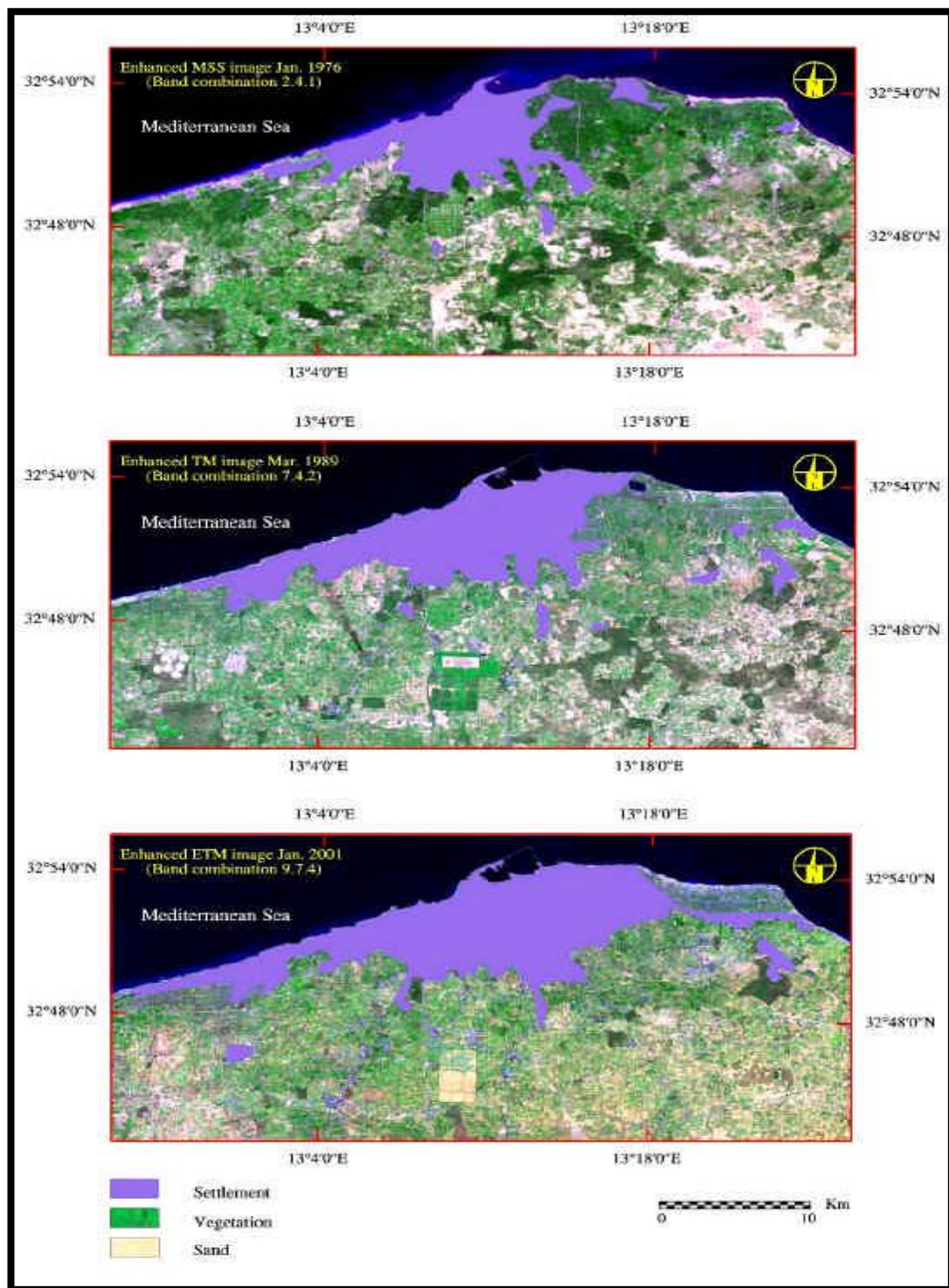
Figure 7-12: Satellite images show urban expansion in Tripoli 1976, 1989 and 2001.Source: El-Tantawi (2005).
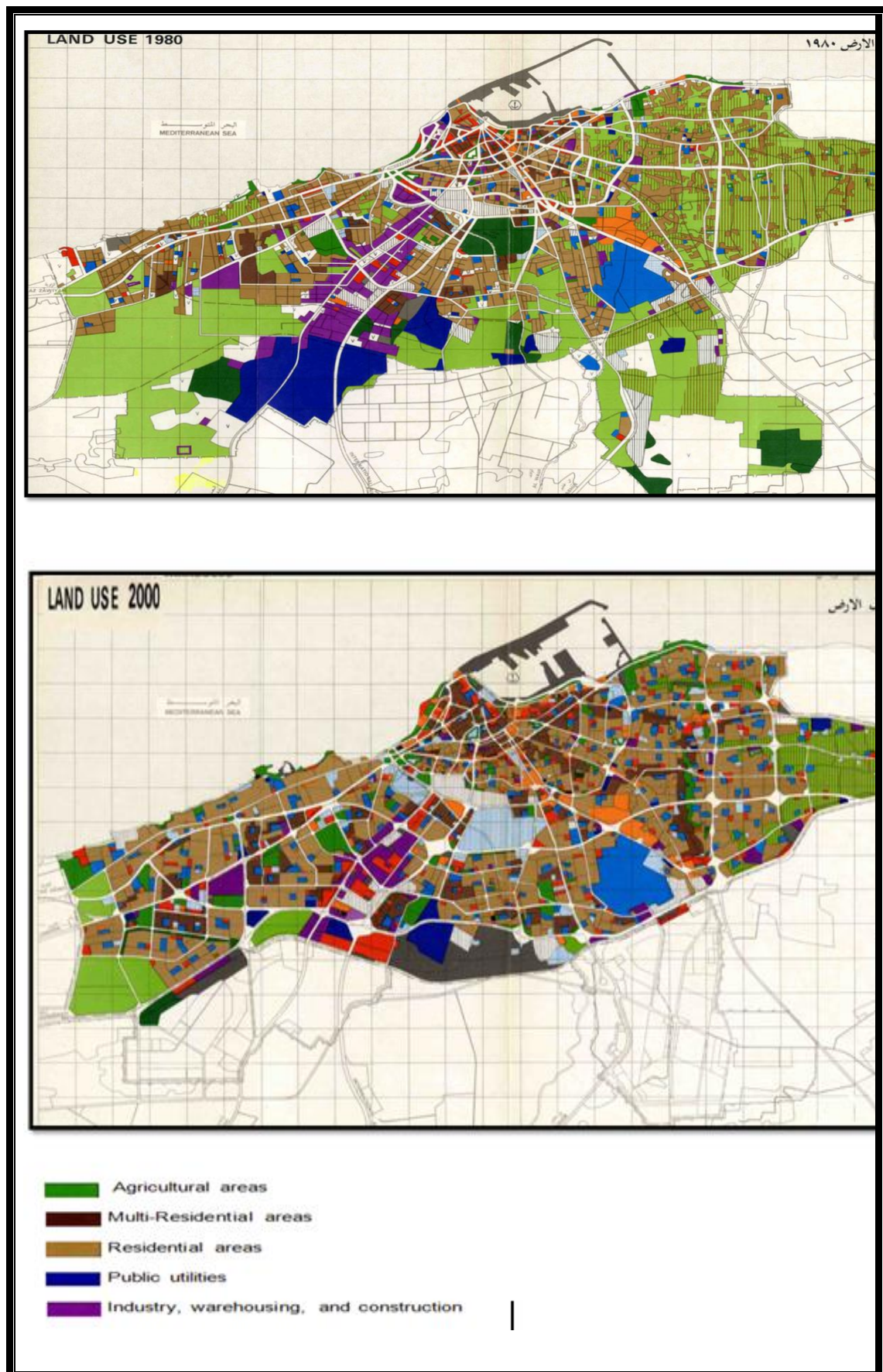
Figure 7-13: Land use change in Tripoli in 1980 and 2000.Source: Polsrvice and Wadeco, 2000.
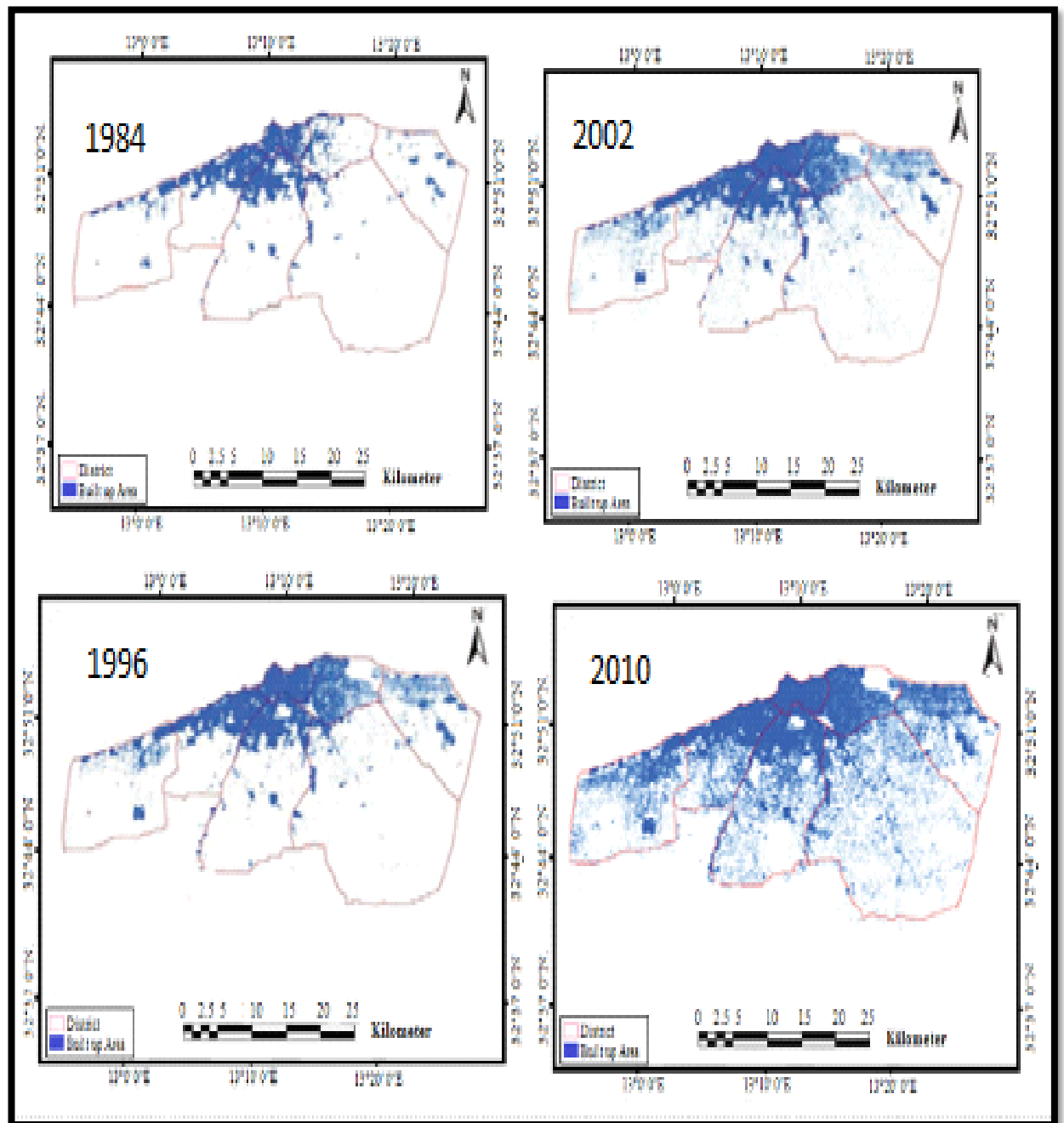
Figure 7-14: Land use change in Tripoli (a) in 1984 (b) in 1996 (c) in 2002 (d) in 2010. Source: Al-Sharif et al. (2013).
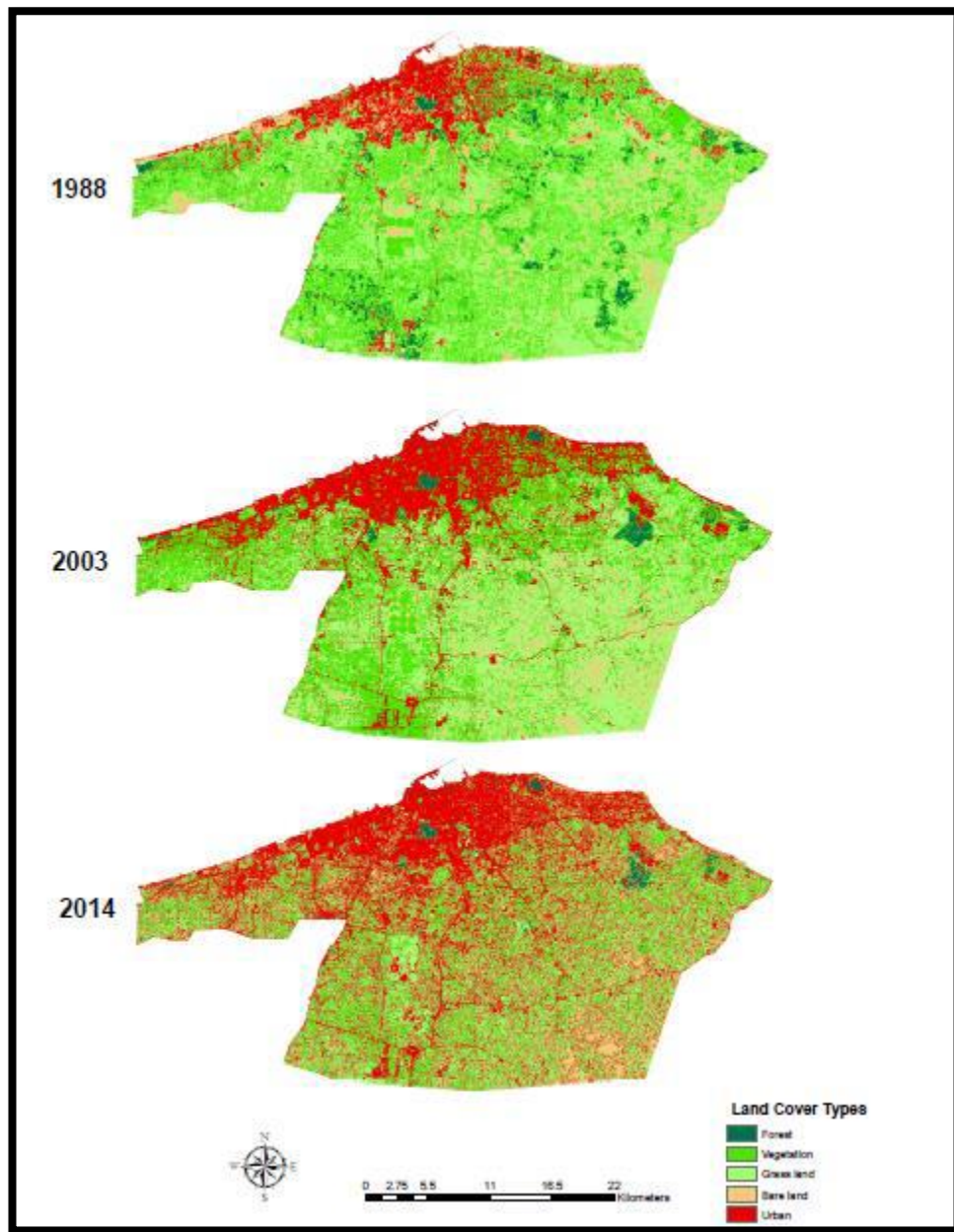
Figure 7-15: Urban expansion in Tripoli 1988, 2003 and 2014. Source: Attwairi (2015)

Table 7-7 shows the residential land use change in 1969, 1980 and 2005. Inspection of the table indicates that the percentage of the built up area in 1969 ranged from about 4% to 33% in Ain Zara and Tajouradistricts respectively, with the average percentage around 10%. Between 1969 and 1980, the percentage of the built up area increased to about 38% where the highest increase, about 44%, occurred in Abuslim and Hey Alandlus.

Comparing the percentage of built up area in 1969 with it in 2005 Table 7-7 the built up area in this period has increase about nine-fold; the percentage of the increase was ranging from about 70% to about 96%. This reflects an intensification of urban expansion, at the expense of agriculture land. Also, since 2005 the construction sector was considered as

one of the country's fastest growing sectors (Commission of the EU, 2009; Sakr et al., 2008). This trend is expected to continue for at least a decade. In 2008 it contributed to around 4% to the GDP and employed about 700,000 workers (FAO and WFP, 2011). In addition, previous studies have shown that construction services in Libya are increasing by about 6%, and other services are declining by about 8%. Moreover, average salaries in the construction services are increasing by around 5% pa which may lead to an increase of the demand for workforce (George et al., 2010). As a consequence of that, the issue of urban expansion has been exacerbated more and more.

Table 7-7: Residential land use change in Tripoli in 1969, 1980 and 2005.

Districts	1969	%	1980	%	2005	%	Total*
Central Tripoli	405,6	21.9	680,7	36.7	769,6	41.5	1855,9
SuqAljumma	207,3	11.6	678,9	38.0	901,8	50.4	1788
Tajoura	166,7	**33.0**	181,3	35.9	156,8	31.1	504,8
Ain Zara	78,5	**4.4**	494,7	27.5	1226,5	**68.2**	1799,7
Abuslim	143,7	6.5	964,6	**43.7**	1099,8	49.8	2208,1
Hey Alandlus	205,7	6.1	1497,5	**44.3**	1674,4	49.6	3377,6
Janzour	78,1	8.7	170,1	19.0	645,1	**72.2**	893,3
Total*	**1285,6**	**10.3**	**4667,8**	**37.6**	**6474**	**52.1**	**12427,4**

Source: Ali et al., (2008).
*: Values of the Total have been recalculated by the researcher.

Over the past 30 years, Tripoli has experienced rapid uncontrolled urban expansion which has resulted in the alarming and dramatic decrease of fertile agriculture lands. For example, Tripoli's expansion between 1984 and 2010 was more than 189 km^2 which is considered very high land use change (Al-Sharif and Pradhan, 2013). In spite of previous studies differing in their analysis of the extent of urban expansion surrounding Tripoli, it is indisputable that this has been rapid and resulted in land use change and green areas being lost. There is a clear need for new policies to be implemented in order to control urban expansion. These policies have to consider urgent and wise development plans in other regions including rural areas to stop and reverse migration.

Table 7-7 above shows the residential land use change in 1969, 1980 and 2005. It indicates that the percentage of the built up area in 1969 was ranging from about 4% to 33% in Ain Zara and Tajoura districts respectively. However, the average percentage was just around 10%. Between 1969 and 1980, the percentage of the built up area increased

to about 38% with the highest increase(about 44%), occurring in Abuslim and Hey Alandlus.

7.12 Change in the farmland

According to Brebiush (2006), the construction processes in Tripoli had an immense impact in 2000 upon farmland and affected about 50% of the total fertile agricultural land in the region. Consequently a large proportion of the agricultural land in Tripoli has been lost.The share of the agricultural lands per capita declined from 4.47 hectares in 1954 to 0.34 hectares in 2000 (AlJlala, 2005). In the same context, the Ministry of Agriculture (2012) indicated that the building processes have dramatically expanded on large tracts of fertile agricultural land surrounding the city (Tripoli), which reached over half in 2005. This can be attributed to the lack of real policies and strategies which can direct and organise the process of planning and control the urban expansion (Al Zanan, 2006). Moreover, the Global Land Cover Network (GLCN) project (2010) summarized the land use change in Tripoli between 1976 and 2001 (Table 7-8, and Figure 7-15).The GLCN project used satellite images (Figure 7-15) to assess the land use change in Tripoli and they found that the urban area have increased dramatically from 11,587 ha in 1976 to 22,534 ha in 2001, and farm-land increased from 67,132 ha in 1976 to 84,896 ha in 2001, and forest lands decreased from 24,637 ha in1976 to 6,179 ha in 2001. This means that over this period the expansion of urban and farm-lands occurred mainly at the expense of the forest lands, which reduced by 75% (Table 7-8). Furthermore, the urban development also encroached into lands turned to farming.

 In fact, a significant proportion of forest area was transferred to farms by the government. This information has been confirmed by interviewees in this case study, they also mentioned that the government has contributed to the forest reduction by passing huge areas of forest lands to government loyalists and official persons in the previous regime (divided into 4 hectares). Similarly, the Director of Studies and Research for Settlements (slums) in Urban Planning Agency, Saad (2012), has confirmed that the growth of the settlements (slums) was as a direct result of government policies during the Gaddafi regime. Rather than addressing the problem of housing, he gave the green light for the construction of luxury buildings, such as palaces and villas. There was little investment in the construction of solid affordable accommodation. This suggests that under the Gaddafi regime, the policies contributed to the expansion of the settlements at the expense of agricultural land. Nevertheless, field observations and satellite images (Figure 7-16),

obtained from the Libyan Remote Sensing Centre by the researcher, show that urban expansion is still occurring now at the expense of farm lands. In interviews with local farmers and officials, the reasons for transferring the farm lands to built-up areas were given as follow:

- Increase demand for housing.

- Higher land price for these farms as it is closer the city.

- Low cost of preparing the farm lands for building.

Table 7-8: Land use change in Tripoli between 1976 and 2001

Area (ha)	1976	1989	2001	1976/2001
Urban	11,587	17,922	22,534	194%
Farms	67,132	75,573	84,896	126%
Forest	24,637	18,651	6,179	-75%

Source: Global Land Cover Network (GLCN) project (2010) and LCRSSS (2015).

Urban

Forest

Agricultural land
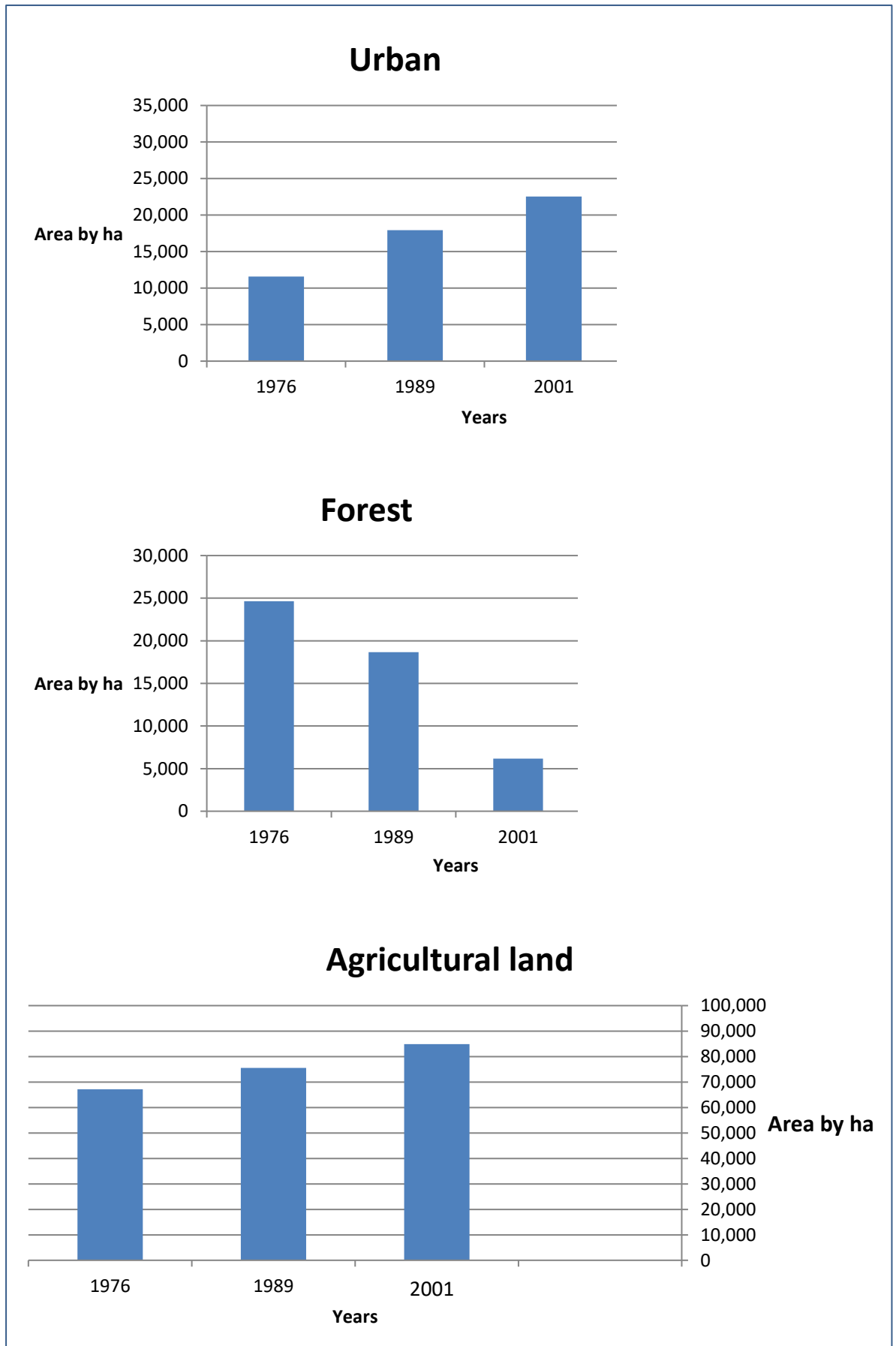
Figure 7-16:Changes in Land use in Tripoli between 1976, 1989, and 2001. Source: Global Land Cover Network (GLCN) project (2010) and LCRSSS (2015).

1976
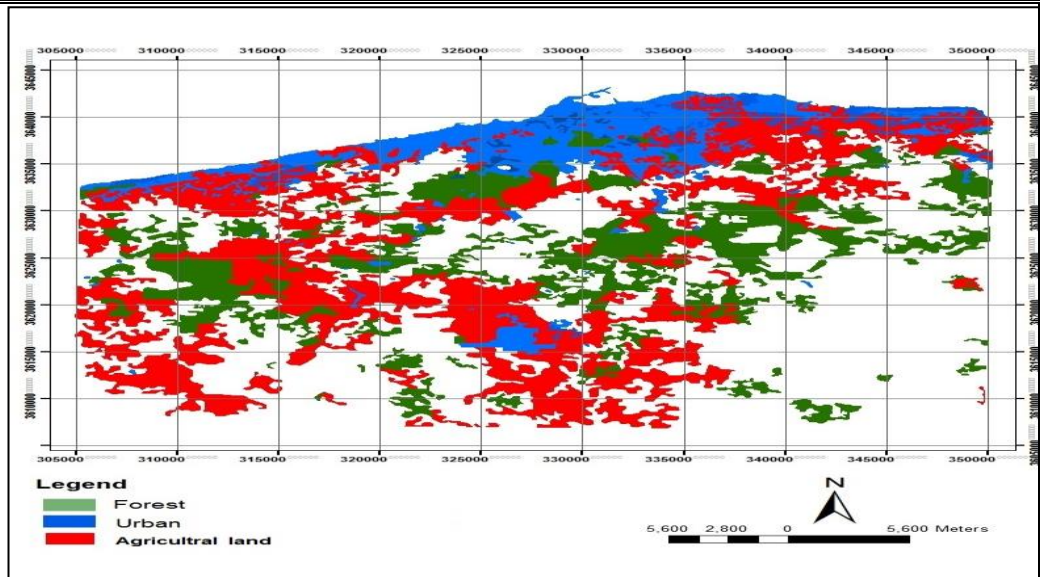
1989
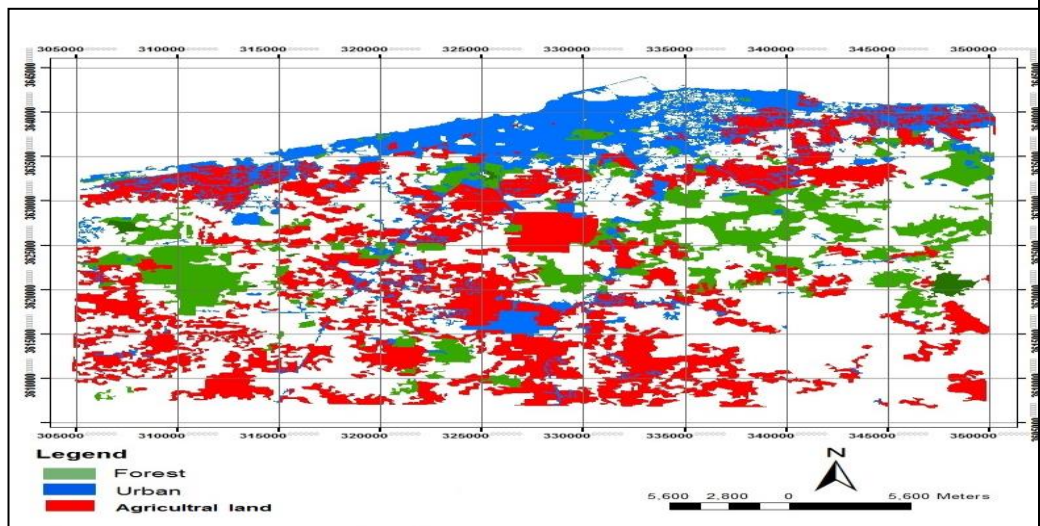
2001
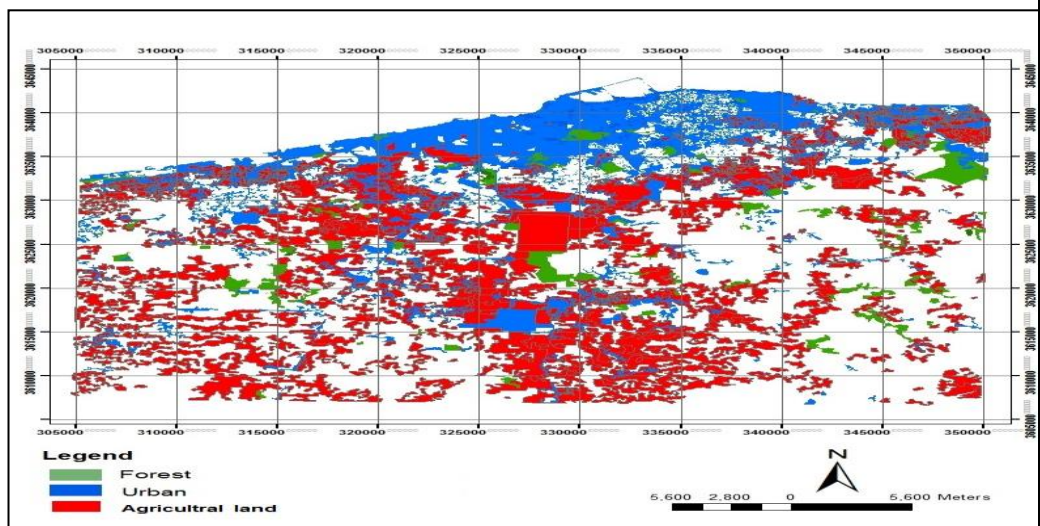
Figure 7-17: Land changes in Tripoli in 1976, 1989, and 2001. Source: LCRSSS (2015).

167

7.13 Conclusions

State policies played a major role in the growth and prosperity of Tripoli, creating important socio-economic and political opportunities and a better living standard than other regions. However, the prosperity of Tripoli has resulted in the rapid growth of the city as internal migration from other cities to Tripoli has increased exponentially. This is made clear in Sections 7.3, 7.4 and 7.5. Expansion has produced overcrowding in the city and resulted in it becoming more dominant in the wider region. This, in turn, has had a negative impact on the agricultural and forest lands by the expansion of the urban area, which has only been exacerbated by the turmoil of the 2011 Libyan Revolution. The unstable political situation in post-Revolution Libya has witnessed urban expansion has become uncontrollable.

Chapter 8 : Stakeholder analysis and questionnaire finding

8.1 Introduction

The first section of this chapter focuses on analysing and evaluating the interview data on the views and opinions of the respondents (stakeholders), from whom important information can be obtained about the major drivers of urban expansion at the expense of agricultural land. The questions were selected based on the research objectives as well as according to the knowledge gathered through the literature review (Appendix 1). During the period of field study (specifically in 2012), and due to political conditions in Libya at the time (Revolution of 17th February), the researcher was only able to choose eight stakeholders, who are considered key players in different institutions in the Libya state, including the Ministry of Agriculture, Urban Planning Agency and Municipality of Tripoli. Furthermore, the interviewees were selected based on their knowledge and experience of these subjects. Table 8.1 outlined below shows the number of interviewees, their positions and the institutions for whom they worked. The qualitative data from the interviews were analysed manually using the transcribed data because of the relatively small sample size. The transcripts were carefully examined to identify the key themes related to the urban expansion of Tripoli.

The second section of this chapter focuses on the analysis of the results from the primary data collected via questionnaires. It examines the findings from the questionnaire survey carried out at Tripoli region in order to establish the opinions of local populations (farmers), regarding any obstacles imposed by various factors in relation to urban expansion. Moreover, this section analyses the link between the Libyan government plans in agriculture sector and the urbanisation process and nature of the local communities involved and identifies the key causes of urban expansion in the region, which includes financial issues, government support and issues related to farm income and its adequacy. This section also evaluates the views and opinions of the respondents about the legislations and government planning policy. The findings from these data sources are presented within figures and tables where appropriate.

8.2 Qualitative analysis

The researcher used semi-structured interviews that were carried out with key stakeholders and decision-makers directly involved in assessment the urban expansion, land management and development in Tripoli.

Table 8-1: list of Interviewees and their institutions

	Institutions	Participants ID	Number of Interviewees	Position
1	Ministry of Agriculture	MA	1	MA1 (First Advisor to the Minister of Agriculture)
2		MA	1	MA2 (Second Advisor to the Minister of Agriculture)
3		MA (CAFMATB)	1	MA3 (Chairman of Administrative and Financial Affairs at the Ministry of Agriculture of Tripoli Branch).
4	Urban Planning Agency	UPA	1	UPA1 (Director of the Urban Planning Agency)
5		UPA	1	UPA2 (Administrator of Planning and Follow-up Office)
6		UPA	1	UPA3 (Inspector: Assistant Head of the Real Estate Registration and Property of the State)
7	Municipality of Tripoli	MT	1	MT1 Consultant
8		MT	1	MT2 Technical Engineer

The purpose of the interviews was to explore the professional opinions of the interviewees regarding the current issues and problems related to the rapid urban expansion and its environmental impacts. The interviews were conducted in order to further explore and support the information obtained from documentation and the questionnaires. The interviews were conducted in Arabic language, and then translated into English language. This process was done as accurately as possible to reflect the true meaning for the stakeholders.

From the literature review, with guidance from the study research objectives and research questions, the researcher classified the following themes of urban expansion: the causes such as migration, the subdivision of agricultural plots and government support. Furthermore, these interviews were conducted to examine the extent of the impact of urban expansion through physical loss: agricultural land, green space and increased area of urban development. This focuses on the physical change environmentally, socially and

economically. This section also explores the actual implementation of policy and legislation through place controlling and steering agricultural land and development, its operation and governance.

The data from the interviews WERE analysed and presented in four categories based on the key themes as well as to cover all research questions. These categories (themes) are as outlined below:

- *The causes of urban expansion*
- *The impact of urban expansion.*
- *Legislation and policy.*
- *Implications of changing political situation / conflicts.*

8.2.1 The causes of urban expansion

The findings from the interviews demonstrate that urban expansion results mainly from three powerful forces: falling government support, the subdivision of agricultural plots, a growing population, particularly migration due to low income, thus these fundamental forces need to be remedied. The interviewees suggest some possible solutions.

8.2.1.1 Government support

The first issue under this category regards the lack of experts in the agriculture and planning sector. Most of the participants stated that the number of experts is not sufficient. Interviewee MA3 from Ministry of Agriculture mentioned that

"A very limited number due to the lack of attention of the Libyan state for the agricultural sector, especially in the field of the agricultural planning and guidance".

Moreover, MT2 from Municipality of Tripoli has pointed out that

"It does not have a sufficient number of experts in the field of urban planning as well as the lack of attention of the State to create advanced courses for a group of individual competencies. In addition, there are no workshops and seminars especially organised for the target groups, such as consultants, administrators, and reviewers, engineers and staff developers involved in the urban expansion"

Whereas, interviewee UPA1 from Urban Planning Agency stated

"There are a number of experts available but still not enough to cover all the areas across the country. In the past, there was a department of urban planning where all graduated students come from, and this department was part of the faculty of engineering in the Garyounis University, which is a public university in Benghazi, Libya and it's one of the most important institutes of higher education in Libya. Since 1984 more than 250 students graduated but it is unfortunate that the department has closed down in 1993 due to state policy".

Similarly, UPA2 from Urban Planning Agency has indicated

"Currently, there is a limited number of graduates training to working this field, which means a lot of those who work on this issue are not qualified to do so. Also, at the beginning of 1980s there was a planning and building standards department in Benghazi University which was responsible for producing the graduates who achieved their qualification in this field"

The closure of the university department which is responsible for delivering training for these experts, as highlighted by interviewee UPA1, is the key to this issue. Nevertheless, several of the interviewees also mention the lack of training opportunities and the lack of managing and organizing for these experts (if found), have contributed significantly to this current situation.

8.2.1.2 The subdivision of agricultural plots

Libya is classified as an arid area with very limited agricultural land (UN-HABITAT, 2007). Therefore, agriculture has had a great influence on economic growth. Indeed, it can be an important element in supporting the economies of many countries, especially in terms of incomes. It is especially significant in promoting growth of an emerging economy for any state (Allafi, 2014). The interviewee MA1 claimed that

"There is encroachment on large tracts of agricultural land and forests in particular after the 2011 Libyan Revolution. Because Libya is currently undergoing stages of weakness in the performance of successive governments due to armed militias that have power and ability to direct or influence upon these governments to change the course of events"

Similarly, MA2 has mentioned that

"In this time, the size of the agriculture lands and forests are gradually reduced and the situation is getting worse. There is a dramatic change in form or appearance, specifically when the revolution started (2011), that mean the urban expansion increased. We have some evidence of encroachment on the forests, which has transformed them into small pieces of land, for the purpose of selling, and then construction. Furthermore, this proof exists at the Archives of the Ministry of Agriculture"

However, interviewee MA3 had a different view on this, commenting that, because of the large population growth in Tripoli, this has contributed to an increase in uncontrolled well digging. Groundwater aquifers have been affected by seawater intrusion that led to salinity of water, which led to the failure of a large number of farms, and therefore a decrease of agricultural product. Hence, many farms shifted into small plots for the purpose of construction.

On the other hand, UPA1 has pointed out that

> "In recent years the situation was bad because the rules (the laws and the legislation in relation to the protection of natural resources and the environment in Libya) were notactivated or even respected. Hence, there is a gradual and continuous loss of green spaces. Also, there was no good understanding of the consequences of cutting the trees of the jungles and transforming them into green land for the purpose of construction. In addition, therapid encroachment upon green spaces is at a much higher rate due to weak governments especially after 2011"

In sum, all interviewees point out that, following the 2011 Libyan Revolution, there has been an encroachment on large tracts of agricultural land and woods in Libya generally and in Tripoli in particular. Therefore, the situation in the country has considerably deteriorated. Favourable political conditions are considered to be the most important factors in underlining the decline in green spaces. However, the weakness in the performance of successive governments has been the major reason for the decline after 2011. This factor resulted in the establishment's development of numerous buildings at the expense of the green areas. It should be noted here that some of the interviewees insisted on selecting the policies of previous government, in particular during the Gaddafi regime, as alternative policies, which have contributed to the deterioration of green spaces, agricultural land and forests. This point has been confirmed by MA1.

8.2.1.3 Migration

The first question looked at the causes or factors that led to urban expansion. This question aimed to list the causes of urban expansion which forced a growth in Tripoli area and the causes that are responsible for undesirable pattern for green land consumption and sprawling development, which is important to know for the purpose of analysing urban growth. It is also necessary to understand and evaluate the consequences or impacts of urban growth in the context of achieving sustainability. Therefore, the main findings in this question are summarized as follows:

Interviewee MA1 indicated that there are many causes, particularly the lack of respect for rules and regulations. This has encouraged people to take advantage of the situation and led them to break the law by carrying out different projects, including residential, commercial and entertainment projects. In other words, ineffective environmental laws and regulations do not protect green spaces and this leads to establishing social and economic projects for the purpose of personal benefit at the cost of the environment. In addition, the focus of attention solely on Tripoli by previous governments increased development through the implementation of several projects, which attracted migration from other cities. On the other hand, other areas or cities were neglected. Therefore, this spatial policy is often marred by prejudices and abstract visions for general planning. The subsequent lack of economic and social opportunities in small towns, secondary cities and rural areas led to this increase in migration to the city of Tripoli, and resulted in a significant increase in the population.

The interviewee MA2 mentioned that the problem lies in the planning policy concerning Tripoli. Economically and politically powerful, the capital city always attracts a significant proportion of the population from the other cities by way of permanent migration. This is often at the expense of agricultural land. This factor drives land-cover changes and consequently built-up lands expand rapidly, whether residential, industrial or commercial. In other words, the absence of urban planning makes people use the regions that are green, particularly for the building of more new houses, which ultimately worsened the problem (the lack of planning for construction). In addition, the Ministry of Agriculture has not helped farmers care for their green lands (in terms of their needs of seeds, plants, educating and increasing awareness, even though farmers are responsible for maintaining the groundwater and use of fertilizer and agricultural machinery to increase the productivity of the farm, etc.). Hence, this led to sale of agricultural land by farmers and the appearance of more informal settlements around Tripoli.

Interviewee MA3 claimed that

> "There had not been awareness on the part of the government about spatial dimension in the development process, especially in Tripoli, which polarised the population through the development. This in turn has encouraged population movement into Tripoli. As a result, there was an increase in the growth rate of Tripoli by individuals (the increase in population) which increased the consumption of groundwater in huge quantities. Therefore, an intrusion of sea-water has occurred which had a negative influence on the production of local farms".

Interviewee UPA1 stated that there is a housing crisis due to the lack of implemented housing schemes (master plans). Therefore, the housing issue in Tripoli is more profound compared with other Libyan cities due to the fact Tripoli is considered the centre of industrial, urban planning, commercial and cultural place. Also, there is increased attention on improving living conditions by the government in this city, especially the economic, social and health conditions of the population. Hence, these factors led to an increase in the growth rates of the population through attracting large numbers of individuals (migration). In addition, as an attempt to overcome the housing shortage, between 1988 and 2000, the government changed its policy by providing citizens with loans to overcome the population problem (Attwairi, 2015). Furthermore, the lack of attention on development, planning and building projects in the other cities, especially the rural areas, has led to population decline through out-migration (imbalance). Moreover, the relevant authorities have not been cooperating or organising among themselves in an effort to deal with urban expansion.

Interviewee UPA3 noted that the housing problem in Tripoli is more severe compared to other cities. The problem is caused by the fact that the economic, social and political services are available in the city of Tripoli only, which encourages migration (and this leads to sharp distinctions in population size between Tripoli and others cities, towns and rural areas). Furthermore, there has been an issue of not implementing the plans, which were presented by some private companies to construct new cities (such as Wadi Al-Sharqi, a project which was terminated half-way through) around the city of Tripoli. These bids were given to the Ghaddafi family and their supporters through many institutions like Savings and Real Estate Investment Bank, Organization for Development of Administrative Centres, and the Economic and Social Development Fund this in turn ultimately had a negative impact on the schemes. An example of this is a set of projects which reached to 75% of completion but which unfortunately did not have access to sewerage and water treatment plants and electrical power plants. In the absence of those basics, the projects were abandoned. Several examples of obstacles which greatly obstruct the success of any project or scheme include:

- Lack of consideration for the studies that are conducted by some institutions and private companies on the schemes
- Lack of practical seriousness of projects' management authorities
- The apparent absence of the role of management in state enterprises

- High state authorities had always been intervened in all projects, both large and small. For example, provided housing project and after discussing the relevant competent authorities for this project. All of them have agreed to establish this project and went on to complete approximately 50% to 60% of the project. But suddenly, the director of the Office Saif Ghaddafi cancelled the project after visiting the site. Hence, these decisions concerning urban management and governance are arbitrarily made, taken by those selected and imposed by high authorities.

This demonstrates a lack of understanding at the highest level of government for the matters relating to administrative affairs and planning. Consequently, in the process of establishing any housing project, it must be taken into account that the service sectors like the sewers, electricity, water and roads contribute by providing the basic necessities like water and electricity. This is to prevent cases of abandonment of projects. For example, the completion rate of the Enjela residential project exceeded 90% but unfortunately was still missing access to simple services like power generation (electricity). To be effective such initiatives require joined-up planning.

This was summarised by UPA3, who reiterated that the above factors led to urban expansion, arguing that

> "The absence of administration has led to clear weaknesses in planning management, policy and development. Furthermore, there is a big problem in coordination and cooperation between state sectors, resulting in a clear gap in cooperation and coordination among planning authorities and other government institutions. Consequently, many of the existing problems still require attention, including allocating the necessary fund for developing other cities, towns and rural".

Interviewee MT1 pointed out that the majority of residents in the other cities come to Tripoli for jobs, services and living. Today, more than 2 million people live in it. Hence, the problem of the housing is considered to be most significant. This resulted from the following:

- The government never provided any adequate plans for properties (lands) to enable people to buy.
- The government have not accomplished housing projects. For instance, during the last 30 years the government have not planned, prepared or achieved any housing projects to meet the needs of people at all levels. This is according to UN-

HABITAT (2007), which has pointed out that over the past four decades, the issue of housing represented one of the most complex problems facing the Libyan state. Libya could not succeed in the formulation of a clear and specific housing policy that takes into consideration the social, economic and environmental dimensions to meet the requirements of citizens of different living conditions.

- The government have not improved or developed the old houses in many areas such as Abuslim, AlhadbbaAlsharqya and GouthAlshaal by the Brownfield Approach (demolished and renovated).

The interviewee MT2 stated that the issue of housing represented one of the most complex problems facing the Libyan state in general and Tripoli in particular. The population in Tripoli has risen dramatically because it is considered a multifunctional hub: the political, commercial, industrial and recreational centre and service capital in the country. It is also the communication centre with the outside world (centralizing economic growth and employment opportunities). This has led to demographic pressures on the environment (through housing demand). Also, the above pointed out that

> "Issue urban expansion occurred because of the accumulation of services, facilities and abilities in this city. In addition, there was a lack of planning at state level (national planning level) for the distribution of services, especially housing and implementation of development programs for other cites".

The findings of the interviews which asked what were the causes or the factors that led to urban expansion highlight one common key factor. The majority of the respondents stated that as a result of national policies in Libya, there is an uneven distribution of development especially in social and economic sectors. The changing economic infrastructure of the two large cities, especially in Tripoli, has encouraged people to move toward the capital. Hence, socio-economic factors were considered a first cause of the infringement on agricultural land. In other words, the government encouraged the population to immigrate to Tripoli through resources and capabilities available in those cities.

Regarding the question on what the respondents consider to be the main factor of urban expansion: natural population growth or migration towards cities, all respondents at MA1, 2 and 3, UPA2 and 3 and MT1 and 2 agreed. They stated that migration is the main factor for urban expansion, which has had a negative effect on Tripoli. Only one respondent from the group, UPA 1, emphasised that the natural population factor is responsible for urban expansion. The interviewees pointed out that due to the existence of possibilities in

Tripoli such as public services, economic activities, state institutions and infrastructure, this has created prosperity. These factors compelled the people to move towards the capital. This means development programmes have a significant impact on the growth of cities in terms of attracting increased populations (pull factors). Furthermore, the neglect of villages, small towns and secondary cities has created push factors to Tripoli city. Therefore, one way to solve this would be to create balance in the development of all regions. This solution will rely on social and economic justice, and could potentially prevent the internal migration to Tripoli. This point has been confirmed by all the interviewees. Moreover, they stated there is a more urgent need to get statistics and data regarding immigration, especially for recent years. This data is needed to assist policy makers and planners to make appropriate decisions in order to find the solutions.

With regard to respondents' views on other reasons that led to migration towards Tripoli, all of the participants expressed the view that the development sector (whether economic or social) were not given the necessary support by the state. This means that rural areas, towns and cities are not funded when compared to Tripoli, despite the existence of appropriate plans to improve development throughout all Libyan regions. This is the main point centralisation – the idea that families migrate as a result of the lack of job opportunities as well as the availability of economic, social, political and cultural activities in Tripoli. Moreover, some of the stakeholders emphasized that all Libya's state institutions are based in Tripoli including: embassies, commercial and industrial centres, ports, airports, universities, hospitals, and hotels etc (which encourages migration). Consequently, there is easy access to services and jobs and a decent life in the capital, thus this led to inhabitants moving towards Tripoli. Therefore, to limit the migration, a balance between all areas in Libya in terms of development of these services is necessary.

As indicated above, migration was considered to be the main cause of urban expansion by many respondents with regard to Tripoli city. This is due to the pull factors, whether economic and social, which have encouraged an increase in the size of the city. Hence, the bulk of the substantial spatial growth that has occurred across the Tripoli city can be ascribed to such a cause.

8.2.2 Suggestions to stop uncontrolled urban expansion

Regarding the suggestions to stop uncontrolled urban expansion upon green areas, the interviewees identified several significant factors. For example, interviewee MA1 pointed out that the government should activate the system of development justice for all regions,

especially in terms of social sector. Furthermore, this should take into account the laws and regulations on the protection of agricultural land in order to ensure the rules and regulations are followed and everyone is complying with the law. In addition, there is the important role of participation of communities with the ministries of planning, housing and facilities to find the alternative plans for housing and public utilities upon non-fertile lands. In other words, construction must be on lands are not suitable for agriculture.

Interviewee MA2 emphasised some solutions, like the use of new technology (such as GIS or RS) for evaluating, monitoring and activating environmental laws and regulations, especially those focused on the protection of agricultural land and on the strengthening of support for the supervisory authorities. Also, co-operation and co-ordination is needed between the relevant governmental organisations. Finally, the government must work to increase environmental awareness about the preservation of the green spaces.

In the upcoming decades, the urban areas (cities) are expected to absorb most of the population growth (United Nations Department of Economic and Social Affairs UNDESA, 2012). However, the interviewee MA3 has pointed out that

> "It is very important to develop a scientific strategy involving state institutions to limit the speed of expansion in Tripoli through the transfer and opening of residential plots far from Tripoli and its suburbs"

Interviewee UPA1 stated that the suggestions are based on finding a way to make the agriculture land rules work effectively (more productive). In addition, there is a need for cooperation between all related parties (i.e. planning ministry, housing, agriculture ministry and individuals) to find alternative plans/schemes for housing upon non-agricultural lands.

Interviewee UPA2 noted the lack of balanced growth on the national level in terms of development. Thus the growth level needs to increase along with other factors like implementation of laws and regulations, increased environmental awareness, non-overlapping of the authority (supreme authority) in duties and responsibilities for the stakeholders. Related institutions must intensify efforts in terms of co-ordination and co-operation when it comes to urban expansion issues.

The interviewee UPA3 mentioned that the council inspectors (Agricultural Policy Enforcement Officers) need to be very strict on this issue,

> "Increase the Agricultural Policy Enforcement Officers to do their job properly and enable them to take actions against any unauthorised building projects. Also, the council inspectors need to be given the full authority in order to stop any unlawful actions regarding infringement the green areas and agricultural land. Before the 17 of February Revolution these institutions

played a vital role to stop and reduce the construction many projects to build on the agriculture land".

The interviewee MT1emphasises that

"In fact, to be honest, I can say that yes, there are proposals that seemed wonderful, for example a proposal to build new cities called satellite centre (city skip) far away from Tripoli, like the city of the East Valley which built on land (not suitable for agriculture).This city was one of the significant proposals included in the Second Generation; the proposal stated that the capacity of this city could receive around 250,000 people. Furthermore, there is a city near Ainzara, and another city in Janzour city called Enjela where 5000 flats have been built. However, these cities have been planned according to scientific research by consultant offices, who are specialists in this field. The achievements of these cities were poor for three reasons: firstly because there was not a stable administration, which means there, was no continuity (management of long-term projects). Secondly, the government did not implement plans to solve the housing issue despite having the resources to do so. Thirdly, the Ministry of Housing was cancelled in the era of Ghaddafi regime which created many problems in particular, random construction at the expense of agricultural land"

Interviewee MT2 mentioned that it is very important to develop a policy of balance and mutual benefit between the place (land) and the user of this place (construction). This balance can be achieved by protecting green space and people's need for construction (housing). Before 1970, this existed, during the implementation of the housing projects the green space ratio was the highest. In addition, we find cases where the farmer occupies a small part of the land for dwelling and the rest of the land is reserved mostly for production. The Libyan laws allowed the farm owner to build a house on agricultural land not to exceed 250 square metres only.

In conclusion, the respondents in group one (MAI, MA2 and MA3) stated the importance of increasing the system of development justice for all regions, alongside the application of the laws and regulations on the protection of green areas. Also, they mentioned the importance of engaging with relevant authorities to find solutions appropriate to the challenges of construction that are still occurring on green spaces. The second group (UPA1, UPA2 and UPA3) mentioned the issues represented below:

- Increase the council inspectors, require them to carry out their duties properly and enable them to take actions against any unauthorised projects (illegal).
- Implementation of the laws and regulations as well as increased environmental awareness.

- Non-overlapping of the authority (supreme authority) in duties and responsibilities for the stakeholders and co-ordination and co-operation between the governmental institutions in order to protect agricultural land.
- Making sure the government is achieving a balanced growth at the national development level.

The third group (MT1 and MT2) were of the view that the government had to build new cities to reduce the pressure in Tripoli. Also, they highlighted that the government should implement the basics from urban planning to determine the built-up areas, which must be adhered to alongside correct exploitation of lands, mutual benefit for the place (land), and the user for this place (construction). It is clear that all groups have different views with regard to solutions to stop the uncontrolled urban expansion into green areas.

8.2.3 The impact of urban expansion

This category is the most important, as it reflects the key issue of the study in terms of environmental degradation. Libya is classified as desert area with a limited area of quality agricultural land, estimated at about 2%. Nevertheless, inefficient use of environmental resources, has led to physical change (environmentally, socially and economically) in particular, the loss of agricultural land, increase in urban development and loss of green spaces. There are different points of view on the impacts of that physical change.
The interviewee MA1 has mentioned that

> "Libyan soil is considered fragile and therefore increased urban sprawl has a massive effect on the environment, like the rising in temperature and decline in rainfall. This process, typically referred to as desertification, will create drought for lands"

The interviewee MA2 pointed out that the rapid activities associated with construction led to change in the fertile soils. This in turn has had a negative impact on the economy and environment. Socially, most of the farmers and their families have considered selling their lands for better investment because of the government's lack of interest in helping farmers. Therefore, most imports (food) come from overseas, which constitutes around 85% of food consumption.
The interviewee MA3 emphasises that the infringements on green space have brought numerous problems for the environment and the economy. It has eroded soil in particular in Tripoli areas, where the growth population in this region led to an increased demand for water which resulted in the digging of many wells (uncontrolled). In addition, many black wells (used for storage of waste) have been drilled, which led to wide changes in

the soil and groundwater. Consequently, groundwater aquifers have been affected by seawater intrusion. Hence, the farmlands were affected in terms of their production.

The interviewee UPA1 mentioned this point

"... the shortage of green areas led to more temperature rises and lack of rain, which resulted in climate change".

As a result, this is expected to continue to have a negative impact on the economy and the environment.

Interviewee UPA2 highlighted that Libya is one of the countries that has a small percentage of green area, and has less useful area for agriculture. The two main areas for agriculture are Sahel Jifara (Jifara Plain), and the Green Mountain. In these two areas the majority of Libya's population live, with 80% residing here. Therefore, there can be found many illegal buildings across the agricultural lands, and these can have a negative impact on the environment and the economy. This outcome was an indication of climate changes, which have occurred, such as drought.

The interviewee UPA3 indicated that

"There are many violations committed by citizens upon the green spaces such as cutting down the trees. These have been the most obvious cost of the impact of human activity on environment thus, they have caused major environmental damage such as land transformation to concrete which has had a negative impact on biological diversity and climate".

The interviewee MT1 has stated that the most important aspect is the preservation of the green areas. Hence, the loss of the agriculture lands and woods will impact on the economy and on social life. Also, beside environmental, these green areas are the breathing space for the people. In addition, the forests have been used as a hedge or barrier to reduce the winds facing the city of Tripoli.

The interviewee MT2 mentioned that haphazard construction is still a major cause of environmental degradation through the loss of green spaces, which is a vital source of food. As a result, we will see increased CO^2 in the atmosphere, affecting plants and all terrestrial ecosystems. Also, green spaces are always giving relaxation or comfort and reassurance. Moreover, there are invisible impacts such as contamination of groundwater due to random construction outside the schemes, which have led to the increase of well digging due to a large number of the population in coastal area, specifically the Tripoli area.

All of the respondents acknowledged that the rapid urban expansion has had a significant impact on green space both in terms of the environment and the economy. This means that conservation of green areas is an important priority, which must be implemented. Additionally, the majority of interviewees stated that rapid urban expansion is causing

numerous problems such as rising temperatures, lack of rain and lower sea, gradually the lower sea level has created drought (desertification). This in turn has had a negative impact on agricultural lands. Some of the interviewees pointed out that Libyan soil is originally considered fragile, something that needs to be considered carefully if we are to achieve sustainable development.

8.2.4 Legislation and Policy

There are a number of laws (see section 5.5.1), which have been established in the attempt to control and steer agricultural land and development, and its operation and governance. However, these legislations have not been fully implemented or have been ineffective for several reasons.

The government started in the 1980s to develop the national economy in terms of adopting economic, administrative and social reforms. Several policies and plans have been issued to enhance the process of national development as well as achieving sustainable long-term development goals, which seek to protect the environment, reduce the consumption of resources and achieve equal development across the country through social-equity and economic aspects.

Nevertheless, urban expansion is caused by the absence of planning policies, as well as the lack of policy enforcement. Hence, it is important for planners to consider the characteristics of each region in terms of balanced sustainable development, paying close attention to factors such as agriculture and fisheries, industry and mining, tourism and cultural heritage, housing, transport, water and environment.

To successfully achieve any aims of reform, such as developing a management programme, it is essential to issue effective regulation along with a strong enforcement system to ensure implementation of these regulations. Across the world, there are different regulations to save natural resources in general and agricultural land in particular. In the Libyan context, all the interviewees agreed that there are a significant number of protection laws but unfortunately they are not working.

Interviewee MA1 has mentioned that

> "I would say, yes the laws and legislation are adequate for controlling urban expansion; however, the real issue is that these laws have not been implemented at all, especially after the Revolution of February 17, in 2011. I believe this issue has increased because of the absence of a formed state at the moment".

This also corresponds with Saad (2011) who mentioned that there are strong laws for the protection of agricultural land, but that they are not applied correctly.

The interviewee MA2 stated that

> "The agriculture police reported that more than 60 cases were recorded as environmental crimes. These cases were related breaking the law through transform agriculture areas into housing projects. But, there was no action taken against those people, that mean there was a lack of disciplinary action to deal with those individuals who committed environmental crimes and broke the law".

This agrees with Otman and Karlberg (2007) who pointed out that the public institutions in Libya have failed to achieve their intended social and economic goals. Furthermore, this is due to large scale corruption, resulting from a lack of accountability mechanisms and the absence of transparency. Legislations and laws have not been enforced due to the corruption of the official executive authority, which is responsible for enforcing these regulations during the period of Gaddafi's rule. Also, those laws are always broken by the highest authorities of the state for their personal interests. Hence, these laws became ineffective and have not been enforced. These points have been confirmed by interviewees UPA 3 and MT2.

However, the interviewee UPA 1 contradicted that

> "…the current laws and legislation some of them need to be modified, vetting and developed. In other words, they need to be reconsidered in order to be effective in eliminating the violations of construction on agricultural land".

In sum, there is great potential for the laws and regulations in Libya to cover all aspects in the protection of green areas if properly implemented, especially laws such as Law No. 5 of 1982 on the protection of forests and pastures, Law No. 15 of 1992 to protect agricultural lands and also Law No. 34 to protect the trees (interviewee MA3).

8.2.4.1 Monitoring violations of the law

Regarding the competent bodies or agencies tasked with monitoring violations of the law, all respondents agreed that the Agricultural Policy Enforcement Officers (APEO) is responsible for implementing these laws. Furthermore, all respondents have indicated a wide array of other related Government bodies such as: the City Council of Tripoli, Ministry of Agriculture, the Department of the Natural Resource Mapping project, Ministry of Housing and Utilities, Department of Urban Planning particularly Local of planning council, General Environmental Authority (GEA), and Local Authorities and affiliated institutions; all of these organisations have a prominent role in monitoring violations of urban expansion. However, interviewee MA1 claims that

"…there are several recorded cases of individuals breaking the laws that are there to protect fertile land forests, and those show that no actions were taken against those who were involved, where keeps it in the archive department"

Similarly, Interviewee UPA 2 has mentioned that

"I would say that the government does not pay attention to urban expansion. For example, the Local Planning Council is one of the organisations responsible for maintaining and enhancing the environment and capturing those who behaved and act illegally, or those who break the law by building properties on agricultural lands without planning permission. The issue is Local of Planning Council does not follow up actions in terms of enforcing the law by applying penalties against those who break the law and commit environmental crimes. This is an indication of the corruption within the high authorities of the Libyan state…"

On the other hand, interviewee UPA 3 pointed out that

"I believe the APEO has a vital role in stopping or reducing the urban expansion by providing the technological tools. However, this institution actually lacks the resources. For example, they do not have the necessary modern equipment, neither do they have the cars and helicopters needed to use alongside RS and GIS devices used to keep track of new unauthorised urban expansion"

The policies on urban management and the protection the green areas which are followed by the Libyan state are considered weak and ineffective in enforcing the implementation of these regulations. The Agricultural Minister of Libya (Interviewee, 2010) mentioned that it is expected to increase the population in Tripoli rapidly in the next years, and in the absence of effective management of planning policies and agricultural strategies, the consequences for the limited resources (green areas) will be dire.

8.2.4.2 Obstacles the implementation and the monitoring duties

The interviewees were asked to give their opinions on any obstacles facing these institutions in relation to the implementation and the monitoring duties. The interviewees indicated the following:

Interviewee MA1 mentioned that

"Generally, the implementation of the laws and regulations in Libya is very weak due to corruption of the official executive authority, which is responsible for enforcing these regulations. After 2011 in particular lack of justice system for purposes of litigation (violators), despite the existence of numerous memorandums recording violations have been ignored. This in turn has an increased number of individuals have broken the law through building houses".

While, the interviewee MA2 has pointed out that the militias hold executive and legislature positions in the Libyan state. The Tripoli-based Audit Bureau 2018 report by the government accountability watchdog emphasised that the Tripoli government has mismanaged funds and the capital's powerful armed groups are using their influence over state institutions to enrich themselves (International Crisis Group, 2018). In the same context, the interviewee MA3 mentioned that the current obstacles lie in the lack of a state, which means judicial control is unable to hold the violators. Meanwhile, interviewee UPA1 highlighted that

> "…the last report issued by UPA stated that more than 600 illegal building on the agriculture land and all cases has been taken to court, but the court has not been effective and did not take any action".

The interviewee UPA2 pointed out that the lack of intensified efforts between various organisations related in monitoring processes has resulted in difficulties in controlling and managing rapid urban expansion. Accordingly, these institutions are not effective, and they are not monitoring the situation properly. This interviewee also pointed out the lack of qualified personnel and the lack of training and development in these institutions has further led to the spread of this phenomenon.

The interviewee UPA3 noted the corruption of the centralized power in top management in Libyan government. He also mentioned the implementation of the laws and regulations related to protection of agricultural land are very weak or ignored. He also stated that Ghaddafi's policies and programmes in the past were very strange and incomprehensible; his system is not intelligible to the general public, especially in planning during 2005, 2006 and 2007, during which he ordered the demolition of old homes in the Al-Hadba Eastern area. He gave the homeowners compensatory amounts to provide alternative homes for them. This therefore forced those people to go and buy farms lands around Tripoli, and build houses on those lands without any permission from the relevant institutions.

8.2.5 Co-operation between state institutions

The interviewees were asked if there is any cooperation between these bodies and institutions either exclusively within Libya itself or even stretching beyond to involve international organisations. Most respondents said no. For example, the interviewee MA1 indicated that there is no support and co-operation between authorities within Libya to tackle the urban expansion issue. This is in line with interviewee MA3, who also stated that there is a lack of co-ordination and co-operation between state institutions regarding

this issue. The same was said for co-operation with international organisations. Interviewee (MA 2) pointed to cooperation among the organizations in Libya, but stated that this is very limited. However, there is some cooperation with international organizations. For example, in 2005, the Ministry of Agriculture cooperated with FAO on the expansion under the land cover change analysis in Tripoli, which was conducted as one of the activities contributing towards the "mapping of natural resources for agricultural use and planning in Libya". This collaboration produced clear findings none of which have been implemented effectively.

The interviewee UPA1 has mentioned that

> "There is a lack of co-operation and co-ordination among governmental internal organisations in this domain. Conversely, in UPA, we have got to cooperate with UN and Habitat for the purpose of enlisting their expertise in the field of planning and linking them with consulting offices and specialized individuals of the Agency, especially with regard to the third generation project (3GPP)".

Moreover, The UPA has chosen to cooperate with UN-HABITAT in order to enlist their extensive experience and know-how in the development of residential communities and housing construction (National report for Habitat, 1996). Similarly, Newsletter (2008) emphasises that there are some staff from UPA (around nine), who have travelled abroad (Malaysia, Egypt, Morocco and Jordan) to learn technical skills in various fields such as computer and urban planning training, management projects (high rise buildings) as part of an initiative in coordination with UN-HABITAT. Also, UN-HABITAT is regularly sending experts to contribute to the strengthening of UPA. In the same context, interviewee UPA 3 confirmed that there is coordination and consultation with the United Nation Human Settlement to train the employees at the organisation of urban planning management which will enable them to develop their skills and learn new methods related to urban planning. In 2009 there was cooperation with French office to seek consultation in the planning field. And yet, local cooperation remains limited. For instance, the urban planning management have failed to count the number of the agriculture lands in Tripoli and around to include them in future planning or schemes, even after this was requested by the ministry of agriculture who wanted data regarding those lands.

In addition, there is a lack of co-operation between UPA and the other institutions in the country and this has led to conflicting decisions especially during the construction of housing (random construction) for the city of Tripoli. This has resulted in large urban

expansion, particularly in the southern regions (interviewee, MT 1). That was confirmed by interviewee MT 2

"... Co-operation is between local institutions just in theory only, not practice."

And although there is co-operation with international institutions, this is still limited. For example, in our institution, we have conducted several studies relating to sustainable development for all areas of Libya by cooperating with Russian and French companies.

In summary, all interviewees emphasised the lack of co-operation between local state institutions regarding urban expansion, and the limited cooperation with international organizations.

8.2.6 Ongoing conflict in Tripoli, and the implications of the changing political situation

From 2011 until now, the conflicts are still unfolding, but we can already discern patterns of their effects on the all Libyan regions, especially Tripoli. Libya is currently experiencing profound internal division and conflict, which epitomizes many tribal, ethnic and regional trends. These changes will possibly be long-lasting. Since 2014, the country became divided between two governments: eastern government (the house of representatives to Tobruk) and the Tripoli-based Government of National Accord (GNA), in the west (Lacher, 2019). This split reflected the exacerbated social problems, which affected various components of society and which created the tribal tensions that ultimately led to many conflicts between cities. These conflicts are the result of the impacts of displacement (migration) toward Tripoli, which has had implications on changing the lands as well as causing environmental degradation. The interviewee MA1 claimed that there is encroachment on large tracts on green areas, especially after the 2011. Libya is presently undergoing stages of weakness in the performance of successive governments due to armed militias that have power and ability to direct or influence these governments to change the course of events. Similarly, MA2 has mentioned that, currently, the size of the agriculture lands and forests is gradually reduced and the situation is getting worse. There is a dramatic change in form and appearance, specifically after 2011, suggesting that urban expansion is taking place at a much higher rate than previously.

In summary, all respondents have emphasized that after 2011 the Libya became vulnerable to conflicts by successive governments which has had a negative impact on the situation of the country at various levels. Based on the above, the researcher concluded that the key capacities for governance in the Libyan state are considerably fragile because

of the existing conflicts by the militias, which follow the GNA and Libyan Arab Armed Forces (LAAF) led by Khalifa Haftar. Consequently, the focus will now be on military developments rather than protection of green areas.

8.3 Quantitative analyses

The questionnaire survey was carried out in seven areas in Tripoli: Central Tripoli, SuqAljumma, Hey Alandalus, Abuslim, Tajoura, Ainzara, and Janzour. These regions were selected because they have the most fertile agricultural lands and a noticeable spread of constructions on these lands. The quantitative data were collected from 84 farmers and the distribution was affected mainly by the instability of Libya. However, the response rate of the questionnaire was very good, with 84 farmers out of the initial number of 119 providing data (70.6%).

8.3.1 Dependent Variables

8.3.1.2 Demographic Information

This includes age, gender, place of birth and number of respondent's family members, which are necessary since they influence the changes in agricultural land use.

8.3.1.2.1 Age of the respondents:

The age of farmers was categorized into four groups and then cross tabulated with the farm location. The data presented in the Figure 8.1, shows that the majority of all respondents (73.8%) were aged between 26 and 60 years. In addition, half of total respondents in all areas where in the age category of 26-45 which is much larger compared to those aged 46-60 (23.8%).
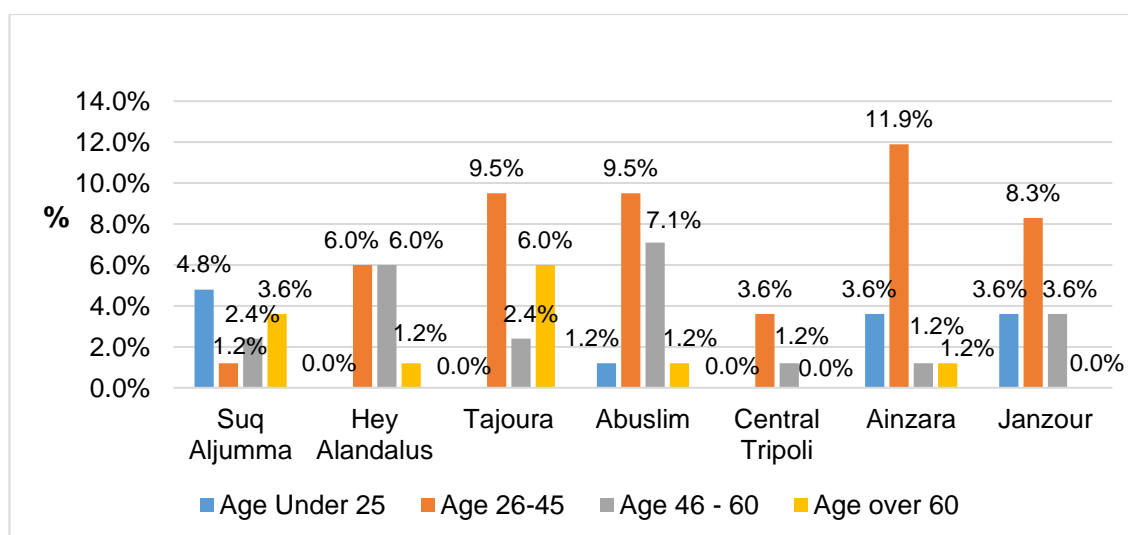
Figure 8-1: Farmer's age

8.3.1.2.2 Place of Birth of the respondents:

As can be seen from Figure (8.2) only about 40% of farmers are originally from Tripoli's, which means that around 60% of farmers have immigrated to Tripoli mainly from Gharyan, Murqub, Bani Walid, and Zawiya. This is in line with data in Lawless and Kezeiri (1987) and (National Consulting Bureau, 2007).
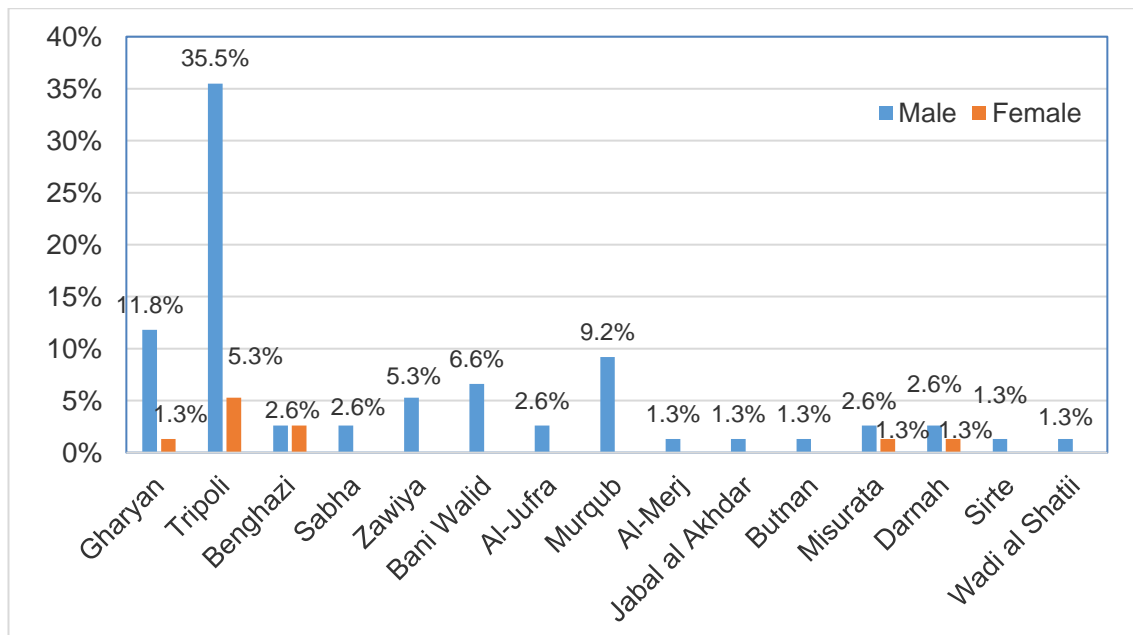
Figure 8-2: Farmer's gender and place of birth

8.3.1.2.3 Farmers' Family Size

As shown in Figure 8.3, the majority of respondents (53.6%) have between three and six children, and 26.8% of respondents have more than six children. This figure demonstrates that farmers have large families, many include at least three but in around a quarter of cases over six children. Field observations and survey questionnaires with farmers have revealed that the children of farmers rarely move away from their family farmer. In order to provide their children with houses, farmers build accommodation for their children on the farm. As a result, fertile land which would normally be used for agricultural purposes is repurposed into housing. If this trend continues, urban expansion over the agriculture land may continue in the future especially with the continuation of the current policies.
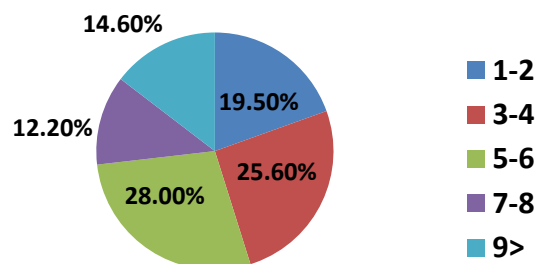
Figure 8-3: The number of family members

8.3.1.2.4 Farm locations

Tripoli is divided into seven areas; these areas are selected as study area as they have the most fertile land in the country. As shown in Figure 8.4, the data were collected from 10 to 16 farms in each area, except for Central Tripoli, where data were collected from just 4 farms.
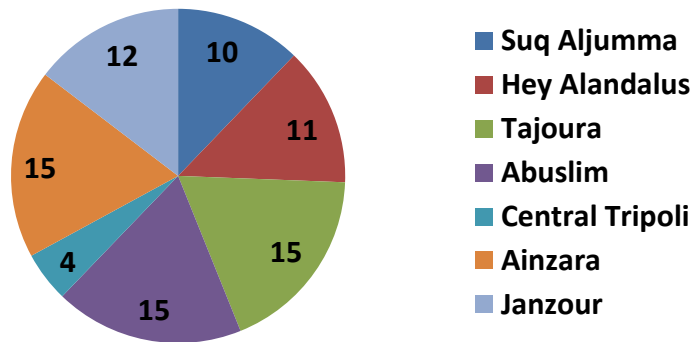
Figure 8-4: The distribution of the farms in Tripoli.

8.3.2 Independent variables

In this section, two types of categories were used to classify the answers of the respondents to the various questions presented on the questionnaire. The first category is Yes or No questions and the second was a Likert scale with the options: Strongly Disagree, Disagree, Uncertain, Agree and Strongly Agree.

8.3.2.1 The Nature of the farm ownership

Figure 8.5 shows the percentage of each type of ownership, inherited or purchased and, as can be seen, about 60% of the farms in Tripoli were purchased. While purchasing farm lands is common across all areas of Tripoli, the purchases in Janzour, Ainzara, Central Tripoli, and Abuslim are slightly higher. As Abubrig (2016) emphasises, there is rapid urban expansion in the Abuslim area, which might explain this trend. In the same context, Attwairi (2015) mentioned that the urban expansion grew largely outside the city limits especially toward the southern areas of the city which means Abuslim and Ainzara.
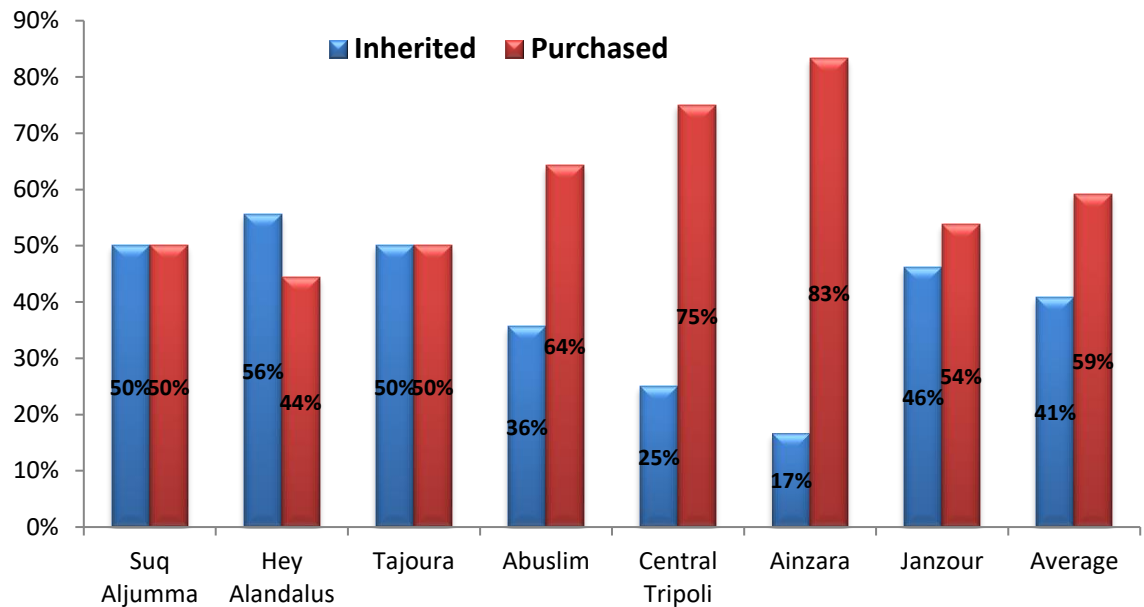
Figure 8-5: Type of Farm's ownership

8.3.2.2 Type of constructions in the farms

Figure 8.6 shows the type of buildings in Tripoli farms. About 99% of the farms have a house, and about 57% of the farms have other building which are constructed for commercial and industrial (warehouses) use. The spread of building for the commercial and industrial use was observed in all seven areas in Tripoli.
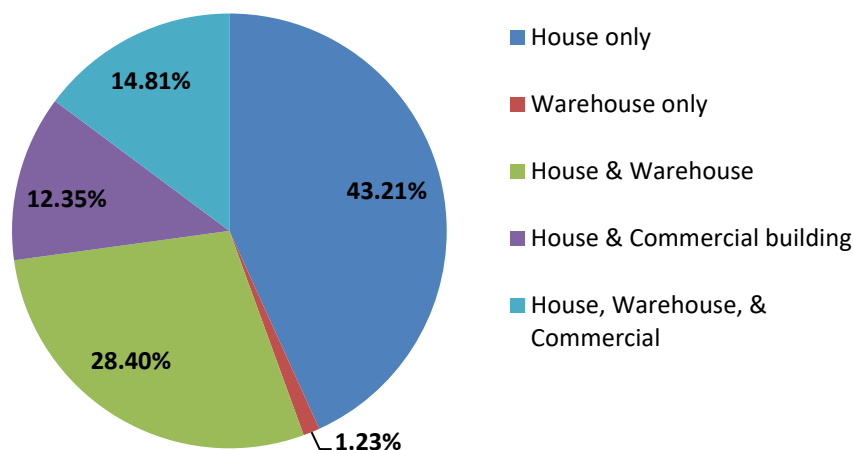
Figure 8-6: Type of constructions in Tripoli

8.3.2.3 Farmers' income and government support

In the questionnaire, farmers were asked about their income and whether they receive adequate support from local authority or not. A total of 83 farmers answered the questions

and as can be seen from Table (8-2) the majority of the farmers (about 78%) confirmed that the farm production is not adequate to support their living expenses. Furthermore, around 84% of farmers stated that they do not receive adequate support from local authorities to support their living expenses. In addition, about 77% of the farmers indicated that they have other sources of income from private activities.

Table 8-2: Summary of the farmers answers about income and Authority support

Statement	Disagree* (%)	Uncertain (%)	Agree** (%)
Farm income is adequate (Income from your farm is enough to support you and your family)	78.3	12	9.6
Getting support from local authority (Local authority provides farmers with adequate support)	84.30	15.70	0
Farm is the only source of income (Working in the farm is the only source of income for most of the farmers)	77.1	14.5	8.4

*: Sum of Strongly Disagree and Disagree.
**: Sum of Agree and Strongly Agree

8.3.2.4 Farms'work-force

In this questionnaire the farmers were presented with the statement "Most of farmers' family members are working in their farm", Table 8-3. Most farmers (around 73%) disagreed with this statement. This is in line with General Authority for Information (2007) has stated thatthe number of farmers decreased, as they numbered 59,566in the census in 2001 and 38,129 in the 2007 census(which proportion about 39%). This is attributed to the shift to other sectors to improve income, especially the trade and services sector and because of the increase in agricultural equipment (reducing labour demand) together with well-water scarcity (limiting farming activities).

However, around 59% of farmers pointed out that it is difficult to bring workers to work in their farms.

Table 8-3: Summary of the farmers answers about income and Authority support

Subject	Disagree* (%)	Uncertain (%)	Agree** (%)	Sample Size
Family is working in the farm (Most of farmers' family members are working in their farm)	73.49*	21.69	4.82**	83
Difficult to bring workers to work in farms It is difficult for farmers to find workers to carry out field works (Yes or No Question)	40.7	-	59.3	81

*: Sum of Strongly Disagree and Disagree.
**: Sum of Agree and Strongly Agree

8.3.2.5 Production cost and marketing support

In the questionnaire, farmers were presented with several questions and statements in relation to farm production, production cost and production prices and if they receive any kind of support towards these elements. Table (8-4 a, and b) summarises their response, showing that between 78% and 88% of farmers confirmed that the production, production costs, and prices are not favourable. Furthermore, between 86% and 92% of farmers pointed out that they do not get support from Agriculture authorities and other institutions in relation to farming production and marketing.

Table 8-4: Summary of farmers answers about farm production and Agriculture support.

a:

Statement	Yes (%)	No (%)	Sample Size
Production Cost (Production cost is very high comparing with the outcome)	88	12	83
Farm Production (Agriculture land production is very low)	86.10	13.90	79
Getting farming support (Do you get any support from agriculture authority or other institution/s?)	13.60	86.40	81

b:

Statement	Disagree* (%)	Uncertain (%)	Agree** (%)	Sample Size
Agriculture products prices are good enough to support the continuity of production	78.30	10.8	10.8	83
Production and marketing Support (Agriculture authority or other institutions support you in farming and/ or marketing your production)	91.6	7.2	1.2	83

*: Sum of Strongly Disagree and Disagree.

**: Sum of Agree and Strongly Agree

8.3.2.6 Legislation and Government Planning Policies (Policies and Laws)

Farmers were asked about the reasons behind the spread of the building of houses on agriculture lands, and Table 8-5 summarise their response. Most farmers (about 68%) were aware that the law does not allow farmers to build on their land, but about 87% of farmers stated that they can overcome this restriction demonstrating that the existing regulations are not adequate. Moreover, about 99% of farmers believe that buying lands form agriculture lands is cheaper than buying inside the city and about 90% of farmers indicated that the farmers have no alternatives to solve the housing issue but to build in

their lands. About 96% of farmers considered the focus on improving their quality of life as one of the main reasons behind building in the farmlands. This indicates that the authorities focus on issuing laws and regulation without looking deeply on the requirements which are needed to implement these legislations such as solving the housing issues and supporting the farmers.

Table 8-5:Summary of the Farmers answers about the reasons behind the spread of buildings in farmlands.

Statement	Yes (%)	No (%)	Sample Size
The Law allows farmers to build in their land	32.50	67.50	83
The Law does not allow but farmers can overcome this restriction	86.70	13.30	83
There is no alternatives for farmers to solve the housing problems	90.40	9.60	83
It is cheaper to buy in agriculture land than to buy inside the city	98.90	1.20	82
Improve of the life quality	96.20	3.70	81

8.3.2.7 Farmer financial issues and other problems

Farmers have been asked about the reasons behind selling the farmlands. Table 8-6 summarises their response and, as can be seen here, all farmers (100%) stated that farmers sell part of their farms to solve their financial problems. Additionally, between 88% and 99% of farmers consider the high production cost, low farm outcome and the desire to improve their quality of life as reasons behind selling the farmland for building purposes. However, around 59% of farmers also consider the difficulty of finding workers as one of the reasons behind selling their farmland.

Table 8-6: Summary of the Farmers answers about the reasons behind the spread of buildings in farmlands.

Statement	Yes (%)	No (%)	Sample Size
Farmers sell part of their farms to be used for buildings to solve their financial problems	100	0	83
Agriculture land lost its value as their production outcome decreases	92.8%	7.2%	83
Production Cost (Production cost is very high comparing with the outcome)	88	12	83
Farm Production (Agriculture land production is very low)	86.10	13.90	79
Difficult to bring workers to work in farms	59.3	40.7	81
Improve of the life quality	98.80	1.20	81

The farmers were asked about the existing buildings on their farms and whether they plan to construct further buildings in the future. Table 8-7 summaries their answers and shows that most of the farmers (about 94%) have constructed building in their farmland. Around 79% of farmers are considering more constructions in the future, in addition to about 70% of farmers confirming that they can construct building if they have the financial resources. However, about 40% of farmers stated that they will leave their farms if they find a job. It is worth saying that although about 61% of farmers would agree with the following statement

"By law a farmer is not allowed to sell his land or part of it to be used for buildings"
About 94% of the farmers still constructed a kind of building in their farmlands; this clearly illustrates some development aspects of the situation and current legislations.

Table 8-7: Summary of the farmers answers about the buildings and building plans in their farmland.

Statement	Yes (%)	No (%)	Sample Size	
Have you constructed any kind of building in your farmland?	93.90	6.30	80	
Are you planning to build in the future?	78.50	21.50	79	
Statement	Agree* (%)	Uncertain (%)	Disagree** (%)	Sample Size
By law a farmer is not allowed to sell his land or part of it to be used for buildings	61.40	12	26.50	83
Most of farmers will not leave their land if they get another job	27.70	32.5	39.80	83
If a farmer has a financial ability to build a house; s/he can Build it in his/her farm	69.90	8.40	21.70	83

*: Sum of Agree and Strongly Agree.

**: Sum of Strongly Disagree and Disagree.

8.4 Summary of the quantitative survey analysis

The following discussion and conclusion sections will pull out the trends and patterns and analysis the differences by job role to generate findings. The aim of this chapter was to identify the opinions of local populations, regarding any obstacles imposed by various factors in relation to urban expansion in Tripoli region-Libya, and therefore the present questionnaire analysis has revealed a number of results; the main findings are summarised below:

- The majority of all respondents were aged between 26 - 60 years.
- The majority of respondents are male.
- The percentage of those who inherited farms compared with those who purchased farms in all is remarkably similar, but in Ainzara purchased farms are five times more than inherited farms.
- The majority of respondents have between 1 and 6 family members
- The majority of respondents have built houses and/or warehouse
- The majority of all respondents wither strongly disagree or disagree with the statement "the source of income is from working on the farm".

- The majority of respondents disagreed with the statement "most of farmers' family members are working in their farm"
- The percentage of those who strongly disagree or disagree with the statement "most of farmers' family members are working in their farm" is remarkably similar for all Tripoli's areas except Central Tripoli.
- The majority of the respondents agree with the statement "by law a farmer is not allowed to sell his land or part of it to be used for buildings".
- The percentage of those who agreed with the statement "by law a farmer is not allowed to sell his land or part of it to be used for buildings" is remarkably similar for Abuslim, Ainzara and Janzor
- Almost half of respondents disagreed with the statement "farmers will not leave their land if they get another job".
- The majority of the respondents are disagreed with the statement "local authority provides farmers with adequate support".

From farmers' notes: the majority of the respondents stated that excessive use of groundwater by people (increasing consumption), has had a negative impact on the productivity of land through seawater intrusion and therefore the effect of salinity led to a decline in agricultural yields. This in turn has made the farmers increase the division of their farms to sell them

8.5 Conclusion

The majority of those interviewed agreed that migration was the foremost driver of urban expansion. The services and opportunities available in Tripoli make it a main destination for people wishing to migration from rural areas of Libya to urban areas. The reason why these services and opportunities are available in Tripoli is due to policies favouring development here and in selected other large cities. Secondary cities and rural areas lack development. Internal migrants in Libya are attracted to Tripoli due to the improved standard of living here as well as the job opportunities. As a result of these social and economic 'pull factors', migrants add to natural population growth in cities including Tripoli and, in turn, require more housing to be built in order to accommodate the increasing population.

There is a lack of expertise regarding agriculture and planning in the current Libyan government, and therefore also a lack of focus on these issues. The closure of university departments focusing on training urban planning experts is a primary reason behind this.

There is also a clear lack of urban planning to deal with the population increased caused by migration. As a result, there is a housing crisis and lack of housing schemes in Tripoli. This problem is particularly severe in Tripoli compared to other cities. At the same time, the Ministry of Agriculture is failing to support farmers and aid the agricultural sector.

Following the 2011 Revolution, large tracts of agricultural land in Libya have been encroached upon. Green areas have been built upon due to the weakness of government and unstable political situation; while there are laws prohibiting this, they are not being enforced.

In summary, the failure of government support, the subdivision of agricultural plots and a growing population have combined to cause rapid urban expansion in Tripoli.

One way to combat urban expansion in Tripoli is to adopt a policy of balanced development throughout Libya, improving other secondary cities and towns to alleviate pressure on large cities by stopping the flow of migration from rural to urban areas.

Due to the current political situation in Tripoli it is difficult to implement policy. The lack of cooperation between government departments is a fundamental obstacle to combating urban expansion and the decrease of agricultural land.

An analysis of the data collected through questionnaires demonstrates the following.

Farmers do not get their main income from farming and that their family members are not working on their farm. Farmers understand that it is illegal to sell any part of their land for building. Most farmers are of the opinion that their local authority does not provide adequate support for them. Due to the excessive use of groundwater and subsequent seawater intrusion there has been a decline in agricultural yield as a result of increase salinity. In turn, farmers are more likely to divide up and sell portions of their land as it is not economically viable for farming.

Chapter 9 : Discussion

9.1 Introduction

This chapter discusses the findings and results which were analysed and presented in the previous chapters. The researcher has used triangulation to link interviews and questionnaire surveys with the literature review to achieve the aims of the research and answer the research question.

The findings are drawn from at least three sources of evidence, including interviews, questionnaires, evidence from the literature reviewed and fieldwork evidence (photos and observation notes), which are discussed and summarised in Table 9.1

In this research, the sources of information which were used were based on a review of the available documents and fieldwork evidence. The findings will also be discussed in light of the researcher's experience as a resident of Tripoli, as a member of staff at the Ministry of Agriculture (engineer), alongside which he had a small construction company before the 2011 Libyan Revolution. In the following sections, the researcher will discuss the results of the data analysis and observations which were undertaken during the fieldwork visits to the MA, UPA, MT, and farmers, made in August and September 2012.

This chapter discusses the results relating to the issues that were categorised and analysed in Chapter Eight and the main shortcomings of restricting the speed of urban expansion in the study area, which is considered one of the most fertile lands in Libya. This chapter also considers what the driving force for the urban expansion in this area was, and how this came at the expense of agricultural land.

Finally, the main conclusions are drawn and implications for future land management and development are considered. This need for future balance between development and conservation is so important because agricultural land in Libya represents about 2% of the country's total area (1,754,000 Km^2), the rest being desert.

Table 9-1: Cross-referencing of the research evidence (the Causes of Urban Expansion)

Identified Issues	Literature	Interviews	Questionnaires	Field Observation	Key Results
Expertise of Agriculture and urban planning sector	Lack of adequate expertise; these have been confirmed by Abubrig (2012), and Kamouka (2012)	Numbers of experts in the Ministry of Agriculture and Urban Planning Agency are considered inadequate	The majority of the respondents are not qualified and not experienced in agriculture	From the field observations, the researcher has observed that farmers' practices do not reflect their level of knowledge on agricultural sciences, especially in relation to land and water management	Lack of understanding of the impact of urban expansion
The planning	The planning process in Libya depends on a complicated decentralized structure. See section 6.6 (Chapter 6). During the period 2000, Tripoli suffered from lack of an urban planning and poor management. Also, in 2011, there was no plan to control the rapid development in the sub-region in Tripoli (Ali et al, 2011). Porter and Yergin (2006) pointed out that urban planning in Libya is focusing primarily on the plan formulation rather than its implementation. Inadequate agriculture development plans.	According to MT1 (2012) during the period 1990s, the Ministry of Housing was abolished. As a result, there was a massive increase in construction (random).	Around 80 % of farmers are considering building more constructions in the future due to poor planning	From the field observations, the researcher has observed that farmers' practices do not reflect their level of knowledge on agricultural sciences, especially in relation to land and water management. (For example, they do not use the agricultural cycle to preserve the fertility of the land).	The researcher agrees with all with regards to poor planning. Hence, poor urban planning assisted housing development at the vicinity of Tripoli (the peripheral areas) by the construction of informal settlements.

Policy (government support)	The previous policies of Libyan government have concentrated upon big cities through sectorial planning (Lloyd and Mattingly, 1989; WHO, 2007, and Attwairi, 2015). The policy played major role in urban expansion.	**All the interviewees acknowledged there is no support of the government. As an interviewee MA2 pointed out that:"*The Ministry of Agriculture has not helped farmers care for their green lands in terms of their needs of seeds, fertilizer and agricultural machinery to increase the productivity of the farm as well as increase awareness in soil conservation and groundwater consumption*". See Section 8.3.1**	More than 80% of farmers pointed out that they do not get support from Agriculture authorities and other institutions in relation to farming production and marketing. See Section 8.5.1 (Chapter 8).	From the field observations, the researcher has observed that farmers' practices do not reflect their level of knowledge on agricultural sciences, especially in relation to land and water management. For example, use the agricultural cycle to preserve the fertility of the land and they still used the crops (which needs a high water requirement).	The government policies have played a significant role to increasing urban expansion at the expense of agricultural land by focusing on the city of Tripoli. See Section 7.2(Chapter 7), which created centralisation, leading to increased migration.
- Housing shortage:	Previous studies conducted by the Ministry of Housing (1989) have demonstrated that Libya needs an approximately 50000 dwelling units annually (Omar and Ruddock, 2001; Polsrvice and Wadeco, 2000). See section 7.8 (Chapter 7). Awotona (1990) stated that Libya had a severe shortage of housing. This might be a consequence of the some reasons, which can be summarized as follow: - Lack of government support. - Massive urban migration. - High rate of population growth. - Unplanned development of cities. Also, Saad (2011) pointed out that no new housing schemes. This in turn has led to the expansion of the cities is random, especially settlements construction at the peripheral areas of the cities.	All of the interviewees agreed that there are had a severe shortage of housing. As UPA1 expert commented that there is a housing crisis due to the lack of implemented housing schemes (master plans). Also, the interviewee MT1 confirmed that during the last 30 years the government have not planned prepared or achieved any housing projects to meet the needs of people at all levels (only small a number).	Most of the respondents considered that the purchase of farm lands is common across all areas Tripoli. About 99% of the farms have a house, and more than 50% of the farms have other buildings, which are constructed for commercial and industrial (warehouses) use. This might explain that the purpose of purchasing the farm is not just for agricultural production but also for residential, commercial and recreational use. See Figure 8.6 (Section 1.2.2 Chapter 8).	The researcher noticed from the performance on the ground during the fieldwork visit that most of the farmers divided their land without any permission from the competent authorities. As a result, important agricultural land has been lost. See Figures 9 (Section 3.3.2 Chapter 7).	The researcher noticed from the performance on the ground during the fieldwork visit that most of the farmers divided their land without any permission from the competent authorities. As a result, important agricultural land has been lost. See Figure 9 (Chapter 7). In addition, land prices are considered one of the variables that contribute to the possibility of a shift from agricultural use to urban use, where the researcher found that most of the farmers prefer to sell their farm land or they used it for commercial (such as shops and small scale factors) projects to get high income. This also corresponds with Zaiat (1999).

Migration	Migration is usually driven by the economic forces of an urban region. Keiser et al., (2004), and Elbendak, 2008 have stated that the rural population growth has decreased dramatically, as a result of one fundamental reason: the strong economy existing in cities such as job opportunities, education, and others, which leads to emigration from rural to urban areas. Similarly, Alshebani (1995) confirms that the low standard of living and per capita income is one of the causes of migration from the towns, villages toward the big cities. According to Ali et al, (2011) have mentioned that around 45.4% of population in Tripoli region are migrants and they have come to the region from the rural and other Libyan cities and towns in order economic income.	All interviewees believed that the focus of attention solely on Tripoli by previous governments increased development (economic, social and political) through the implementation of several projects, which attracted migration from other cities. See section 8.2.1.3 (Chapter 8).	60% of the respondents have immigrated to Tripoli mainly from Gharyan, Murqub, Bani Walid, and Zawiya. See Figure 8.2 (Chapter 8).	Field observations suggest that farmers desire to land fragmentation, subdivision and selling for the purpose of quick profit.	Migration is one of the most important factors for urban expansion, where the direction of population toward Tripoli has become a key issue for those who are looking for a better life as city has a higher concentration of services and income. Therefore, the researcher agrees with all with regarding migration.
Implementation of the law and regulation	Poor implementations of the laws and legislation related to the protection of agriculture lands. Although these laws and legislation are very strong and stringent, but have often been broken if it benefit of some of the parties. See Section 5.5.1 (Chapter 5). Weakness of the implementation of laws and regulations.	Most of the interviewees agreed that there is a great significance or value for the laws and regulations in Libya to cover all aspects for protection of green areas if properly implemented. They are likely to have a profound effect on environment. However, some have mentioned that laws such as Law No. 5 of 1982 on the Protection of Forests and Pastures, Law No. 15 of 1992 to protect agricultural lands and also Law No. 34 to protect the trees (see chapter 5); have not been enforced	The majority of farmers understand that it is illegal to sell any part of their land for building. But there weakness of the implementation of laws and regulations especially these in this time.	Weakness of the implementation of laws in relation to the protection of agricultural land (are not enforced and completely absent).	Poor implementations of the laws and legislation related to the protection of agriculture lands. Although these laws and legislation are very strong and stringent, but have often been broken if it benefit of some of the parties.

		for several reasons: the corruption of the official executive authority, which is responsible for enforcing these regulations during the period of Gaddafi's rule.			
Implementation of the policies	The NPPP and NSP policies are not implemented (no effects have been observed). See Chapter 6. The NPPP planning aimed to develop all settlements according to their growth potential and resources, which means used to develop all the areas in Libya. Thus, this plan has important consequences of the broader domain of the spatially unequal pattern for the distribution of the urban and rural settlements, and the disparities in the living conditions and levels of utilities. The aim of the NSP is to provide an appropriate standard of living for Libyan citizens. In addition, it will promote sustainable economic and environmental development; organize demographic distribution; protect the environment; safeguard agricultural land; increase productivity; raise public awareness for planning and the environment; and provide safety and security, as well as transportation. The NSP was approved by the GPC and will be implemented through the 3GPP (Newsletter, 2007).	All of the interviewees have agreed that there is no implementation for these policies.	Exploit agricultural land in activities of non-agricultural nature and the fragmentation of farmland.	The researcher has observed much of infringement upon farmlands.Wide-spread of dividing the farmlands for construction purposes.	Are not working due to a shortage in public funds. The point of view the researcher if the government implemented a strategy such as NSP and NPPP (see chapter 6), which would protect green areas.

9.2 Factors contributing to flaws in government policy regarding urban expansion

The continuation of urban expansion which is being witnessed in Tripoli has been directly exacerbated by ineffective government policies and regulations, and also from the weak enforcement of laws in relation to the protection of farm lands and green spaces. As illustrated in Figure 9.1, policies have been ineffective due to them being based on inaccurate information and/or a lack of understanding. However, there are some factors which affected government decisions and choices in relation to these policies and regulations. For instance, launching a new project in Tripoli was considered a positive achievement, and officials were proud of supposed successful projects as they thought that they solved several issues simultaneously: they created new job opportunities, new houses and new roads inside the capital. Moreover, to establish new and substantial projects, decision-makers had to consider the availability of labour and the required infrastructure. Therefore, they were more likely to choose Tripoli as a place of the project as there was a steady supply as well as existing infrastructure in the city which could readily support new projects. On the other hand, building new and big projects in rural areas requires resourcing a pool of labour as well as ensuring the construction of good infrastructure, such as public transports, ports, electricity grid, etc. These essential elements are not available in rural areas especially small towns and villages. Furthermore, the Libyan government has not provided adequate support to the agriculture sector, as it considered the productivity of this sector unstable.

Although there are several laws and regulations which have been issued to protect farm lands and green spaces they have. However, not been enforcement by the appropriate authorities. Finally, urban planning and the agriculture sector in Tripoli have suffered from the continual instability of the administrative structure of the country. Within the ensuing instability, regulations are habitually breached by other higher authorities.

In sum, all previous factors discussed above have created a system of unbalanced development and unbalanced life quality between Tripoli and others cities, towns and rural areas. This, in turn, has led to increased migration towards Tripoli, as it offers better facilities and opportunities compared to small towns and villages in other areas. As a result of the subsequent rapid urban expansion, with more housing and facilities needed to accommodate the significant influx of migrants, the small but significant area of agricultural land surrounding the city has been encroached upon with detrimental effects on the environment.

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┌──────────────────┐          ┌──────────────────┐          ┌──────────────────────┐
│ • Availability of│          │ Unbalanced and   │          │ • Lack of            │
│ Labour in Tripoli│────────▶ │ Poor Policy      │◀──────── │ Understanding of     │
│ • Expensive      │          └──────────────────┘          │ the impact of        │
│ infrastructure in│                   │                    │ Urban Expansion.     │
│ Rural Areas.     │                   │                    │ • Centralisation     │
│ • Existing       │                   ▼                    │ of Government        │
│ infrastructure in│          ┌──────────────────┐          │ Structure.           │
│ Tripoli.         │────────▶ │ Unbalanced       │◀──────── │ • Instability        │
└──────────────────┘          │ Development      │          │ (Agriculture         │
                              └──────────────────┘          │ Sector & Urban       │
                                                            │ Planning).           │
                                                            │ • Weakness of        │
                                                            │ implementation.      │
                                                            └──────────────────────┘
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Availability of Labour in Tripoli; Expensive infrastructure in Rural Areas; Existing infrastructure in Tripoli. → **Unbalanced and Poor Policy** ← Lack of Understanding of the impact of Urban Expansion. Centralisation of Government Structure. Instability (Agriculture Sector & Urban Planning). Weakness of implementation.

Unbalanced Development
More projects in Tripoli, ignoring other cities and rural areas

Other Factors
• Cheaper to built on Agriculture lands
• Low Farm Productions
• Insufficient Agriculture support
• Selling Land to Improve Live Quality

Population growth
Migration

Urban Expansion

Impacts on Agriculture Lands

• Widespread of Constructions on Farms
• Subdivision of Farms
• Selling of Agriculture Lands

Figure9.1: Reducing urban expansion processes in Tripoli. Compiled by the author.

9.2.1 Migration

In line with the findings from the field observations, questionnaires and interviews, this research shows that migration to Tripoli is the major driving force of urban expansion. While the main reason behind rural-urban migration was economic, in particular, employment opportunities, the motivations were different from the beginning to the end of that century. Harrison (1967) and Costello (1977) have reported that the natural advantages for fertile agriculture land in Tripoli were the most important factor for this migration. Whereas, Elkabir (1972) and Amer (2007) have stated that the increase of migrants and the urban growth came as a result of the economic development in Tripoli. Furthermore, Saad (2011) pointed out that the differences between life quality in cities and rural areas is the main reason behind the migration towards the cities and the

expansion of urban areas; i.e. health, education, employment and entertainment services in cities act as pulling factors for emigrants from rural areas.

The expansion of Tripoli at the expense of agriculture lands occurred due to the following reasons:

1- **Pulling factors** (the factors that attract people to Tripoli).

- Tripoli's growing economy.
- More job opportunities.
- Offer the highest salaries in Libya.
- The administrative capital of Libya.

2- **Pushing factors** (the factors that enforce people to leave the rural areas).

- Hardness of life.
- Poor public services and infrastructure.
- Low and instability of the outcome from agriculture activities.
- Difficulties in finding jobs

Nevertheless, the policy focuses upon building infrastructure in Tripoli and policies that continuingly try to solve housing problems and create job opportunities in Tripoli are the driving forces for urban expansion. These policies should be revised to enable the country to work towards the goal of re-balancing the construction of infrastructure and services to take into account other areas. This would address the migration pattern which has led to overcrowding of Tripoli, by making other areas more attractive. In turn, agricultural land surrounding Tripoli could be preserved as less infrastructural construction would be needed. In addition, further analysis is required to design policy modifications that need to be enacted. Based upon current findings, models need to be developed for restructuring of interdepartmental co-operation and coherent understanding among departments. Overall, current findings would suggest that while legislation is in place to combat the negative impacts of urban expansion, there are serious impediments to stopping further loss of farmlands.

9.3 Challenges for the Future Planning Stage

A key challenge which planners of future policy face is the competition for the land between agricultural and urban development, where significant demand exists in the residential and commercial sectors. In addition to this central tension the success of future planning is dependent on extensive coordination, cooperation and data sharing between institutions and government agencies as well as non-governmental sectors at national and local level (Choguill, 1994; Porter and Yergin, 2006). Although the policies: NSP and NPPP have the potential to cope with rapid urban expansion, the financial limitations and the numerous problems of non-coordination, cooperation between different actors have so far prevented it being implemented. There are several reasons which explain why those policies have failed so far (is not working). The evidence is drawn from a variety of sources such as questionnaires, interviews, responses, documents, fieldwork visits, and researcher's observations. They have been broken down as follows:

- *Administration, policy and regulatory issues*

  o There is a functional deficiency in the infrastructure system in all the Libyan settlements, which have become unable to continue performing their roles.

  o There is non-participation of the people at the local and national level in planning programmes. The participation of non-governmental actors is of great significance, and likely to have a profound effect on the formation and implementation of successful policies (Skeffington, 1970).

  o Institutional and administrative instability as well as near constant alteration of administrative boundaries resulting from the Revolution.

  o The policy played major role in urban expansion.

  o Weakness of the implementation of laws and regulations in relation to the protection of agricultural land (are not enforced).

  o Lack of effective government policies.

  o Weakness in implementation of policies.

  o Instability of the administration system in Libya (Changing Ministries names and roles, in 1986 there was no Ministry of Agriculture and in 1990 the Ministry of Housing was cancelled).

  o Lack of effective marketing policies for agricultural production.

- *Farmland management issues*

  - There is a shortage of farmers as many have changed their occupation and moved into other industries.
  - Wide-spread division of farmlands for construction purposes.
  - Instability of farmers' income for agriculture activities.
  - Lack of housing schemes in rural areas (farmers start to construct on their land to solve their housing problems).
  - Lack of natural protection zones.

- *Collaboration and coordination issues*

  - There is a lack of coordination and cooperation in terms of information sharing between institutions and government agencies.
  - The lack of clear liability for implementing and monitoring urban plans.
  - Lack of cooperation between ministries and contradiction in their policies (Ministries of Agriculture and Urban Planning).
  - Institutions for follow-up and monitoring are not effective and they are not monitoring of the infringements agricultural lands situations properly.

- *Migration issues*

  - Agriculture sector cannot support increased population.
  - Poor infrastructure and public services in other cities, towns and rural areas, which created migration to Tripoli.
  - Continuation of the movement of the Cities' boundaries.
  - Construct most of infrastructure project in Tripoli for economic reasons and availability of labour.

- *Financial and resource shortage issues*

  - There is a shortage of finance to implement the planning schemes, thus leading to delays, which contravene the demands of the schemes.
  - There is competing demand for land for agricultural use and urban development.
  - Financial difficulties for infrastructure projects in rural areas.

- *Planning schemes issues*

  - Government is trying to solve the housing problems and creating job opportunities in Tripoli with little consideration to impact of this.

- o No plan to control the development and rapid population growth in the sub-region, including Tripoli.
- o Lack of urban planning in Tripoli region (in 2000, the planning in Tripoli region was stopped which allowed urban expansion to increase).
- o Planning schemes do not take into account the overall economic development process.
- o During the preparation of the planning schemes, there is a lack of information disseminated and considered in relation to land use regulations.
- o Inadequate agriculture development plans.

In addition, the delays in the preparation of population censuses are creating difficulties, especially when attempting to predict future needs, such as housing and economic development. Sultan (2004) has stated that there are many issues which have resulted in the rapid increase of urban expansion including: limited information, shortage of resources, corruption, non-participation of the citizens during the planning of urban land development, lack of public finance, and delay.

Other issues in post-revolutionary Libya have overshadowed consideration of urban expansion; therefore, solving this issue is not a priority for the government at this time.

As a result, it follows that programmes of construction have been increased illegally.

9.4 Decentralisation as a Solution to Urban Expansion

Decentralisation is a significant finding in this research, that emerged from the questionnaire and interview responses and the fieldwork visit is that the government policies have focused upon two main cities. Other cities have been neglected. Due to of the concentration of economic activities in these two cities, their populations increased rapidly. Hence, this focus created several problems related to the consumption of natural resources such as water and land, and also engendered a migration pattern towards these cities, which has created further problems relating to urban expansion.(See Section 3.6, Chapter 3).

9.5 Balanced sustainable development

There has not been awareness on the part of the government about spatial dimension in the development process, especially in Tripoli, which polarised the population through the development. This in turn has encouraged population movement into Tripoli. As a

result, there was an increase in the growth rate of Tripoli (the increase in population) which increased the consumption of farmlands. Therefore, it is necessary to achieve sustainable urban growth based on economic opportunities to support settlement development for all the regions of Libya. This can only be done with balanced sustainable development through the following (Newsletter, 2007):

- Protect agricultural area, fragile environmental zones and combat desertification.
- Reduce internal migration (small to large cities) through sustainable strategic investments.
- Develop existing primary and secondary settlements to accommodate expected population growth.
- Coordinate and optimise the main functions of coastal cities.
- Identify and guide spatial development within approved urban zones.
- Create buffer zones around cities, especially Tripoli to avoid further sprawl (the green belt surrounding major cities).
- Developing new towns far away upon Tripoli city.
- Restructure urban land use to ensure economic diversification and efficient land use, and to optimise infrastructure networks and create urban character.
- Develop efficient public transport systems in large cities.

9.6 Implications the conflicts

All of the interviewees and respondents have agreed that there are a significant number of militias, which are widespread in all areas, especially in Tripoli. These militias are a big problem for the stability of the country in general and in Tripoli areas in particular. This is because all state institutions are concentrated in Tripoli, thus there is continuous conflict in this region. As a result, agricultural land and forests have been severely affected. This point has been confirmed by the head of the Libyan Center for Remote Sensing and Space Science (in previous interview conducted in 2015). In other words, the current governments do not have the power to make decisions, especially in the existence of conflicts between militias, resulting in the destruction of vegetation and green space. Those interviewed were dissatisfied with the availability of authority for these militias. The result of this is that Tripoli has expanded without control of planning constraints with no preservation of agricultural land.

9.7 The current state of the Libyan state

Libya is at a crossroads, where the government is striving to establish the rule of law and the militias are clinging to revolutionary legitimacy, adopting total disregard for the law. Under the militia, the people are faced with electricity and water outages for prolonged periods of time, lack of liquidity (money), high prices for all goods and shortage of services, in particular in Tripoli as well as the current war, which still exist on the suburbs of Tripoli between these groups. These issues have been regarded as more important than the urban expansion for the government, as currently their main priorities are to restore those services and necessities for the public. In other words, expansion at the expense of agricultural land didn't figure high on the government's list of priorities. Therefore, not surprisingly, after the 2011 Libyan Revolution, those large tracts of high-quality agricultural land were consumed due to the weak government performance and further expansion of building. This would make it very difficult to consider or implement any of the findings from this study. Results from this study will be presented to the relevant stakeholders and policy makers, but it is clear that it would be very difficult to implement any recommendations in the current climate of unstable leadership.

Additionally, these conditions made it difficult to meet the sample size requirements set for this study. The spread of the militia caused safety issues, which meant that the distribution of questionnaires was limited to 84 farmers instead of the initially proposed 119. Although those 86 questionnaires provide sufficient insight into the problems which the research aimed to study, it is an example of the problems that researchers face when doing any fieldwork in areas where the militia in control.

9.8 Conclusion

This research demonstrates that government policies have played a significant role in exacerbating the problem of urban expansion at the expense of fertile agricultural land. Government policies (urban planning), have caused a great disparity among regions in terms of infrastructure, services, and income. This disparity of development has affected Tripoli in particular. The city and wider region has witnessed greater economic prosperity compared to others in Libya. This has resulted in mass migration to Tripoli from smaller town and rural areas. This research has argued that national land use policies should be revised to achieve sustainability in the future. Revising policy would enable the country to re-balance the construction of infrastructure and services, taking into account and

developing other areas. While there are schemes such asNPPP and NSP to promote this (to implement balanced sustainable development 2006 - 2030), it has been difficult to persuade authorities to implement them. As this research has shown, present legislation is not an effective deterrent to protect agricultural land; laws are often broken by a number of individuals despite their comprehensiveness and detail. This research suggests that confronting these issues, namely the enforcement of existing legislation, would reverse a trend in government policy which focused on short term economic benefits (housing construction) at long-term cost (loss of agricultural land).

In order to secure the future of the small but significant agriculture land in Libya, the government and appropriate ministries should look towards the successful urban management policies adopted and implemented in countries to reduce urban expansion as models, as well successful projects and policies which have limited the problems associated with urban expansion in neighbouring countries (see Chapter 3). In addition, designating specific housing areas on brown field sites would protect remaining agricultural land. In other words, brown-field sites are more likely to have existing services and resources for future housing, which green spaces would not provide.

Any future housing plans should follow strategic guidelines, and be situated far away from agricultural land. Housing should also use land wisely by building high density properties, for   instance flats and apartments.

Chapter 10: Conclusions

10.1 The Research Problem

The aim of this thesis was to investigate how agricultural land in the Tripoli region could be protected from land use change brought about by rapid urbanisation. It has assessed the driving forces behind rural-urban migration to Tripoli which has led to rapid urbanisation in the region. Principally this has been caused by unbalanced development across Libya resulting in the Tripoli region being an attractive place to settle. The resultant influx of population and led to rapid urban expansion and land use change in agricultural areas.

Urban expansion is rapidly increasing in many regions across the world. This has been evident in Libya, especially after the discovery of oil in 1958. The impact of urban expansion on the natural environment has become a major concern, in particular the expansion of urban areas at the expense of agricultural land. Excessive exploitation of natural resources has led to environmental destruction and is a considerable risk in light of these indications. Hence, it is crucial to focus attention on the protection of farmland, forests, fisheries, cultural landscapes, historical areas and its aesthetics. This poses a significant challenge for future plans of sustainable development. Therefore, the application of comprehensive policies for physical plans and regional development, land management, and town planning, alongside best practice by relevant authorities, is essential.

10.1.1 Findings of the Research

This study triangulated three sets of data: field observations conduct in Tripoli, the views of stakeholders through interviews, and the views of farmers through survey questionnaires. By adopting the technique of triangulation, several key themes were uncovered which provide clear evidence of the drivers of rapid urban expansion at the expense of agricultural land. The findings of this research demonstrate that government policies have played a significant role in creating and exacerbating the problem of rural-urban migration to Tripoli, which is a principal factor behind urban expansion and the loss of agricultural land. Research has highlighted that national land use policies should be revised to achieve sustainability in the future. This requires environmental impact assessment studies, commitment, compliance, monitoring and evaluation. Revising

policy would enable the country to re-balance the construction of infrastructure services, taking into account, and developing other areas of the country. While there are schemes to promote this (to implement balanced sustainable development 2006 to 2030),it has been difficult to persuade authorities to take action and implement them. The research has found that present legislation is not an effective deterrent to protect agricultural land; laws are often broken by a number of individuals despite the strength of existing laws and legislation. Consequently, control of urban expansion at the expense of agricultural land and compliance with and enforcement of the legislation is often problematic. This research suggests that confronting these issues would reverse a trend of focusing on short term economic benefits (housing) at long-term cost (loss of agricultural land).

10.1.2 Limitations of the Research

In the methodology chapter the researcher had discussed some of limitations. It is, however, worthwhile to reflect on the limitations of this study, which were encountered as well as how the researcher made all possible efforts to overcome them in order to avoid their influence on the outcome of the study:

- The researcher suffered from the lack of data from published literature and information regarding urban expansion. In addition, most of the secondary data being old and out of date. Furthermore, the researcher could not obtain some documents such as maps, photographs and statistics showing the percentage of expansion after the 17th of February 2011.

- Libya lacks experts, skilled well-qualified people and technologies that would help to champion the need to reduce or eliminate this dilemma, especially after the 2011 Libyan Revolution, where some of the few remaining experts were excluded by the pretext of Political Isolation Law (PIL).

- The researcher faced difficulties in accessing some key stakeholders and also had difficulties in gaining access to government officials at the top levels of decision making because of continuing conflicts and proliferation of weapons, especially in Tripoli.

- Due to the Libyan conflict that started on the 17th of February 2011, the researcher has suffered psychological problems and the researcher's family were under gunfire, and he has lost much of his property: such as his house and shop in 2011, and house owned by his father in 2016. Also, he lost his brother which was the victim of an attack in September 2012 and in November 2017 his father was the

victim of hit and run incident, which he stayed a long time in critical care. All of these has affected the research and delayed the research timetable by more than two years.

Thus, much of these limitations have been overcome by using the primary data gathered through the fieldwork data, as well as by utilising family and friend relationships to encourage individuals to participate in the study.

10.2 Research Significance

This is the first study to investigate the causes and consequences of rapid urban expansion in Tripoli. It therefore builds on studies which have investigated this phenomenon in other regions. The original contribution to knowledge of this thesis is to demonstrate that the development policies of the Libyan government have directly contributed to the loss of agricultural land. Specifically, government policies have led to unbalanced development across Libya, resulting in migration towards larger cities including Tripoli and Benghazi. In turn, this has led to rapid urbanisation at the expense of the small but significant areas of fertile agricultural land. This thesis also highlights that while appropriate and detailed policies outlining balanced development which would protect agricultural land do exist, they have not been effectively implemented due to multifaceted financial and political reasons. The uniqueness and contribution of the thesis will be discussed in more detail below.

10.2.1 Uniqueness of the Research

Recently development activities in Tripoli have increased rapidly. Hence, this gives extraordinary value to this study into the urban expansion of this important field, especially since there have been no published studies dealing in depth with the environmental impacts of the expansion operations in Libya, which is crucial issue the country faces today. Although the existence of studies of urbanisation in Libya have concentrated on social change (Elbendak, 2008), the morphology of the built environment (Shawesh, 2000), migration (Saad, 2010), housing (Amer, 2007), planning (Abubrig, 2012) and desertification (Shaban,2015), the researcher did not find any published or unpublished studies referring to the urban expansion, land management and development issues, especially at the expense of agricultural land. Consequently, this research represents the first attempt to deal with the urban expansion issues in this particular

context, and hopefully will provide a basic background to this neglected but important subject, which future research can be built upon.

10.2.2 Relevance of the Research

This research is relevant to all environmental institutions in Libya. It is extremely relevant to those responsible for environmental planning and policies in Libya in general, and in the urban planning sector in particular. Key institutions in this respect include the Municipality of Tripoli, the General Environment and Water Authority and the Ministry of Agriculture, including its affiliates such as the Department for the Management of Natural Resource Mapping for Agricultural Use and the Agricultural Research Centre. Moreover, the research is likely to have a profound effect on the survival and preservation of limited natural resources in Libya, especially the green area.

The relevance of this research is also due to the current significant development of construction operations, in particular those starting after the 2011 Libyan Revolution. Since then, large areas of agricultural production land have been utilized for urban development. It is this shift in usage that gives the research great value at this particular time.

10.2.3 Contribution to Knowledge

The contribution to knowledge of this research has been to provide a thorough analysis and explanation of land use change in agricultural areas of the Tripoli region and highlight the need to implement a policy of balanced development across Libya in order to combat rural-urban migration which is the root cause of the rapid urban expansion affecting Tripoli's agricultural land. This research has described and analysed the urban expansion issues of land management and development in Tripoli. The outcome of the research contributes to an understanding of Libya's problems in improving its planning and policies of future. This will also help in its aspirations for better environmental performance of its limited natural resources, specifically agricultural land which represents only 2% of Libya's total area ($1,754,000km^2$), with the remaining land being desert. Through developing an understanding the reasons behind the driving force propelling the expansion in the region, this research seeks to help stakeholders, especially planners and policy makers to address this problem and to develop effective polices and plans to prevent farmland degradation. In addition, the study will help determine a sustainable management strategy for green areas. This in turn is providing scientific

solutions as a starting point for similar studies in this field, for Libya. Furthermore, this research is significant for some similar developing countries, which have a rapid urban expansion and are interested in developing the land management.

10.2.4 Research Recommendations

After determining the main weaknesses of land management and development, which are not based on equality, this research provides several recommendations in order to avoid the urban expansion at the expense of fertile agricultural land in Libya. The legal system is ineffective, meaning that regulations and laws are not implemented because of the existence two governments: one in the East and one in the West. Until now, these governments have failed to reach agreement (there is not harmony and accordance in opinion). As a result, it has had a negative impact on several issues, especially urban expansion. Therefore, the most important recommendation: is to unify the ranks in order to create a single government capable of confronting the challenges facing the country. This is the right time to act towards this valuable aim; otherwise expansion will incrementally prevail in most of the country in general and Tripoli in particular.

The study has demonstrated that the most important factor behind green space destruction is overpopulation, both natural increase and emigration. Tripoli is an overpopulated city compared to other Libyan cities, accommodating more than 35% of the total population of Libya. In this way it can be regarded as a primary city. Typically, the rapid growth of cities and urban areas is faster, particularly in the large cities such as Tripoli. Hence, the main issue behind urban expansion in Libya concerns the accelerated growth of large urban centres, where the administration services, economic growth and social services are over concentrated. This has caused extensive migration from small and medium-size towns, which offer fewer job opportunities, less social needs and less availability of infrastructure.

Consequently, the research recommendations for practical application in Libya are as follows:

1-The evidence has already shown, both from the literature review and interviews, a dominance of Tripoli city by the continuing uneven development, resulting in spatial problems. It has become increasingly important to consider spatial planning policies in order to create equality for all regions by improving the social and economic development to the medium-sized cities, small towns and rural areas. In this way, by balancing

development across the country, the pressure caused by urban growth in Tripoli can be alleviated. Currently, Libya needs to implement all the development projects and plans previously drawn up, especially NPPP and the NSP (2006-2030), which aims to create a more balanced system for the benefits of spatial socio-economic development of Libya.

The NPPP includes many important points and can be summarized as follows:

- Supporting the secondary cities (the regional capitals), through a policy of decentralising in all fields, such as: industrial, administrative, commercial, and social facilities.

- Balanced development throughout the country for the small and secondary cities through the provision of social and infrastructure facilities, so that even rural settlements will be assured access to employment and social facilities.

- The creation of new cities, which are integrated in development plans. At least twenty-four of these growth centres should be created to exploit untapped resources, absorb excess population, and settle new lands.

- The reduction of villages (around 159), which lack the natural, economic and physical resources essential for future development. This policy will help improve living conditions for these village populations as they will eventually be resettled in developed areas.

The NSP points out some of the most important features in terms of the planning which is an active project which works on promoting the creation of a framework of social and economic justice for all regions of Libya, which has the following main functions:

- Provide basic information and future expectations to the various national bodies and secretariats concerning planning and development at the Libya level (national level) by the long-term spatial policy, which aimed of coordinating the preparation of the sectoral developmental plans up to 2030;

- Provide a framework and guidelines for the preparation of regional, sub-regional and urban plans and the policy of distributing the human settlements at the regional, sub-regional and the local planning level for all the regions;

- Maintain, what remained of the agricultural lands, to prevent them from encroachment by urban growth;

- Protect the environment;

- Utilize modern data capture (remote sensing) and processing technologies (geographical information systems) in the urban planning field.

Towards the end of the1970s and into the 1980s, Libya sought to develop strategies for spatial policy development through the above plans to move towards balanced development across all regions of Libya. Unfortunately, these plans were not implemented (meaning that no effects have been observed). Accordingly, this factor has played a significant role in increasing the urban expansion upon the green areas.

2- Decentralization must be prioritized. Certainly, a solution to reduce or eliminate the urban expansion would be to follow a policy of decentralization as advocated in the 2GP (1980-2000) and the 3GP (2000-2025); using a policy of 'balanced sustainable development'. The effect of centralization is to accelerate migration from rural, small towns and medium-sized cities to primary cities such as Tripoli, which, in turn, puts pressure upon farmlands to alleviate urban expansion. Consequently, this research finds that the decentralization policy is the essential policy to assist in reducing migration

3- The migration factor has played an overwhelming role in encroachment on large tracts of agricultural land surrounding the city to establish housing, particularly in the absence of planning. Through balanced development rural-urban migration would be lessened as facilities and services, previously only available in major cities, would be available in other regions. Therefore, the rapid population growth and resulting housing crisis in Tripoli would be addressed as population growth as a result of migration would decrease. In turn, impetus to build on agricultural land would diminish. In other words, a clear policy must be implemented regarding the demographic spread of population through limiting the migration to Tripoli through to give the rural areas and secondary cities more attention as we mentioned. This may help lead to encouragement for people to return to their territories of origin. In others words, an aspiration would be to encourage the reversal migration through providing incentives for the internal areas.

4-There is no positive co-ordination between universities and decision makers in terms of considering the studies that are conducted, which, to a large extent, offer more scientific and practical recommendations to this dilemma. In this respect, the researcher mentioned that several studies such as (Zaiat, 1999) have recommended as follows:

- Schemes of the cities are not revised and evaluated.
- Administrative instability of institutions, which is caused by continual restructuring of state institutions.

- The laws are always violated against the protection of agricultural land. Thus, the cities have expanded due to construction (i.e. unplanned growth or random growth).

- The Libyan previous governments have failed to provide housing for citizens away from the green areas, which led to expansion of the city at the expense of agricultural land. At the same time, these governments encouraged and granted loans to citizens for housing construction.

- The government has built many of the institutions of the state, and some of the infrastructure projects in the big cities.

- The above have resulted in the movement of great migration to the city from neighbouring cities and surrounding areas. The upshot of all this is that the number of farmers is declining and the land area farmed is decreasing.

5-At a time when there is a rapid urban expansion, which reached more than 35% of the total country's population in Tripoli, it appears a more positive approach is needed for limiting further loss of farmlands. This can be achieved by encouraging the participation of stakeholders in the processes of urban planning, including: local residents, architects, planners, technicians, agricultural engineers, academics, researchers and decision makers. This will give officials a deeper understanding of urban expansion and contribute to the design of more successful and well-considered plans for urban development. It will also play a substantial role in any future attempts at the improvement of the environment and the promotion of sustainability. In addition, this participation would provide new insights which the planners and stakeholders can use to circumvent a number of problems (for the rapid expansion) as outlined in this study and would provide feedback to refine the guidelines and recommendations.

6-Another consideration is the high price of land in the centre of city, where house building land is limited. The increasing costs of housing in city centres results in driving urban sprawl towards green areas. Hence, high prices lead to a diminishing of green areas in and around the city as people start to buy the lower priced land surrounding the centre instead. In the light of increasing demand, price volatility and depletion of natural resources, the Libyan authorities should improve urban planning departments through providing crowded cities with land at appropriate prices and providing new cities far away on the fertile land. The adoption of new cities would be a remedy to mitigate pressure on any big city (although, since 2000, the Libyan government has made huge efforts to build new cities intended to absorb the Tripoli overflow and safeguard agricultural land around

it, which is under pressure, such as Eastern Valley and Enjela). However, major difficulties occurred in the development and completion of these cities due to the government or state disruption following the 2011 Libyan Revolution. 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, especially in the existing 5000 hectares of land space vacant (empty or without use) within the schemes of the city of Tripoli (UPA, 2010). In addition, it must consider the redevelopment of abandoned buildings which can provide many benefits to a community without the damage to green spaces, by developing and enhancing existing areas. In other words, re-development and building on old housing projects (by demolishing the building), and building new housing projects on the same land.

Moreover, Libyan planning policies need to evaluate more effectively the weaknesses especially in the following topics:

- Unplanned development of cities (the lack of urban planning in the cities), which created the proliferation of slums.
- The absence of effective land management and legislation.
- Agencies are dividing and selling farming land for profit without regulation or governmental control. This allows farmers to make considerable sums of money, often without using the land for farming production. The agencies also benefit financially from this process.
- The above factors have resulted in the control of the land market by private speculators. This has led to an increase in land speculation around the city. After 2005, land prices have annually increased by between 25% and 50% on average, but at times have exceeded 100%. This pattern encourages people to build on farmlands where construction is cheapest.

7- The previous policies were one of the major causes of rapid urban expansion. For example, the Libyan government has directly contributed to the increased expansion. The sectoral planning adopted led to a concentration of development in major cities (Tripoli and Benghazi). As a result, these regions have become the most prosperous, while the others have remained less developed. In addition, the Ministry of Housing was abolished in1985.This policy decision was harmful. The role of the state changed from being a provider of housing to give support for the citizens to build their own house. In other words, the state stopped its direct intervention in housing and construction activities and

began to provide encouragement of citizens to obtain housing loans, building materials and credit facilities. Furthermore, in 1986, crucial transforms occurred in the policy of the state with regard to forests, which were changed to farmland (divided into 4 hectares, see Chapter 7 Section 7.12); thus these policies have serious implications in elimination of vegetation. New policies are urgently needed to control urban expansion; these policies have to development plans in other regions including rural areas, to stop and reverse migration towards Tripoli. Therefore, there is a vital role for policy makers to stimulate and encourage the plans to develop the small and medium-sized towns. This leads to an increased need for a more elaborate regional policy in order to guide the development of Libyan cities and towns for the better. Also, the national land use policies should be revised from the relevant authorities or Libya's governmental institutions through compliance to the planning criteria, especially unplanned settlements in the surroundings of Tripoli.

10.4 Key academic conclusions

Population growth is the main cause of urban expansion and urban problems. The larger cities in developing countries have been growing rapidly and therefore most of its countries are facing a significant challenge in successfully protecting green areas including Libya.

In Libya, an absence of well-informed government policies (Urban Planning) has created a great disparity among regions in terms of: infrastructure, services, and income. Tripoli, especially, witnessed greater economic, social, and political prosperity compared with other regions (pulling factors). This disparity is the main factor which has encouraged a massive migration to the city. As a consequence, the city of Tripoli has had to expand due to the growth in population. The increase in population indicates a growing demand for housing. However, the housing expansion is random and uncontrolled by the government. Therefore, the government are responsible for an increase in size well beyond the city limits, with construction taking place on agricultural land. This occurs despite the fact that urban planning authorities established and developed several plans, projects, in particular in 1976, the Libyan state assign mandated It AL consult to prepare a study of the Libyan settlement system for all regions. After the situation was appraised, it has given some recommendation which were incorporated in the plan **(NPPP)**, which was adopted in 1979 as the guide for future development at the national, regional and local scales as a means of securing coordinated spatial planning in all regions as mentioned

above. Also, (NSP, 2006-2030).The National Spatial Policy was published 2000 but, unfortunately its recommendations were never implemented. This corresponds with Porter and Yergin (2006) who have stated that the urban planning in Libya is focusing primarily on the plan formulation rather than its implementation.

The adoption of National Spatial Policy 2006 - 2030 (**NSP**) would be a remedy to the current imbalances, as it addresses decentralisation by planning resources outside of Tripoli; a strategy of sustainability which integrates small and medium-sized towns through the development and economic growth and employment is required.

Based on the current situation, it is argued that there have been constant difficulties in managing and controlling the urban expansion within urban centres in general, and Tripoli in particular, due to conflicts between militias. Before implementing the National Spatial Policy, the conflict must be resolved, otherwise, it is impossible.

10. 5 Suggestions for Further Research

Land management and development are still a major issue in Libya despite considerable efforts in recent years by the government to deal with this issue (before the 2011 Libyan revolution). This is partly because urban expansion at the expense of agricultural land is a relatively new subject that needs continuous research and updating over time. However, the environmental impacts of any expansion (construction) should not be ignored any longer, especially upon the green areas in which this can have a potentially damaging impact for the environment. The driving force of urban expansion is yet to be investigated, while the problem of expansion is increasing. Therefore, more research is needed to assist in establishing efficient land management, development and performance. This requires the formation of multidisciplinary research teams from the competent authorities who can conduct this research. Such research, however, would be difficult to implement at a large-scale, mainly due the problems of instability and safety of entering areas under militia control - an issue that led to some sampling limitations in this project. This area of research should be explored and investigated by different institutions such as local universities, research centres and government bodies such as the Ministry of Planning, Agriculture and Environment, whose focus should be on producing policies geared towards the protection of agricultural land.

Agricultural land represents about 2% of Libya's total area (1,754,000km^2), the rest being desert. This research aimed to look at the topic of land management and development in

Tripoli, Libya and provides the basic background to this important field. The findings from this research contribute to the literature on the protection of fertile land by way of providing data which can be used by future researchers and policy makers when considering the issues of urban expansion.

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Appendices

Appendix 1

Consent Form for Interviews

Interview Questions

I hereby declare that I am fully aware about all the following:

1. I am willingly taking part in the interview for this research and for the interview and my participation is voluntary and that I may withdraw at any time with no obligation.
2. I understand that no-one will have access this interview beyond the researcher and his supervisors.
3. I understand that any personal statements made in the interview will be confidential, and all comments will be nameless in any reports or papers that are produced as a result of the research.
4. I understand that I will be offered a copy of my interview transcript and provided with the opportunity to take out or amend any part of it that I do not wish to be reported in the findings.
5. I understand that the data from this research will be used for academic purposes only.

Name ofRespondent:………………………………………………………………..

Institution of Respondent:……………………………………………………………

Signature of Respondent: ……………………………………………………………

Positionof Respondent:………………………………………………………………

Date: …………………………………………………………………………………

Name of Researcher:…………………………………………………………………

Signature of Researcher: …………………………………………………………….

Interview Questions

1- Do you have enough number of expertise's working in agriculture development planning?

2- Do you have enough number of expertise's working in urban planning?

3- What is the current status of green spaces, agriculture lands in Libya in general and in Tripoli in particular?

4- What is the current percentage of the area covered with green spaces in Tripoli?

5- What are the causes or the factors that led to urban expansion?

6- Comparing Tripoli with other cities in Libya, do you think that the housing issue in Tripoli is more profound and why?

7- What might be the economic and environmental impacts of urban sprawl into agricultural land and green areas?

8- What are your suggestions to stop uncontrolled urban expansion into green areas and agricultural land?

9- Looking to migration towards cities and natural population growth; which one do you consider is the main factor for urban expansion and why?

10- What are the causes or the factors that led to migration towards Tripoli?

11- Do you think that current laws and legislation are adequate to control urban expansion?

12- Does Libya have competent bodies or agencies tasked with monitoring violations of the law such as illegal urban expansion?

13- Are there any obstacles facing these institutions in relation to the implementation and the monitoring duties?

14- To tackle this matter is there any cooperation between these bodies and institutions either exclusively within Libya itself or even stretching beyond to involve international organisations?

15- If you have any other points or additional comments, please state them.

Appendix 2

Sheffield Hallam University

Faculty of Development & Society Graduate School

Questionnaire survey (farmers)

Dear Respondent,

This questionnaire is a part of a PhDresearch study at Sheffield Hallam University looking at land management and development in Tripoli, Libya. The aim of this questionnaire is to assess the major drivers of urban expansion.

We would be very grateful if you could spare a time to fill in this questionnaire.

All given Information will be kept strictly confidential, to be used for research purposes only.

Thanks for your cooperation in advance.

A: <u>Demographic Information (General Details)</u>

This section presents the demographic information of the farmer respondents in terms of their place of birth,age andgender. An analysis of these variables is necessary since they influence the urban expansion, demographic concentration and changes in land use on land management and development in agricultural sector.

1) Place of Birth: …………………………….

2) Age: ……………….
Under 25 ☐ 26-45 ☐   46-60 ☐   over 60 ☐

3) Gender:
Male ☐   Female ☐

4) Number of Family Members:
 1-2 persons ☐   3-4 persons ☐ 5-6 persons ☐7-8 persons ☐ 9 or more ☐

B: Land Ownershipand Farm Structure

This section presents the farm owner, the type of ownership, the farm area, the percentage of the cultivated area, the area covered by buildings and type of buildings.

5)Are the owner of the farm?

Yes ☐   No ☐

If yes

6) What is the type of ownership?

Inherited   ☐ When? …………………..

Purchased ☐ When? ……………………….

Leased by the state ☐ When? …………………….

Other ☐   Please Specify ………………………………………….

7) What is the area of the farm? ………………………. (hectares)

8) What is the percentage of the cultivated area? ……………… (%)

9) What is the area covered by buildings? …………………... (m^2)

10) What type of buildings?

House ☐Warehouse ☐   Commercial building ☐

Other ☐   Please specify …………………………………………..

C: Farm Income and Government Support

11) Please indicate whether you

1) Strongly disagree   **2**) Disagree   **3**) Uncertain   **4**) Agree   **5**)Strongly agree

	Items	**SD**	**D**	**U**	**A**	**SA**
a)	Income from your farm is enough to support you and your family	1	2	3	4	5
b)	Agriculture authority or other institutions support you in farming and/ or marketing your production	1	2	3	4	5
c)	Working in the farm is the only source of income for most of the farmers	1	2	3	4	5
d)	Most of farmers' family members are working in their farm	1	2	3	4	5
e)	Farmers income is adequate for living in Tripoli	1	2	3	4	5
f)	Most of farmers will not leave their land if they get another job	1	2	3	4	5
g)	Local authority provides farmers with adequate support	1	2	3	4	5
h)	Agriculture products prices are good enough to support the continuity of production	1	2	3	4	5
i)	If a farmer has a financial ability to build a house; s/he can build it in his/her farm	1	2	3	4	5

12) Any other comments you would like to add in relation to farmer's income

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D: Legislation and Government Planning Policies (Policies and Laws)

13) There are several reasons behind the spread of the building and houses on the agriculture lands. Which of following do you think are the reasons behind this spread? You can choose several answers.

a. The Law allows (farmers) building on agricultural land ☐ Yes☐ No

b. The Law does not allow building on agricultural land but farmers can overcome this restriction ☐ Yes☐ No

c. There are no alternatives for farmers to solve the housing problems ☐ Yes☐ No

d. It is cheaper to buy in agriculture land than to buy inside the city ☐ Yes☐ No

e. To improve quality of life☐ Yes☐ No

f. Other reason/s

1- ---

2- ---

14) Please indicate whether you

1) Strongly disagree **2)** Disagree **3)** Uncertain **4)** Agree **5)** strongly agree

Item	SD	D	U	A	SA
a- By law a farmer is not allowed to sell his land or part of it to be used for buildings	1	2	3	4	5

15) Have you built in your farmland? Yes ☐ No ☐

  If yes:

  16) Why: --

  17) What: --

  18) When: --

 If no:

19) Are you planning to build in the future? Yes ☐ No ☐

E: FarmerFinancial and Problems

20) What is the reason behind selling the agriculture lands?

		Yes	No
a	To improve quality of life	☐	☐
b	Farmers sell part of their farms to be used for buildings to solve their financial problems	☐	☐
c	It is difficult for farmers to find workers to carry out field works	☐	☐
d	Agriculture land lost its value as their production outcome decreases	☐	☐
e	Agriculture land production is very low.	☐	☐
f	Production cost is very high comparing with the outcome	☐	☐
g	Other reason/s ☐		

----

21) Do you get any support from agriculture authority or other institution/s? For example, did you get a loan from banks?

Yes ☐   No ☐

If yes:

22) Is the support sufficient?   Yes ☐   No ☐   do not know ☐

23) Any other comment you would like to add?

------------Thank you for your cooperation.

Previous interviews

First interview

According to the head of the Planning Department in Agriculture sector (in previous interview, 2010), huge areas of fertile lands, since early 1980s, have been lost as a result of the expansion of housing and industrial construction in and around Tripoli. The following are some examples:

- Alhadaba agricultural project in the Abuslim region: the number of farms is 107 and the area of each farm is 6 hectares. Most of these farms have been changed to housing structures with percentage 85%.
- Alfateh at Tajoura Area: the number of farms is 19 and the area of each farm is 5 hectares. Farmland here has been converted to housing.
- Altadamun farm at Hay-Demashk (30 hectares) and Seif Aldawla farm (15 hectares) in the Abuslim region: both are now areas completely made up of private houses.
- Alektifaa Alzati farms (located at airport road) in Abuslim region: Its total area of 400 hectares has been transferred completely to housing constructions.
- Khalet Alfirnaj farms (300 hectares) in the Ainzara region: it has been transferred to housing constructions.
- Lanab farm in Hey Alandalus and Janzour area (30 hectares combined), has become private housing.

Additionally, the director of Planning Administration to Agriculture Research Centre, (interview, 2012) has confirmed that there are many farms in Tripoli, which have disappeared due to construction.

Second interview

The Minister of Agriculture stated, in an interview, that the urbanisation phenomenon is one of main challenges that face the Libyan government at this time. This is especially true regarding the encroachment on fertile agricultural lands in the Tripoli region, in which a significant population of Libya resides. Outlining the causes of urbanisation, he noted that, the principle reason behind immigration from rural areas to urban was the economic opportunities present in Tripoli. While there were schemes for housing, which would be situated away from farmland, the government was not effectively implementing them (Minister of Agriculture, interview 2010).

Field observation

From the field observations that there are wide spread of housing constructions carried out on agriculture lands. This phenomenon is conducted by both the single farmer and the recent change to urban buyout partner's stealing land. The most serious one is carried out by small business companies where they buy large farms and divide them into smaller land unites (400 to 1000 m2) and prepare them for housing construction by building road and connecting them to the electrical and water grids to resell them with higher price, Figure (15). This phenomenon has spread-out even in areas far away from the boundaries of Tripoli as the land price is low relatively. This way of dividing agriculture land will encourage more people from other town and cities to migrate and reside in Tripoli. Ali et al., (2011) has confirmed this, stating that

> "The change in the land use whereby urban residents which buy up prime agricultural land for residential uses in Tripoli sub-region. Semi-squatter is located in southern part in Tripoli region, this settlement has built by the people themselves, and the people own the lands, and they started dividing their lands to small plots and selling to each other. The process of buying and selling was done with private commissioner without certifying in department of urban planning and agricultural department to release agricultural character, for that the process is illegal"

Photograph 1:District Ainzara Source: collected by the author 2012

Photograph 2 : District Abuslim (Slah Aldyin, Abu Shaala) Source: collected by the author 2012

Photograph 3 :District Ainzara Source: collected by the author 2012

Photograph 4 :District Ainzara Source: collected by the author 2012

Photograph 5 :District Ainzara Source: collected by the author 2012

Photograph 6 :District Tajoura (Bir Usti Milad) Source: collected by the author 2012

Photograph 7 :District Tajoura (Bir Usti Milad) Source: collected by the author 2012

Photograph 8 :District Tajoura (Bir Usti Milad) Source: collected by the author 2012

Photograph 9: District Abuslim (Slah Aldyin , Abu Shaala) Source: collected by the author 2012

Photograph 10: District Abuslim (Slah Aldyin , Abu Shaala) Source: collected by the author 2012

Photograph 11 : District Abuslim (Slah Aldyin , Abu Shaala) Source: collected by the author 2012

Photograph 12 : District Abuslim (Slah Aldyin , Abu Shaala) Source: collected by the author 2012

Photograph 13 : District Janzour Source: collected by the author

257

Photograph 14: District Abuslim (Slah Aldyin , Abu Shaala) Source: collected by the author 2012

Photograph 15: District Abuslim (Slah Aldyin , Abu Shaala) Source: collected by the author 2012

Photograph 16 :District Ainzara Source: collected by the author 2012

Photograph 17: District Abuslim (Slah Aldyin , Abu Shaala) Source: collected by the author 2012

Population
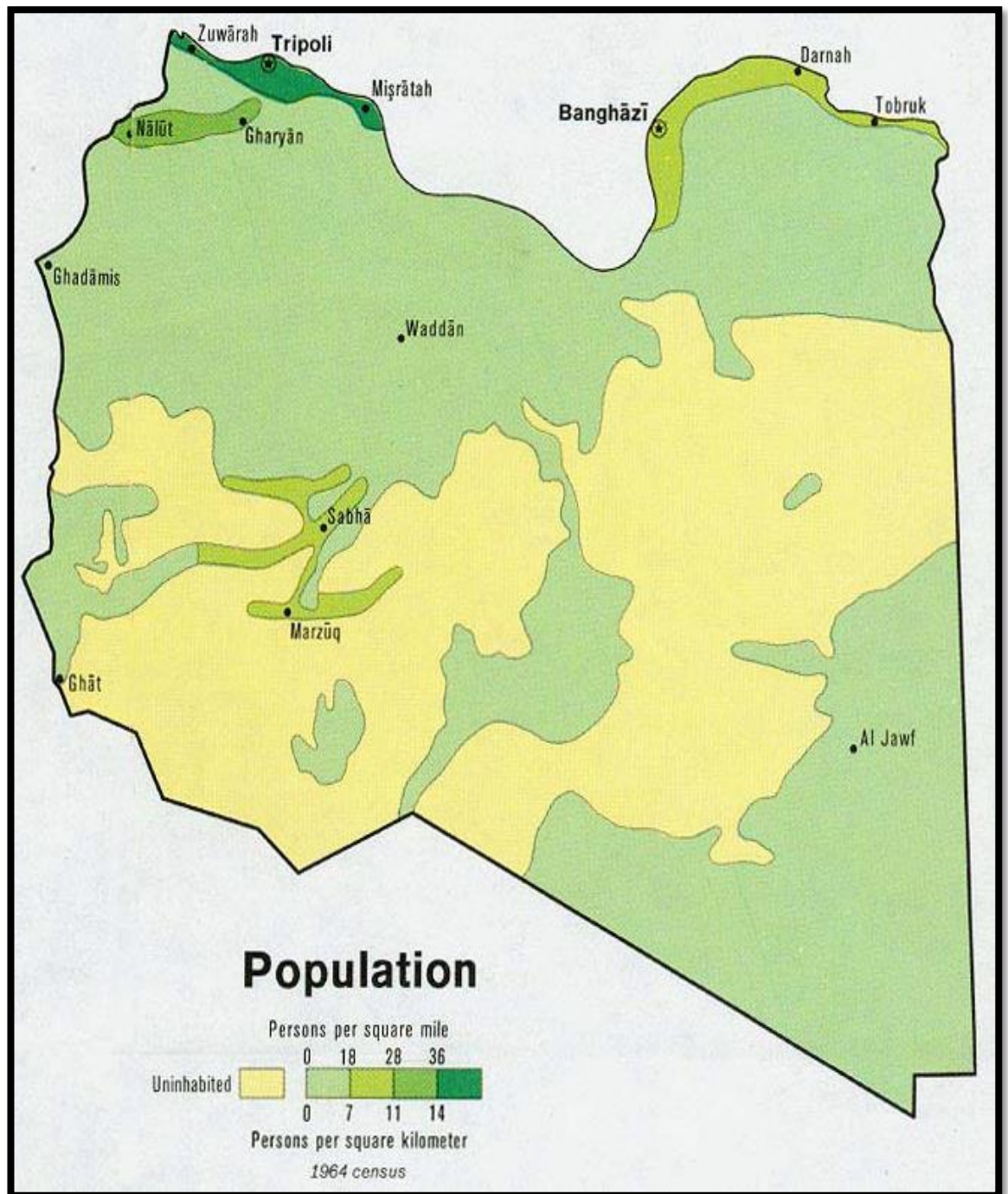
Persons per square mile

| 0 | 18 | 28 | 36 |

Uninhabited

| 0 | 7 | 11 | 14 |

Persons per square kilometer

1964 census

In Libya, the majority of the people live in the coastal areas especially in Tripoli. Source: Grein and Nordell (2006).

الجماهيرية العربية الليبية الشعبية الاشتراكية العظمى

الفاتح أبـدا

اللجنة الشعبية العامة

مصلحة التخطيط العمراني

الرقم الإشاري : 5ر12ر496م

التاريخ: ..../........./........ و.ر

الموافق: 27ر12ر2010 ف

<< مذكرة بشأن آلية إعداد وإعتماد وتنفيذ المخططات والتحديات المصاحبة >>

الأخ/أمين مجلس التخطيط الوطني المحترم

بعد التحية ....

اعتمدت الجماهيرية العظمى في سياساتها التخطيطية على اتباع أسلوب التخطيط من الكل إلى الجزء حيث يتم تطبيق دورة تخطيطية متوالية كل عشرون سنة تبتدى من إعداد مخطط وطني على مستوى الدولة ثم محططات اقليمية على مستوى الأقاليم التخطيطية الرئيسية ومنها إعداد مخططات محلية على مستوى الأقاليم الفرعية والتي تصل بنا إلى المخططات الحضرية أماكن توطين السكان والخدمات والأنشطة الإقتصادية ذات الطابع الحضري.

ولقد تميز هذا الأسلوب بتأسيس نتائج كل مرحلة على المراحل السابقة لها واستناد القرار التخطيطي على دراسة اقتصادية واجتماعية شاملة تربط العلاقة بين الوظيفة والنطاق الجغرافي والمقومات الإقتصادية والإجتماعية .

ولقد مرت الجماهيرية العظمى بمرحلتين تخطيطيتين :-

- الأولى غطت الفترة من 1968 مسيحي إلى 1988مسيحي.
- الثانية غطت الفترة من 1980 مسيحي إلى 2000مسيحي.

وجاري إعداد المرحلة التخطيطية الثالثة التي سوف تغطي الفترة من 2000 إلى 2025 والتي وصلت نسبة الإنجاز بها إلى 65% حيث تم الإنتهاء من إعداد المخطط الوطني (مخطط السياسة المكانية) والذي اعتمد من قبل مجلس التخطيط الوطني.

وتم الإنتهاء من إعداد أربع مخططات اقليمية وهي تحت المراجعة من قبل اللجنة الإستشارية لمراجعة وتنقيح المخططات المشكلة من قبل مجلس التخطيط الوطني.

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                                          الموافق: ..../ ..../ ف

    تم الإنتهاء من إعداد ثمانية عشر مخطط محلى (إقليم فرعى) وهى الأخرى تحت المراجعة من قبل اللجنة الإستشارية لمراجعة وتنقيح المخططات المشكلة من قبل اللجنة الشعبية العامة.

    وقد صاحب هذه المراحل التخطيطية تطوير فى التشريعات المنظمة للتخطيط العمرانى وأخرها صدور القانون رقم (3) لسنة 2001مسيحى بشأن التخطيط العمرانى وعدد من اللوائح الفنية المصاحبه له والذى عالج هذا القانون كل العلبيات السابقة.

    حيث نضم التخطيط على المستوى الوطنى والإقليمى والمحلى وربطها بخطط وبرامج التنمية القطاعية وكذلك نضم أعمال التصميم الحضرى والمرافق المتكاملة ووسعى دائرة المخططات الحضرية بحيث شملت المخططات الريفية لتوطين سكان الريف والرحل أيضاً وفر حماية للأراضى الزراعية والمواقع التاريخية والأثرية و نضم البناء خارج المخططات ووضع آلية لإعداد وإعتماد المخططات بكل مستوياتها وأعطى مرونه للمتابعة وضبط المخالفات.

    ورغم ما اتسمت به هذه التجربة التخطيطية من خصائص جعلت منها الرياده مقارنة بكثير من دول العالم وعلى الأخص النامية منها وذلك بشهادة المنظمة الدولية الراعيه لهذا النشاط (منظمة المستوطنات البشرية) إلاأنه يصاحبها كثير من التحديات كانت سببا وراء عدم تحقيق المستهدف وكانت سبب فى ظهور مشاكل انعكست بشكل أو بأخر على العملية التخطيطية ذاتها.

    ومن بين هذه التحديات :

1- تنفيذ المخططات :

    الهدف الرئيسى من إعداد مخطط ومروره بالمراحل التى سبق الإشارة إليها هو تنفيذه على الطبيعية والإستفادة منه فى حينه ولكن يترك بدون تنفيذ يصبح لامعنى له.

    لقد تأخر تنفيذ المخططات سواء من حيث تنفيذ المرافق المتكاملة أو تنفيذ من حيث الخدمات الأساسية حيث توجد مواقع محجوزة من الجيل الأول ....

    ورغم إنشاء جهاز تنفيذى أخيراً أسندت له مهمة تنفيذ تلك المخططات إلا أن الكم الهائل من المخططات والتراكمات التى ظهرت خلال الفترات الماضية والفارق الزمنى الكبير بين إعدادها والشروع فى تنفيذها جعلها تمر بمشاكل وصعوبات أدت إلى تأخرها مرة أخرى.

أن التنفيذ يجب أن تحدد له أولويات طبقاً لنوع ووظيفة المخطط وطبقاً لمراحل النمو به.

أن تنفيذ الخدمات الأساسية وفتح الطرق فى حينها يحقق الأهداف المرجوه من المخطط ويجعل منه بيئه جاذبه لا طارده.

كذلك وضع الخطط والبرامج التنموية طبقاً للمؤشرات التخطيطية التى حددها المخطط الوطنى والمخططات الأقليمية والمحلية يحقق الهدف المنشود وهو التنمية المتوازية والمستدامة.

2- إدارة الأرض :

عند إعداد المخططات الحضرية يحدد لها سنة هدف وعدد من السكان ووظائف محدده وأولويات تنفيذ هذه الوظائف إلا أن التعامل مع الأرض بالأسلوب المتبع حالياً جعل الحيلولة دون تحقيق هذه الأهداف وذلك بالأستحواذ على الأرض وجعل منها مدخر وعدم اتاحتها للجميع مما جعل اراضى فضاء داخل المخططات الحضرية محجوزه لإجيال متوالية ومن خلال ماتوصلت إليه نتائج الدراسات التى اجريت على بعض المخططات تم حصر الفراغات منها :

5000 هكتار بمدينة طرابلس.

2000 هكتار بمدينة بنغازى.

900 هكتار بمدينة سبها.

600 هكتار بمدينة طبرق.

وقد ادى هذا التدهور فى إدارة الأرض إلى ظهور ظاهرة النمو العشوائى خارج المخططات الحضرية والمضاربة فى الأرض وارتفاع أسعارها.

3- توفر المعلومات

نجاح العملية التخطيطية تعتمد على ما يتوفر من معلومات لدى القطاعات ذات العلاقة وأهمها المعلومات الديمغرافية والإقتصادية إلا أن عدم توفرها فى الوقت المناسب كلف هذه العملية جهد ووقت فى تجميعها والتحقق منها وتحديثها.

4-الأراضى الزراعية

تقع معظم المناطق العمرانية داخل الأراضى الزراعية وخاصة مناطق الشريط الساحلى والجبل الأخضر والجبل الغربى.

ص.ب: 76078

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4893302 - 4893349
4896872 - 4896861

264

الرقم الإشاري : ....

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الموافق: ..../ ..../ .... ف

حيث تطوير المخططات والتوسع فيها داخل تلك المناطق يتعارض فى كثير من الأحيان والرقعة الزراعية المحدده الأمر الذى يترتب عليه صعوبه فى توفير مواقع النمو وإعتمادها بالشكل الذى يتمشى والأسلوب التخطيطى الصحيح.

5- تغير السياسات الأقتصادية :

المخططات المتداولة حالياً أعدت على أساس أن الدولة تدير الأنشطة الأقتصادية والخدمية وبتغيير هذه السياسة التى أعطت للقطاع الخاص دور كبير فى ممارسة هذه الأنشطة مما نتج عنه توسيع أفق هذه القاعدة والحاجة إلى توفير مزيد من المواقع وبشكل يتلائم مع متطلبات القطاع الخاص وقطاع الأستثمار وهذا أحد الأسباب الذى جعل عدم استجابة هذه المخططات إلى هذه المتغيرات والتى تحتاج إلى إعادة النظر فيها كاملة وهذا ماستهدف من المرحلة التخطيطية الثالثة.

6- تأخر اعتماد المخططات :

رغم أن القانون حدد الآلية لعرض المخططات واعتمادها ونص على لجان محدده لكل مستوى تتكون هذه اللجان من الخبراء المختصين وكل القطاعات ذات العلاقة إلا أن تأخر تشكيلها وعدم استقرارها أدى إلى تأخر البث فى تلك المخططات حتى أن البعض منها قد يحتاج إلى عملية تحديث مرة أخرى قبل العرض على الجهات المختصة.

7- قلة العناصر البشرية المتخصصة فى مجال التخطيط :

يشارك فى العملية التخطيطية العديد من التخصصات فى المجالات الأقتصادية والاجتماعية والطبيعية من دوى الخبرة والمؤهلات العليا ناهيك إلى ما يشهده هذا المجال من تطور فى استعمال التقنية الحديثة.

ورغم المحاولات للنهوض بالعنصر البشرى فى هذا المجال إلا أننا لم نتمكن من تحقيق ذلك حيث أن العزوف للعمل بهذه المصلحة كان السبب الرئيسى وراء عدم استقطاب عناصر جديدة بل فقدان مايتم تأهيله لوجود حوافز أفضل فى سوف العمل الليبي.

ورغم ما تمر به العملية التخطيطية من تحديات إلا أن الجهود المبذولة والتعاون الجاد كل القطاعات استطعنا خلال الفترة الماضية أن نواكب حركة التنمية السريعة وبالحجم الكبير الغير مسبوق من المشاريع الأنمائية وذلك بتمهيد الأرضية أمام كل مايجرى تنفيذه وتخطيطية للعملية التخطيطية من دراسات أولية وتحديد مواقع واعتمادات وذلك بما يضمن تحقيق تنمية مستدامة تخدم الأجيال الحالية والقادمة.

ص.ب: 76078	w w w . u p a . o r g . l y	4893302 - 4893349 ☎
طرابلس - حنزور		4896872 - 4896861

265

الرقم الإشاري : .... التاريـــخ: ..../ ..../ .... و.ر

.... المـوافق: ..../ ..../ .... ف

ومن المتوقع وجود إخفاقات صاحبت هذه المرحلة إلا أن حجم التنمية والتحديات التى سبق الإشارة إليها كان وراء ذلك.

وبناء على ما سبق ولتلافى سلبيات المراحل السابقة فإننا نوصى بالآتى:-

1- وضع إستراتيجية ثابتة لتنفيذ المخططات وذلك من حيث تحديد الأولويات واستغلال الفراغات بما يتمشى مع متطلبات نمو المخطط فى حينها .

2- ربط الخطط الإنمائية القطاعية بالمؤشرات التخطيطية .

3- وضع آلية يتم من خلالها توفير المعلومات المستخدمة فى العملية التخطيطية .وتطوير أساليب الأحصاء بكل جوانبه بما يخدم هذا الجانب.

4- الربط بين المؤسسات ذات العلاقة بالعملية التخطيطية وجعلها مكمنه لبعضها البعض.

5- وضع سياسة محدده وثابتة للنظام الإقتصادى وتحديد علاقة القطاع الخاص والعام فى تقديم الخدمات .

6- وضع سياسة واضحة وموجهة لبرنامج الإستثمار ودوره فى التنمية المكانية وعلى الأخص فى مناطق الدواخل .

7- الأهتمام بالعنصر البشرى فى مجال التخطيط واتاحه الفرصة للعاملين بهذا المجال للحصول على المؤهلات العليا والاستفادة من التقنية الحديثة والإطلاع على خبرات الدول المتقدمة فى هذا المجال ومنح الحوافز التشجيعية لإستقطاب العناصر المؤهلة للعمل فى مجال التخطيط العمرانى.

8- إعطاء الصلاحيات الكاملة للجان المنصوص عليها فى التشريعات والموكل لها مراجعة وتنقيح المخططات لتوفير الوقت فى اعتماد تلك المخططات والإستفادة منها فى حينها.

9- من الضرورى التضحية بجزء من الأراضى الزراعية فى بعض المناطق حافظا على البقية فى نوطين المخططات الحضرية.

نأمل أن نكون قد أوضحنا سياسة التخطيط العمرانى بالجماهيرية العظمى والتحديات التى تمر بها ونأمل أن تؤخذ توصياتنا بكل عناية.

والســـلام عليكـم

الدكتور / أحمد المختار النوصى

أمين لجنة إدارة مصلحة التخطيط العمرانى

صـور إلــى :-

الأخ/ أمين اللجنة الشعبية العامة.

الادارات المختصــــة.

ملـــف/ الموضوع

ص.ب: 76078	w w w . u p a . o r g . l y	4893302 - 4893349 ☎
طرابلس - حنزو...		4896872 - 4896861

266

The Libyan Government Authority
General People's Committee
Urban Planning Authority

Ref NO: 5,12,4960
Date: 27\12\2010

(Memorandum About the mechanism for preparing, approving and implementing plans and associated challenges)

Respected Secretary of the National Planning Council
After greeting „„„

The Libyan government body has relied in its planning policies on following the method of planning from the whole to the part, whereby a successive planning cycle is applied every twenty years that starts with preparing a national plan at the state level and then regional plans at the level of the main planning regions, including preparing local plans at the level of the sub-regions that reach us To urban plans, places of settlement of population, services and economic activities of an urban nature.

This Method was distinguished by basing the results of each stage on the previous stages, and the planning decision was based on a comprehensive economic and social study linking the relationship between the function, the geographical scope, the economic and social constituents.

The Libyan government body has gone through two planning stages:
. The first covered the period from 1968 to 1988.
. The second covered the period from 1980 to 2000.

The third planning Stage, which will cover the period from 2000 to 2025, is being prepared, in which the completion rate has reached 65%, as the preparation of the national plan (the Spatial Policy Plan, which was approved by the National Planning Council) has been completed.

Four regional plans have been prepared and are under review by the advisory committee to review and revise the plans formed by the National Planning Council.

Eighteen local plans (sub-regions) have been prepared and are under review by the Advisory Committee to review and revise the plans formed by the General People's Committee.

These planning stages were accompanied by a development in the legislation governing urban planning, the latest of which was the issuance of Law No. (3) of "2001 regarding urban planning and a number of technical regulations accompanying it. This law dealt with all previous cases."

Where planning systems at the national, regional, local levels and linking them to sectoral development plans and programs. As well as , systems for urban design work and integrated facilities, and the urban plans department has sought to include rural plans for settling rural and nomadic people as well as providing protection for agricultural lands and historical and archaeological sites and includes building outside the plans and

developing a mechanism for preparing and approving plans At all levels, it gave flexibility to follow-up and control violations.

Despite the characteristics that shaped this planning experiment that made it a pioneer compared to many countries in the world, especially the developing ones, according to the testimony of the international organisation sponsoring this activity (the Organisation of Human Settlements), but it is accompanied by many challenges that were the reason behind the failure to achieve the target and was the cause of the emergence of problems In one way or another, it was reflected in the planning process itself.

Among these challenges:

1- Implementation of plans:

The main goal of preparing a plan and passing it through the phases mentioned above is to implement it on the natural and make use of it in a timely manner, but it is left without implementation that becomes meaningless. The implementation of the plans has been delayed, whether in terms of implementing integrated facilities or in terms of basic services, as there are reserved sites of the first generation. Despite the establishment of an executive body recently, it was entrusted with the task of implementing those plans. However, the huge amount of plans and accumulations that appeared during the past periods and the great time difference between preparing them and starting to implement them made them go through problems and difficulties that led to their delay again.

That the implementation must be prioritised according to the type and function of the scheme and according to the stages of growth in it.

The timely implementation of basic services and the opening of roads will achieve the desired goals of the plan and make it an attractive not repellent environment.

As well as setting development plans and programs according to the planning indicators set by the national plan, the regional and local plans, achieving the desired goal, which is balanced and sustainable development.

2- Land Administration:

When preparing urban plans, a target year, a number of residents, specific jobs, and priorities for implementing these jobs are set. However, dealing with the land in the manner currently used has prevented the achievement of these goals by acquiring the land and making it a savings and not making it accessible to everyone, which made land space within the urban plans reserved for generations. In series, and through the findings of the results of studies conducted on some plans, spaces were counted, including:

-5000 hectares in Tripoli.

-2000 hectares in Benghazi.

-900 hectares in the city of Sebha.

 -600 hectares in Tobruq.

This deterioration in the management of the land led to the emergence of the phenomenon of random growth (Random Construction) outside urban plans, speculation in the land and the rise in its prices.

3 -Availability of Data

The success of the planning process depends on what data is available in the relevant sectors. The most important of which is demographic and economic findings, but the lack

of it in a timely manner cost this process effort and time in its compilation and verification of them and to update them.

4- Agricultural land
Most of the urban areas are located within the agricultural lands. Especially the coastal strip, Jabal Al Akhdar (**The Green Mountain**) and the Western Mountain areas (**Jafara Plain**).

As the development schemes and expansion of plans within those areas often conflicts with the specific limited agricultural area . which results in difficulty in providing growth sites and adopting them in the manner that Is consistent with the correct layout style.

5- Changing economic policies:
The plans currently in circulation have been prepared on the basis that the state manages economic and service activities and by changing the city, which gave the private sector a major role in practicing these activities. Which resulted in expanding the horizon of this base and the need to provide more sites in a manner that suits the requirements of the private sector , the investment sector, and this is one of the reasons. Which made the non-response of these charts to these variables that need to be fully reconsidered and this is what was targeted from the third planning stage.

6- Delayed approval of the plans:
Although the law specified the mechanism for presenting the plans and approving them, it stipulated specific committees for each level. These committees consist of specialised experts and all relevant sectors. However, the delay in their formation and their instability led to the delay in broadcasting in those plans. So that some of these plans may need to be updated again before the presentation. To the competent authorities .

7- Lack of specialised human resources in the field of planning:
Many specialisations in the economic, social and natural fields participate in the planning process with experience and higher qualifications, not to mention the development witnessed in this field in the use of modern technology. Despite the attempts to advance the human element in this field, we were not able to belittle this, as the reluctance to work in this interest was the main reason behind not attracting new elements, but rather losing what is being qualified for the existence of better incentives in the Libyan labor market. Despite the challenges the planning process is going through. However, the exerted efforts and serious cooperation in all sectors have been able during the past period to keep pace with the rapid development movement and the unprecedented large volume of development projects by preparing the ground for all that is being implemented and planning. The planning process, including preliminary studies, identification of sites and appropriations, in a way that ensures the achievement of sustainable development that serves the current and the next generations.

It is expected that there were failures associated with this stage, but the scale of development and the previously mentioned challenges were behind this.
Based on the above, and to avoid the negative aspects of the previous stages, we recommend the following:
1- Establishing a fixed strategy to implement the plans in terms of setting priorities and exploiting spaces in line with

Timely planned growth requirements.

2- Linking sectoral development plans to planning indicators.

3- Establishing a mechanism by which the information used in the planning process is provided, and statistical methods are developed in every way Its aspects are what serves this side.

4 - Connecting institutions related to the planning process and making them safe for each other.

5- Establishing a specific and consistent policy for the economic system and determining the relationship of the private and public sector in providing services.

6- Setting a clear and targeted policy for the investment program and its role in spatial development, especially in the interior regions.

7- Paying attention to the human element in the field of planning and providing the opportunity for workers in this field to obtain qualifications

And benefiting from modern technology, getting acquainted with the experiences of developed countries in this field, and granting incentives to attract qualified personnel to work in the field of urban planning.

8- Giving full powers to the committees stipulated in the legislations, which are entrusted with reviewing and revising the plans to save time in adopting those plans and making use of them in a timely manner. And it is necessary to sacrifice part of the agricultural land in some areas. Keep the rest in the settlement of urban plans.

We hope that we have clarified the urban planning policy in The Libyan Government and the challenges it is going through, and we hope that our recommendations will be taken with care.

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