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Department of Architecture

URBAN TRANSFORMATIONS IN NEW CITIES IN EGYPT

(CASE STUDY 6TH OF OCTOBER CITY)

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B. Sc. Architecture, Ain Shams University

A Thesis Submitted in Partial Fulfilment of the Requirements of

M. Sc. Degree in Architecture

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Dedication

Dedicated to:

My loving Mother, Father and brother,
My supporting husband and lovely children,

Every one of you had set an example in a way that brought along this success, without your continuous support, patience, love and sacrifice; it would have been a lot harder for me to be who I am.

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Abstract

Salma Ahmed Yousry

URBAN TRANSFORMATIONS IN NEW CITIES IN EGYPT
(Case study 6th Of October city)

A Thesis Submitted in Partial Fulfillment of the Requirements of M.Sc. Degree in Architecture.

Ain Shams University, Faculty of Engineering, Department of Architecture.

Cities, like human begins, have the common nature of continuous change. Being called growth, transformations or deviations reflects the same sense ensuring that a city is never in a stagnant state. The research explores the urban transformations that had taken place in the Egyptian new cities and resulted in huge new extension areas most of which are unplanned comprehensively leading to deviation from the goals and objectives for the city and the creation of an urban environment that lacks identity and cohesiveness.

These extension areas often require reassembling to fulfill the city future vision and updated targets. This research will illustrate different urban and land reassembling tools that could be applied on extension areas of new cities in Egypt, focusing on the case study of 6th of October city and the application of Land readjustment for the southern extension areas of the city.

The success of LR scheme in 6th of October will be based on the achievement of the strategic plan objectives for the city as common target for land policies.

Key words:
City growth, new cities, Land reassembling, Land Readjustment, Land ownership, urban management.

Author's declaration

I the undersigned, hereby declare that this dissertation submitted to Ain Shams University, Faculty of Engineering, Department of Architecture; is my original work and no part of it was submitted to any other institution or university to achieve any degree and that all the references to the work of other authors have been duly acknowledged.

_____

Salma Ahmed Yousry

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Last but not least the staff from Institute for Urban Housing and Development Studies (IHS), Erasmus University and Lincoln Institute of Land Policy for the precious experience provided during my diploma months in Rotterdam; especial gratitude to Carlos Morales my diploma supervisor and great teacher.

Abbreviations

GOE	Government of Egypt
MHUUD	Ministry of Housing, Utilities, and Urban Development
GOPP	General organization for physical planning
NUCA	New Urban communities Authority
October city	6th of October and Sheikh Zayed city
CAPMAS	Central Authority for Public Mobilization and Statistics
LR	Land Readjustment
UNCHS	United Nations Centre for Human Settlements (Habitat)
LDDC	London Docklands Development Corporation
REHCO	Real Estate Holding Company
BSE	Beirut Stock Exchange
NHP	National Housing Program
TOD	Transit oriented development
GCR	Greater Cairo Region
JICA	Japan International Cooperation Agency
BDC	Beirut development Centre

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Introduction

The term GCR often describes the region of Cairo city (old Cairo) and the surrounding urban areas (including new cities that had grown to combine with the old -already expanding- capital). The GOPP defines GCR as the area encompassing the contiguous urbanized area of the three Governorates of Cairo, Giza and Qalyubia (mainly the cities of Cairo, Giza, Shubra Al Khayma) and the eight new urban communities that surround it.

One of the main reasons why major changes took place in GC is due to its regional importance as the prime engine within the country as the economic, cultural and urban capital. The GCR share of national population increased from 12.5% in 1960 to approximately 20% in 2006. The GCR share in total urban population reached the peak of 43.3% in 1976 then stabilized between 1976 and 1986 around 42.3% then slightly declined to 40.3% in 1996 and is now about 40%.[1]

There are several proposed reasons for the importance of GCR within the future vision for the country in few major aspects that could be summarized as follows and illustrated in Figure 1:

- Center for industrial development providing value-added activities
- Center for information and technology
- Center for tourism
- Center for finance
- Center for administration

1 UNDP, "Strategic Urban development plan for the GCR", Cairo, 2007

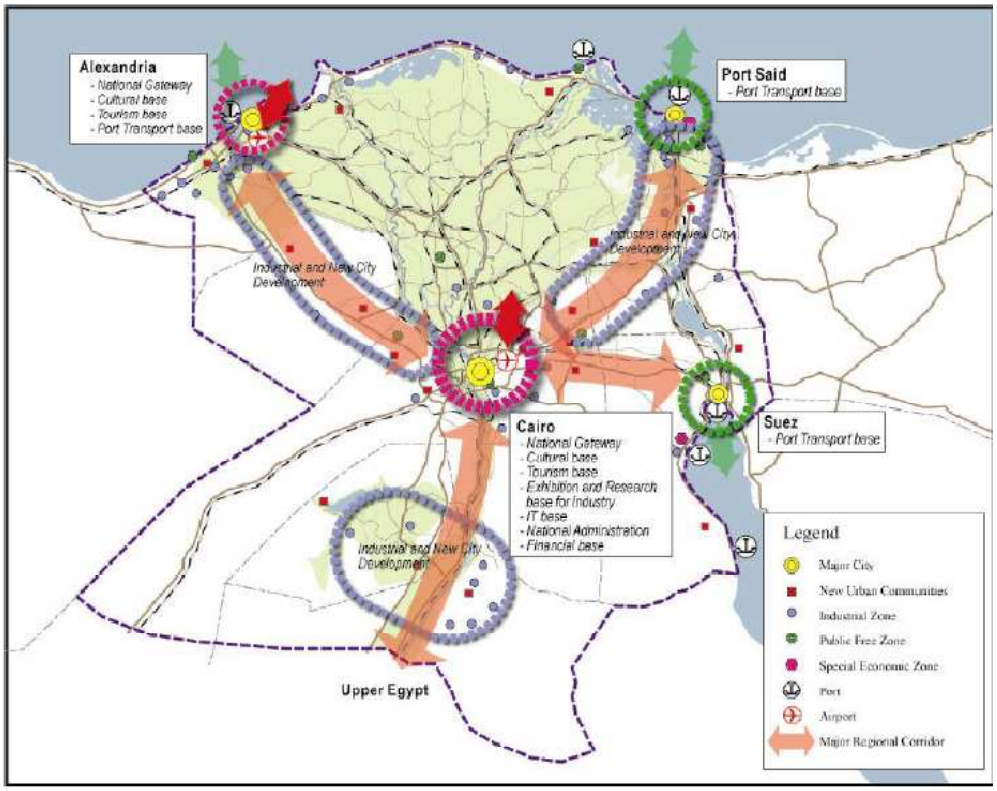

Figure 1: Cairo Region importance in Egypt's future vision

Source: JICA Study,2008

The map next page describes the area where this research will focus, including seven main new cities; 6th October\Zayed, 15th may, El Obour, El Sherouk, New Cairo, Badr, and 10th of Ramadan.

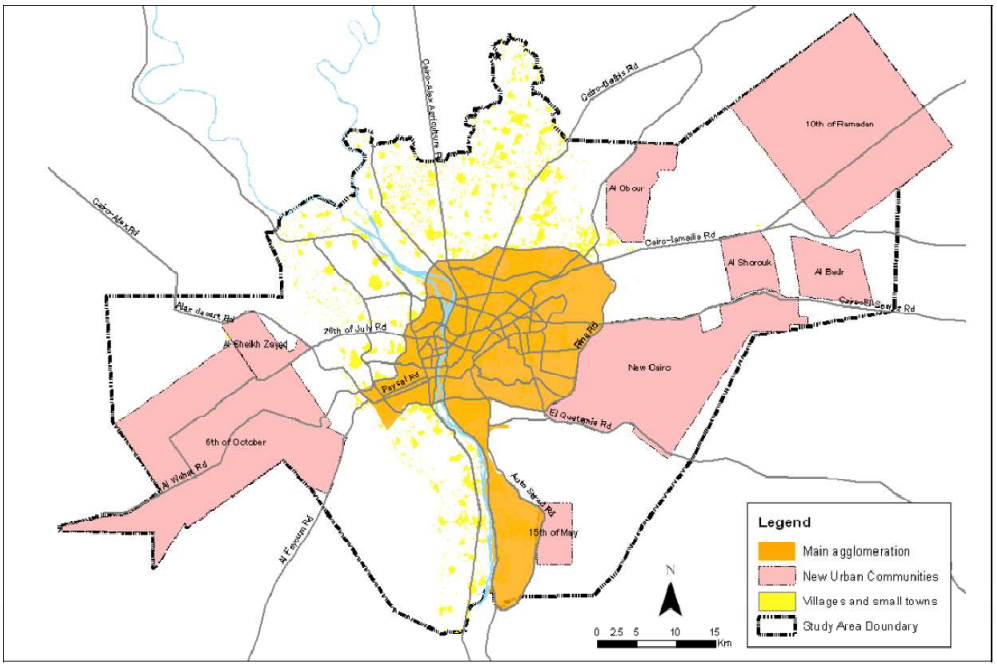

Figure 2: GCR study area

Source: JICA Study,2008

In 1949 the Municipality of Cairo was created, which was then transformed into the Housing and Utilities Directorate of the Defense organized through a public sector concession company affiliated to the Ministry of Housing. By 1966 there four similar companies were created: Nasr City, Heliopolis, Maadi, and Ain Shams, Then most informal areas started to be formed.[1]

The first change started with the 1952 revolution, before which Egypt's civil areas -excluding the desert areas which were controlled by the Ministry of Military- were divided into 14 provinces under the authority of the Ministry of interior affairs and enforcing mandates of other related ministries. The revolution introduced new reforms changing the structure of the Egyptian society from dominance of the feudal system to strong industrial and socialist systems.[2] One of the important changes influenced by the revolution and the reforms was the establishment of field units in the central ministries as a first step toward decentralizing the urban management of the country.

1 "Urban Slums Reports: The case of The case of Cairo, Egypt", Cairo, 2003

2 Soliman, Ahmed Mounir, "A possible way out: formalizing housing informality in Egyptian cities ", Beirut, 2003,

These units were provided by necessary equipment, technical skill and full responsibility to carry out their tasks[1].

One other important change the 1952 revolution enforced was a better vision for the importance of urban development strategies in Egypt. Unfortunately with the fast social, political and economic changes at that time is was hard to cope with the growing urban problems that faced the society. In 1956 the idea of new cities was not literally on the urban planning agenda but the main concept of creating new communities around the main Cairo city had started to evolve.

The first master plan for Cairo -which started in 1953- aimed at determining industrial locations, addressing the development in the national territory and offer better living conditions for the middle class.

Great importance was given to Industrial development, 6 satellite suburban[2] communities were proposed which were more or less industrial towns in nature within a 30km radius around Cairo on already existing industrial centers. Beside their industrial nature, those cities were also to absorb Cairo's excess population growth. This was in addition to two other minor centers (El Bassatine and Sekkiet Nekki). The future extensions of the Cairo region were to be suited in the eastern desert of Cairo (existing Nasr city).

After the 1956 war, reconstruction of Suez Canal region was the priority and projects in Cairo region were only in essential cases. For this reason in addition to the long term goals of the plan, only Helwan town was selected of the 6 towns. This was followed by evolving of some other areas that were not planned for like El Mohandessien and Shubra El Khiema, and this shift in the Master Plan recommendations had negative impacts on the future of the metropolis; attracting new migrants, causing misdistribution in the country's resources and the conversion of some of the best arable lands. This called at the late 1960s for a new Master Plan for GCR.[3]

The next plan for GCR was started in 1966 by the formed Greater Cairo Higher committee, published in 1970 and was approved in 1973.

At this time, Cairo had become the largest industrial area in Egypt, the regional metropolis of the Arab world and the largest city in Africa. As a

1 UN HABITAT, "Metropolitan Planning and Management in the Developing World: Spatial Decentralization Policy in Bombay and Cairo", Nairobi, 1993

2 Qaha, abou Zaabal, Helwan, Birkash and El Tebbin.

3 United Nations Centre for Human Settlements, "Metropolitan planning and management in the developing world: spatial decentralization policy in Bombay and Cairo", UN HABITAT, Nairoubi, 1993,

result, the main goal for this master plan was to try to integrate the burst out Cairo areas especially in regards to infrastructure and transport.

The planning area was 68,000 fd and population 6.1 million in 1966. The target population (in 1990), was projected in the range of 14.7 to 16 million, which turned out to be a little too high.[1]

Some of the important problems highlighted in this master plan could be summarized as follows:

- Very high density & increasing urban population
- Inadequate infrastructure networks
- Deterioration of housing stock (Advanced decay of medieval and old city)

The plan proposed redistribution of population to balance overpopulated areas and shelter 9.5 million inhabitants. The 5.3 surplus were distributed on four satellite cities shown in the Master plan map (Figure 3). The location of these new cities was based on the importance of preserving agricultural land, easy access and economic development costs.[2] This plan was the first to define ring roads system for GC agglomeration by two circular ways, and crossing radial connecting highways and regional roads.

Of the New cities we know today, 10th of Ramadan, 6th of October, El Obour and 15th of May were formulated in this master plan.[3]

1 El-Kouedi, Hazem, Madbouly, Mostafa and The World Bank, "Tackling the Shelter Challenge of Cities Thinking it Through Together", Cairo, 2007,

2 United Nations Centre for Human Settlements, "Metropolitan planning and management in the developing world: spatial decentralization policy in Bombay and Cairo", UN HABITAT, Nairoubi, 1993,

3 Sims, David and Séjourné, Marion, "Understanding Cairo", Cairo, 2006,

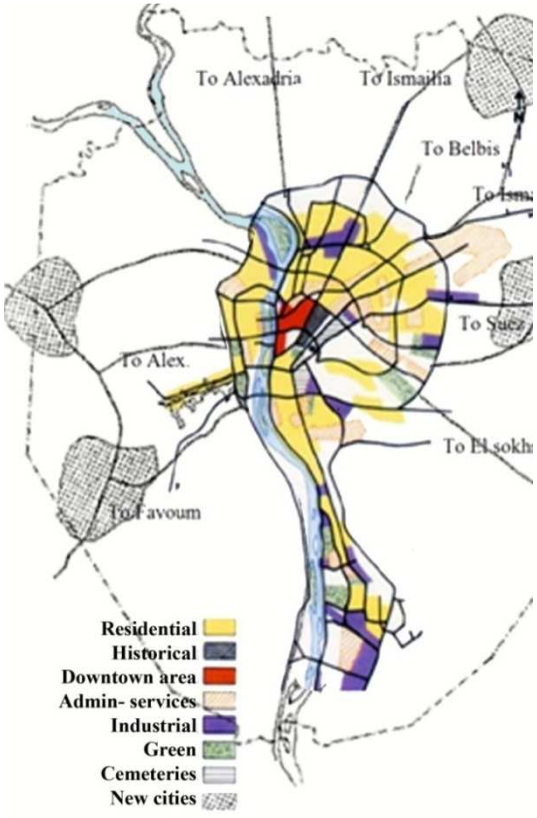

Figure 3: GCR Master Plan 1973

Source: Hazem ElKewidi,1998

This Master plan had better chances of success with the growing institutional and legal framework and the post war political circumstances; however after signing the peace treaty with Israel, the priorities were again shifted to the reconstruction of Suez Canal towns and navigation.

In 1973 Cairo specific agency of management and planning was transformed into national agency of regional & urban planning (GOPP).

The evolving economic liberalization gave Cairo (and Alexandria) the opportunities to associate with international companies and research agencies to be involved in the management of the city. Therefore Cairo needed to upgrade in order to attract the international investors, which was performed in various sectors:

- Infrastructure, transport & communication:
    - Renovation of road network & 6th of October bridge (German company-1973)

  - New transport & traffic studies (international firms 1974-1976)
  - New coherent city plan (British consultant 1980)
  - Cairo underground works (1981-1988)
- Urban and regional planning
  - New towns concept (1974-1979) [1]

These local authorities were further supported by laws to ensure decentralized implementation of new urban plans, however the planning itself and decision making was still performed by the main government. "*The system was amended in 1979 to strengthen the authority of Governors, who were granted considerable powers and have become the direct representatives of the President. They have control over housing, public utilities, land development, slum upgrading and most aspects of urban planning, design and project implementation*"[2].

Part I of this research will study the urban growth of new cities around Cairo since their creation leading to the existing situation New Cities in Egypt have achieved with special focus on the growth of 6thOctober city (the case study).

1 United Nations Centre for Human Settlements, "Metropolitan planning and management in the developing world: spatial decentralization policy in Bombay and Cairo", UN HABITAT, Nairoubi, 1993,

2 Mona Serageldin, "Planning and Institutional Mechanisms", Aga Khan Award of Architecture, Cairo, 1985, P.121-128

Contention

The research addresses the definition of an urban development tool to be applied on the southern extensions of 6th of October city that would help get over the results of unplanned city transformations and achieve the aspired vision and strategies for the city.

Research Scope

The research will review the transformations that took place in the new cities in GCR in Egypt with special focus on the case study of October city. The study will then explore three main land development tools that were able to overcome relevant negative changes in cities in the international experience and support their development focusing on the socio-economic impact of the different tools. LR will be chosen to be applied on 6th of October southern extension areas. Lebanon and Columbia LR schemes will be illustrated to support the application. The study will conclude the gained socioeconomic benefits from the application relating to the strategic plan objectives defined in 2008.

Hypothesis

- The concept of New Urban communities in Egypt started more than thirty years ago but only began to be relatively successful and attract population recently.
- Various social, political and economic changes in the Egyptian society lead to the transformation of the urban areas in the country especially around Cairo region.
- The changing policies, supply driven market and lack of comprehensive vision lead to the existing patchy development in southern extension areas in 6th of October city.
- The application of a well chosen urban development reassembling tool would maximize 6th of October city potentials and get over the existing challenges facing the application of the strategic plan prepared for the city.

Objectives

This study aims at providing an urban development tool to help transform October city existing urban situation to the desired vision defined in 2008. This is to be achieved through a number of sub-targets illustrated as follows:

- Review history of development of new cities in GCR and specially October city to analyse the reasons creating its existing situation.
- Explore current challenges facing October city and the application of the aspired goals and vision.
- Define the relevant development tool that would overcome the challenges.
- Conclude social, economic and physical benefits added to the city through the transformation application.

Methodology

The study starts with a review of the history of new cities development and transformations in GCR with special focus on 6th of October city and its existing situation, defined vision and strategic plan for the city analysing the main challenges facing the implementation of the strategic plan and vision for the city and different land reassembling tools that could applied to overcome these challenges. The deduction method will then be used to conclude the most suitable tool to be applied in October to help the city achieve its envisioned objectives analysing different international examples and their relation to the case study.

The Application method will be implemented in applying the chosen tool on the case study, and the analytical comparative method will be implemented in analyzing the application though comparing different scenarios with\without the proposed scheme according to original strategic goals.

Finally the deduction method will be used in concluding the benefits added to the city by the application.

The methodology of the study is illustrated in Chart 1

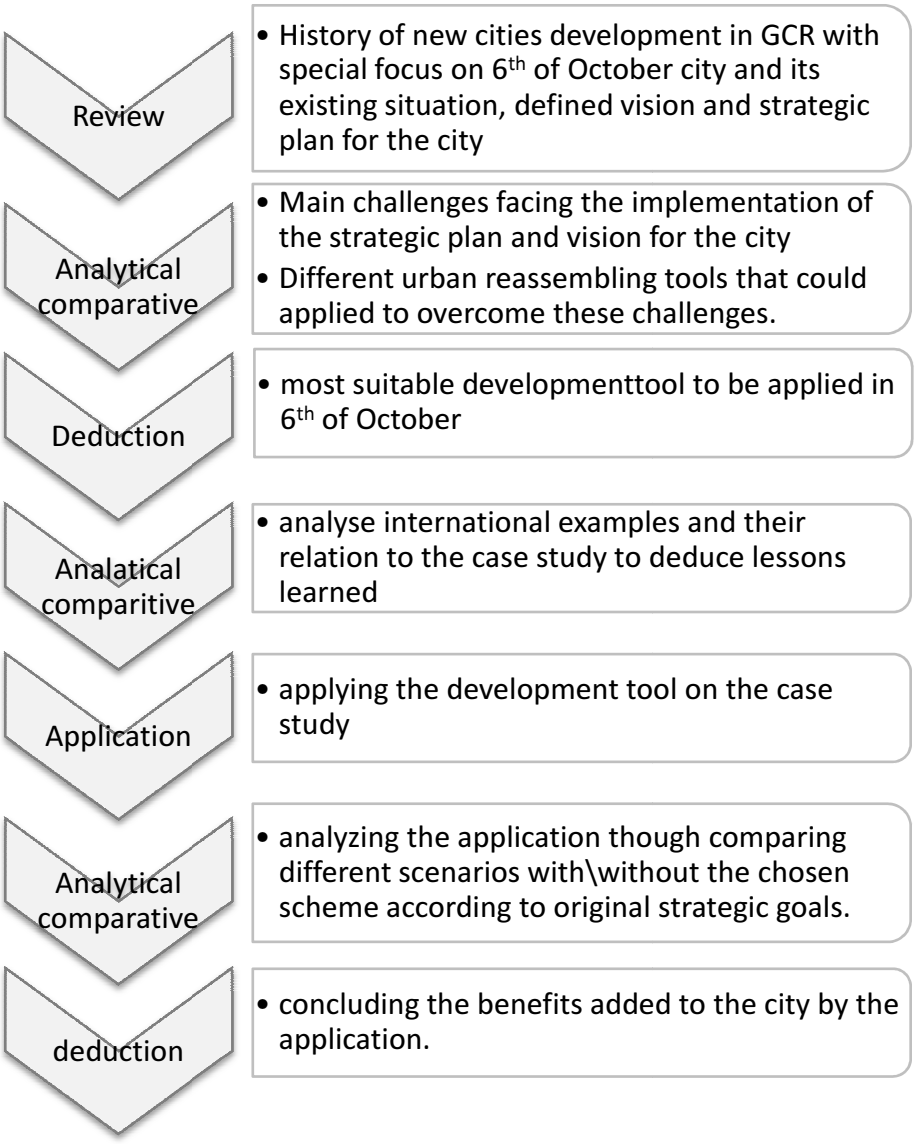

Chart 1: Study Methodology

Structure Overview

The research is composed mainly of three parts illustrated as follows:

Part I: New cities in Egypt

Chapter I: Launching and transformations of new cities in Egypt focusing on GCR

"Reviews the history of launching of new cities in Egypt with special focus on greater Cairo and the growth of new cities within its region ending with the summarized changes that took place in those cities since their first planning till now"

Chapter II: 6th of October city development, existing status and aspired vision

"A focus Study on the history and development of 6th of October city; its original goals, planning and its rapid physical growth leading to its existing situation and the vision of the strategic plan with its challenges that needs to be overcome"

Part II: Guiding future urban transformations in new cities

Chapter III: Land reassembling tools

"A review of different urban development tools that could be applied to support the future development of 6th of October city and a comparative analysis to chose the most appropriate tool to be applied on October case which would then be further explained"

Chapter IV: LR scheme in the international Experiences

"Analyzing the experiences of Columbia and Beirut in LR application and the lessons learned from them"

Part III: Applying LR on 6th of October city:

Chapter V: 6th of October Southern plan with LR scheme

"Explaining the application and process of LR scheme on 6th of October southern extension areas and its proposed management scheme"

Chapter VI: The concluded benefits for 6th of October by applying LR scheme

"The final chapter concludes the added social, economic and urban benefits to the city through LR application comparing the study area with\without LR scheme and the achievement of the strategic plan goals through either case"

The following table shows the structure of the research, being classified into parts including different chapters.

Table 1: Structure of the study

Research structure	**Part I** New cities in Egypt	**Ch. I** Launching and transformations of new cities in Egypt focusing on GCR	The need of new cities in Egypt	**Background**
			Launching of New cities and NUCA formation	
			Development of NUC in GCR (1980s -1990s)	
			NUC's Shift (2001-2007)	
			The changes of NUC in GCR from their original plans	
		Ch. II 6th of October city development, existing status and aspired vision	Original Planning, goals and Objectives for October city	
			Successive extensions and existing situation	
			Strategic plan and vision	
			Main challenges facing the vision for the city	
	Part II Guiding future urban transformations in new cities	**Ch. III** Land reassembling tools	Urban tools applied for reassembling and urban development projects	**Theory**
			Comparative example of urban transformation tools	
			Conclusion and recommended tool (LR)	
			Background and definition of Land Readjustment	
			LR process	
		Ch. IV Lessons from international experience and cases	Comparing international examples of LR application	
			The Colombian experience in 'Nuevo Usme'	
			The Solidere Region in Beirut, Lebanon	
	Part III Applying LR on 6th of October city	**Ch. V** 6th of October Southern plan with LR scheme	Site boundaries definition	**Application**
			LR application and process proposed	
		Ch. VI The concluded benefits for 6th of October by applying LR scheme	Defining evaluation criteria	
			Comparing the study area with\without LR scheme	
			Conclusion and recommendations	
			Future research work proposed	

Part I: New cities in Egypt

Chapter I: Launching and transformations of new cities in Egypt focusing on GCR

As reviewed in the introduction of the study, by the end of the 1960s Egypt was suffering from obvious urban challenges especially within its growing GCR; the thing that had further encouraged the application of the early idea of decentralizing out of the narrow valley. In this chapter the main reasons that had lead to the creation of NUC in Egypt are illustrated.

.1.1 The need of new cities in Egypt

The GOPP saw an urgent need to decentralize out of the growing urban metropolis of Cairo and generally the Nile valley of Egypt. The main reasons behind this idea were due to the growing urban problems that the shifted priority to Suez –explained in the introduction of the study- caused.

In the early 1970s, and after abandoning the designed master plan, the region –and Egypt in general- was suffering from a number of main urban challenges that could be explained in the following:

.1.1.1 Population growth and distribution

Country's population

The first Egyptian census was held in 1882 as a result of early awareness of population increase in Egypt. Since then, it was proved that the Egyptian population was increasing rapidly at a growth rate of 2.1% annually as shown in the following chart and explained during the National Population conference, 2008[1] as follows:

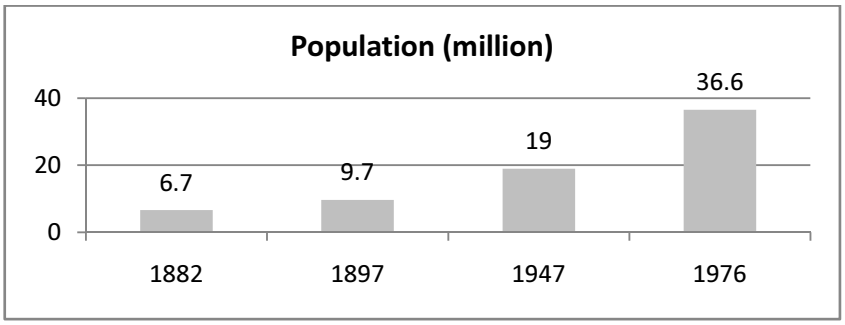

Chart 2: Population increase in Egypt (1882-1976)

1 National Population conference, "Towards Life Without Suffering", Egypt, 2008,

The problem has always been not only the growth in population, but also the distribution of this population among the Egyptian lands, which is a problem we are still trying to face in the present time in the vision for Egypt 2050.

"*To tackle the population problem, we should not just focus on reducing growth,"* noted Prime Minister Nazif at the National Population conference. "*We should also address demographic distribution and characteristics. Human resources could be a great asset if capable of production, which is not currently the case*." [1]

As shown in the figure and the statistics, only about 3% of the Egyptian Land was inhabited which was one clear indicator for the need of a better distribution of population and desert urbanization.

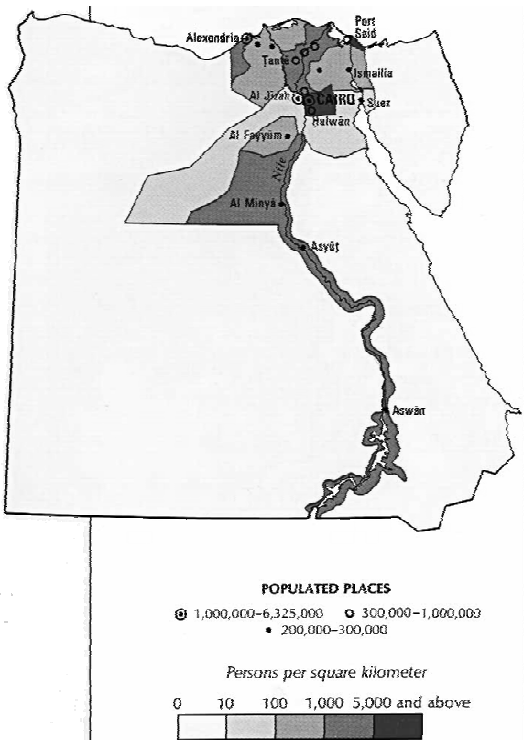

Figure 4: Egypt Population Density (1986) [2]

Source: based on 1986 census data by first level administrative division, www.lib.utexas.edu , Created 1993

1 Leila, Reem, "Bigger but not better",Al Ahram weekly,901, 2008

2 based on 1986 census data by first level administrative division, www.lib.utexas.edu , Created 1993

GCR population

Since GCR was the main urban community at the time and with people migrating from villages and from Suez after the 1965 war, the growth in GCR was even higher reaching 4.1 %. The following table shows the population growth in GCR.

Table 2: Growth of the Population of the Greater Cairo (1863-1968)

Year	Population	Growth rate (Percentage per year)
1863	305,000	
1882	374,000	1.1
1927	1,060,000	2.3
1937	1,312,000	2.2
1945	2,162,000	6.4
1968	5,487,000	4.1

Source: JICA Study,2008, P.31. sourced from : City of History, Raymond, 2004 – and Greater Cairo Region Long Range Urban Development Scheme, GOPP

As illustrated in the table, the GCR growing rates exceeded the ability of the urban areas to absorb leading to many overpopulation and informal crawl on either new desert subdivisions or agricultural delta lands.

.1.1.2 Unemployment

After the 1952 revolution and by the early 1960s the employment system in Egypt was facing a strong urge of employers in the formal sector (civil services, governmental officials, etc) to sought informal jobs outside the working hours which guaranteed them well paid opportunities at both sides.[1]

This left the lower social classes in Egypt with even less job opportunities compared to the growing labour force, which was increasing by 2.6% annually.

Over half a million people reach employment age each year, but the economy is growing too slowly to provide them with jobs.[2]

1 Soliman, Ahmed Mounir, "A possible way out: formalizing housing informality in Egyptian cities ", Beirut, 2003,

2 National Population conference, "Towards Life Without Suffering", Egypt, 2008,

.1.1.3 Lack of Affordable housing and shelter

In the 1950s and in an attempt to help protect tenants of agricultural land, commercial property, and rental housing; a number of rent control laws were introduced which fixed rents in nominal terms to the prevalent rates in that time and guaranteed indefinite occupancy rights to tenants. [1]

By time, these laws lead to rents deviation from market rates which in turn dried up the supply of privately owned rental land, commercial property and housing which resulted in conversion of rental contracts into purchase contracts, with incomplete and poorly defined property rights for both sides.

The problem cycle extended further as property owners –in response to lack of rental housing- began speculating with their properties either for investment or for their future generations. [2] The result was a shortage in housing units by the year 1964. *In 1959, investments in housing were less by 50% than in 1956. In 1962, investments were decreased by 42% than in 1959.*[3] Adding to the previous the absence of mortgage finance in Egypt, The access to affordable housing and accordingly the growing informal market in the late 1960s became a growing problem that needed further attention by the upcoming five year plan for Egypt.[4]

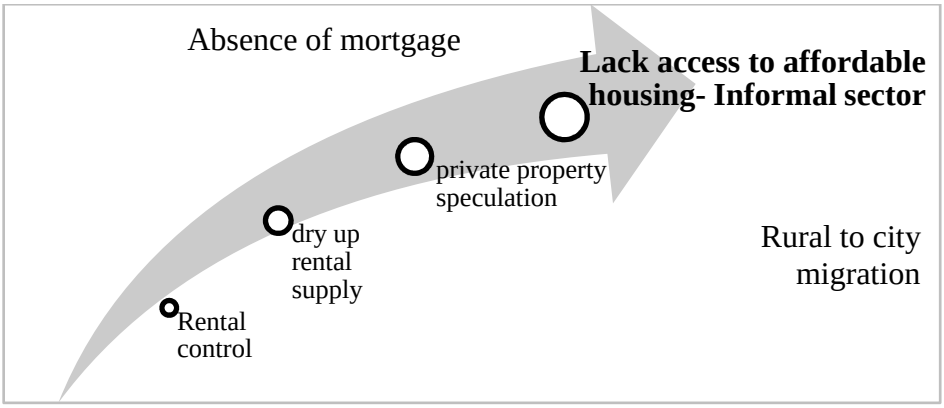

Chart 3: housing problems in Egypt (1960s)

Source: Author

1 Law no. 199 of 1952 stated rents reduction by 15% for buildings constructed between 1944 and 1952

Law no. 55 of 1959, reducing housing rents by 20 % for buildings constructed

2 Assaad, Ragui and Ramadan, Mohamed, "Did Housing Policy Reforms Curb The Delay In Marriage Among Young Men In Egypt?",Policy Outlook,1, 2008

3 Aref, Hisham, "Housing Generated By (Re)generation, Egyptian experience", ENHR, Cambridge, 2004

4 The second five year plan was expanded to seven years (1965-1972)

Things became worse with the 1967 war as most of the country's financial plans were directed to the war- as explained earlier- and development plans were not the priority, with the increasing migration of population from Suez to Cairo and thus the increased demand on housing provision.

By the 1960s a number of informal sectors in Egypt and specially the GCR were growing, including: Bolaq el Dakrour, Manshiet Nasser, Waraq El Hadir, and Imbaba.[1]

.1.1.4 Industrial Pollution and Agricultural land conversion

The World Bank,2008 explained the concept of industrial areas formation within the urban zones stating that *"Since the 1952 Revolution and subsequent nationalizations, the creation and operation of industrial areas in Egypt has been almost exclusively a State undertaking. Large smoke-stack industrial areas were created or expanded in the 1950s and 1960s in Helwan, Shubra el Khaima, El Mex, Moharam Bey, Suez, and Mahalla el Kubra, dominated by large public sector enterprises. Public sector heavy industries were also established in Upper Egypt in Naga Hamadi and Aswan. Under Sadat an authority for industrial free zones was established with sites in Alexandria, Port Said, and eventually Cairo for private as well as public sector investors.[2] "*

These industrial zones lead to the increased levels of air pollution within urban areas which added to the already contaminated water and noise pollution, calling for a new idea to locate industries away from inhabited areas.

Besides being contaminated from industrial wastes, Agricultural lands were also invaded by growing urban expansion as an easier access to land within the tight land providing policy and since building permits were not necessary outside city limits. From 1947 to 1967 most expansions on agricultural land was formal; especially in Mohendesiin, Dokki, Hadaek el Quba, Abbassia and Shobra. This was either directly government authorized or through private land development companies.[3]

1 Soliman, Ahmed Mounir, "A possible way out: formalizing housing informality in Egyptian cities ", Beirut, 2003,
2 The world bank, "Toward an urban sector strategy", Egypt, 2008
3 "Urban Slums Reports: The case of The case of Cairo, Egypt", Cairo, 2003

.1.2 Launching of New cities and NUCA formation

Having illustrated the main reasons that encouraged the GOPP to propose the creation of new cities, the main objectives for this new policy was to overcome the main urban challenges for specifically the GCR and generally the whole country.

.1.2.1 The needed objectives for the new urban policy

The new policy had to overcome the disabilities of the system and achieve the following objectives:

- Decentralize away from the Nile valley and into the desert areas aiming at increasing the urbanized land of the country and guarantee a better population distribution of future and existing inhabitants leading to an overall increase in the quality of life of inhabitants and better provision of services and infrastructure.
- Creating new investment attractions that would refresh the market and provide new job opportunities that cope with the growing demand.
- Providing alternatives to informal settlements around the main urban areas and better access to affordable land and housing
- Move the industrial areas away from urban communities to better well chosen locations where they have minimum effect on inhabitants and natural resources. The new industrial areas should have a studied access to infrastructure and transportation facilities that could also be an incentive to support the national and international industrial investment.

Thus, the GOE figured out that creating new towns in the desert areas outside the Nile valley could be a first step toward achieving the objectives of the new urban strategy; together with developing the existing areas and having comprehensive development plans for the country sustainable future growth could be achieved.

.1.2.2 The first generation of new cities in Egypt

Within the general framework of urban changing policies, new cities were first launched in the early 1970's aiming explicitly to "*attract population, create an industrial base outside the Valley, and attract public and private investments*".[1]

The new towns policy was launched in 1974-75, *the first new town venture began in 1976 with the declaration by President Sadat of the GOE's intention to build a new, totally self-sufficient new town at a desert location about halfway between Cairo and Ismailia. To be called Tenth of Ramadan, this new city was to have a solid economic foundation based on manufacturing, and workers in the industrial enterprises were to reside in government-built housing blocks.*[2]The site selection for the new cities was based on a number of factors that could be summarized as follows:

- Keeping an "economic" distance between the principle city and the new one
- Close to a primary network & benefit from existing infrastructure
- Near regional capital
- Geographical aspects of the land (preferable flat land)
- Attraction location for population (new working force)
- Water resources (wells)
- Confirm national security strategy[3]

The early new cities were located by the central government and belonged to their governorate until the creation of the New Urban Communities Authority in 1979.

1 The world bank, "Toward an urban sector strategy", Egypt, 2008. P49
2 Ibid.
3 United Nations Centre for Human Settlements, "Metropolitan planning and management in the developing world: spatial decentralization policy in Bombay and Cairo", UN HABITAT, Nairoubi, 1993,

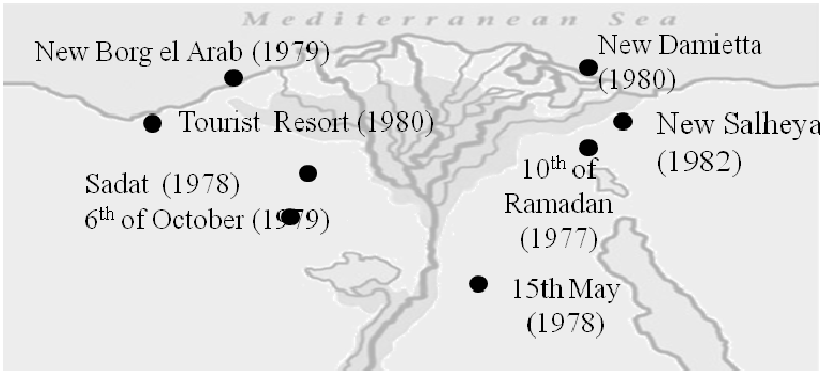

Figure 5: First Generation New cities in Egypt

The first generation of the new cities was located around main urban agglomerations, i.e. around GCR, northern delta, Alexandria area as shown in the previous figure with target populations of between 250,000 to 500,000.

As for the GCR, by the end of the 1970s three main cities were evolving: 10th of Ramadan in the north east of Cairo, 6th of October in the west and 15th of May in the south. The new cities in GCR in the late 1970s are shown in the next figure.

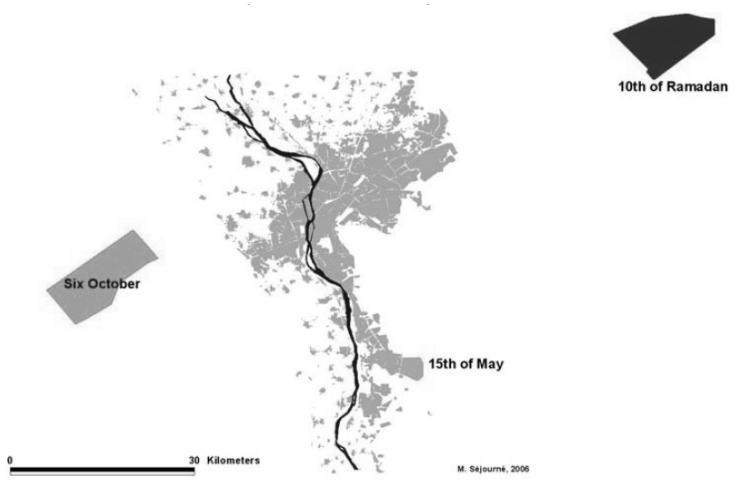

Figure 6: New Cities in GCR (end of the 1970s)

Source: David Sims, et al.,2006

.1.2.3 New Urban communities authority formation

Few years after the creation of the first generation, the legislative and institutional framework for the new towns was formalized with the promulgation of the New Urban Communities Authority (NUCA) by Law (no. 59 of 1979) within MHUUD (ex-reconstruction). *At the local level, according to Law 43/1979, Governorates have authority over most urban planning and management activities such as housing, land development and infrastructure. Furthermore, urban planning Law 3/1982 set the responsibilities of these activities upon the LGUs with the cooperation of GOPP*[1].

.1.2.3.1 NUCA's rights

NUCA enjoyed a number of rights that no other authority had before; such as rights to:

- Declare special development zones on State-owned desert lands (upon agreement with the Armed Forces and the Department of Antiquities).
- Develop and sell lands within the special zones and to retain these revenues to finance further development[2].

.1.2.3.2 NUCA's responsibilities

NUCA would basically be responsible of the planning and development of basic services & infrastructure until once developed the new towns were to revert to standard municipal local administration under the relevant governorate.[3]

The basic responsibilities\scope for NUCA were to:

- Outline policy, plans and programs for the creation of NUC
- Study and select suitable locations for NUC
- Organize & coordinate the ministries and public bodies involved in the provision of infrastructure for the projects
- Implement and evaluate the projects (NUCs)
- Conclude loans and obtain grants for the projects
- Promote the sale, lease or use of lands in the NUC
- Divide up the NUC to towns, villages, zones an quarters and create building standards and issue building permits for them.

1 The world bank, "Toward an urban sector strategy", Egypt, 2008
2 neither Governorates nor ministries could enjoy
3 The world bank, "Toward an urban sector strategy", Egypt, 2008

.1.2.3.3 NUC proposed by the law in 1979

This law declared the launching of 18 new cities in Egypt, with total area 2400 KM^2 representing 6.3 % of Egypt's inhabited area with overall target population of 6,145,000 inhabitants distributed over four types of cities as following:

Table 3: New cities proposed by the 1979 law[1]

title	Target population	Description	cities
Large new cities[2]	500,000	Suited at distance between 40-90 Km from Cairo, Ismailia & Alexandria	10th Ramadan -6th October- Sadat- Borg El Arab
Satellite cities	250,000	30Km away from the capital	15th May, El Obour, Badr, El Amal, New Domietta (the port city)
Cities coupled to old cities of	60,000 - 130,000	middle and upper Egypt on the desert fringe along the narrow valley	Bani Sueif – Sohag – Minia – Assiut - Aswan
New settlements (Tagamoaat)	100,000	New desert zones	El Noubaria – El Saleheya

Source: based on data from United Nations Centre for Human Settlements,1993

1 Based on United Nations Centre for Human Settlements, "Metropolitan planning and management in the developing world: spatial decentralization policy in Bombay and Cairo", UN HABITAT, Nairoubi, 1993,

2 Priority projects

.1.2.3.4 NUCA administration chart within the MHUUD

The new communities' authority currently lies within the MHUUD shown in the chart below:-

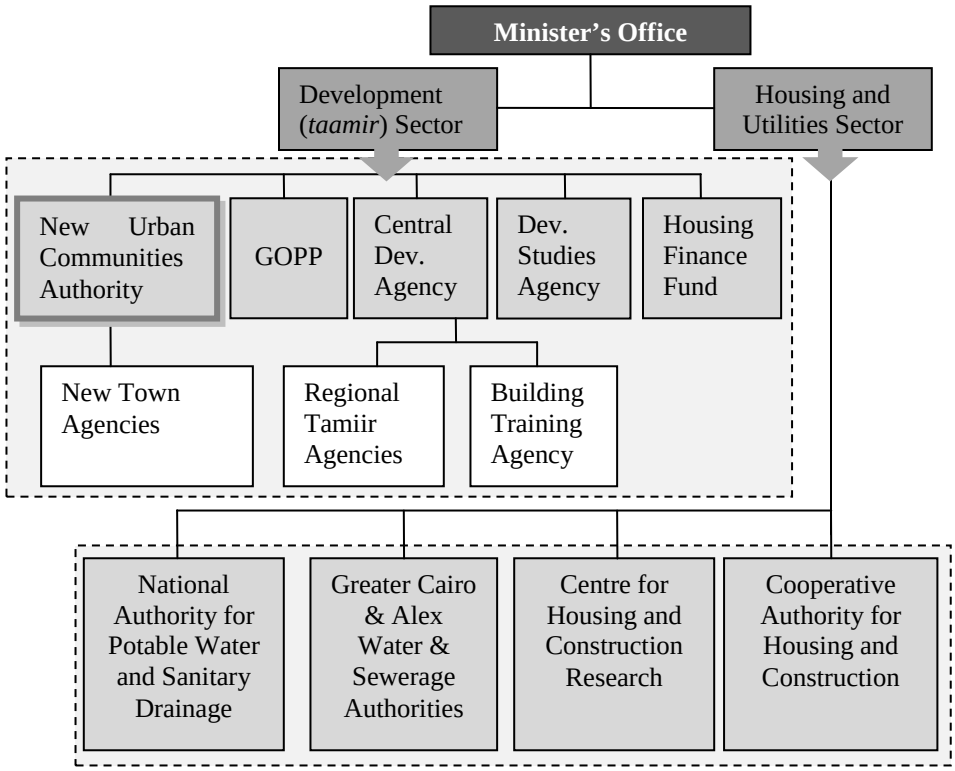

Chart 4: NUCA within MHUUD administrative chart[1]

Source: MHUUD,2002

The existing administrative chart for the NUCA is illustrated as follows:

1 Based on MHUUD, "Mubarak wal Omran", Cairo, 2002, p. 21

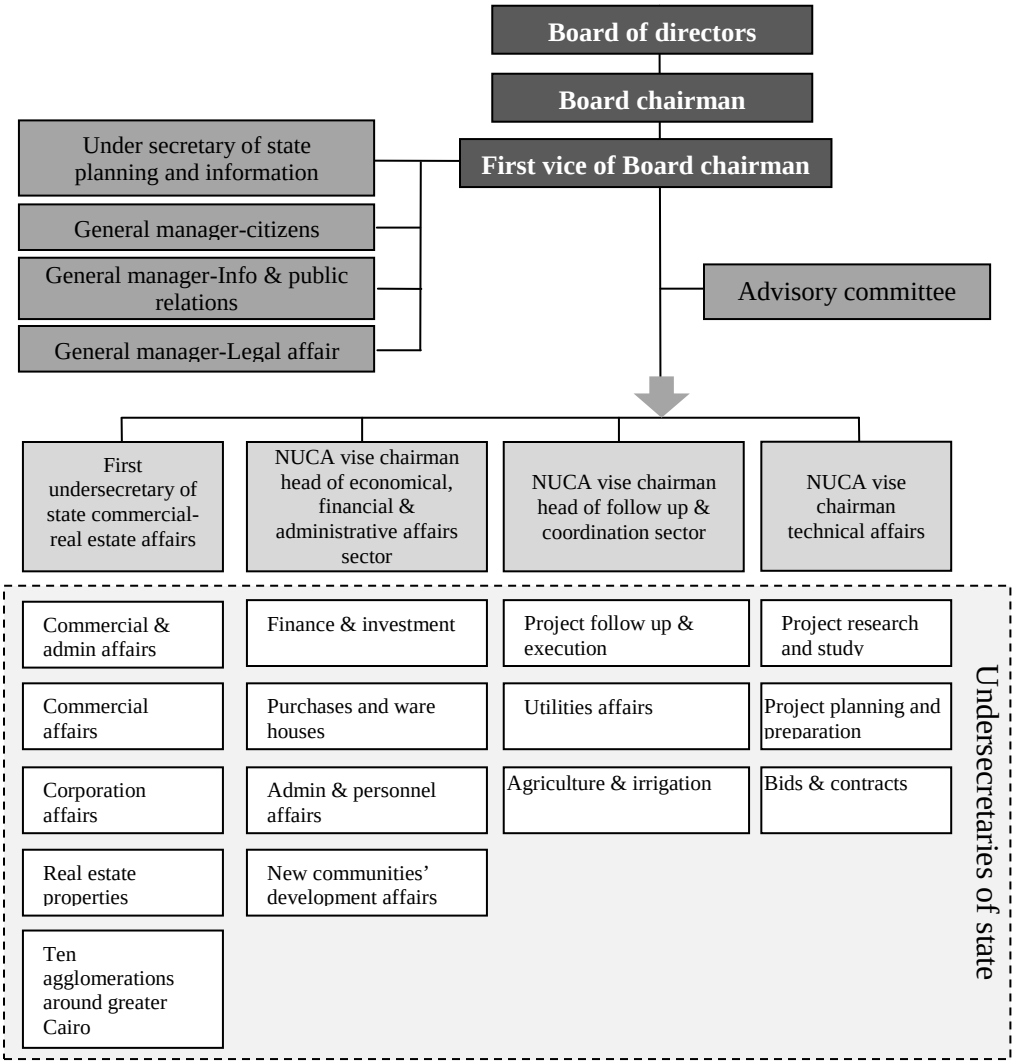

Chart 5: NUCA administrative chart

Source: NUCA,

.1.2.3.5 NUCA vision, mission and objectives [1]

Having discussed the main reasons and challenges behind the establishment of the NUCA, it is also important to explore the vision and objectives the NUCA administration had set for itself.

Mission

"To identify the most suitable places for establishing new urban communities and to develop existing cities by raising standards for physical and social environment through preparing new urban development plans until the year 2030"

Vision

"To Create and develop sustainable cities where residents can enjoy good quality of life"

Objectives

- *Redistribute the population away from the narrow strip of the Nile Valley.*
- *Establishment of new urban attraction points outside the existing cities and villages.*
- *Extension of the development spine to the desert and remote areas*

.1.2.3.6 Financing New cities

One important aspect that supported the financing of new cities was the land (desert) belonged to the state, the thing that decreased the cost of projects significantly. Otherwise, projects were financed as follows:

- The state (ministry of finance) 11.5%
- National investment bank 67%
- Revenues from land selling to individuals, housing cooperatives & investors 0.17 %.[2]

1 NUCA, "NUCA official website", http://www.urban-comm.gov.eg/,

2 United Nations Centre for Human Settlements, "Metropolitan planning and management in the developing world: spatial decentralization policy in Bombay and Cairo", UN HABITAT, Nairoubi, 1993,

.1.3 Development of NUC in GCR (1980s -1990s)

After the 1979 law for NUC and NUCA formation, various incentives were given to encourage investments and attract population to the new cities, those were basically tax exemptions and privileges on investments and could be summarized as follows;

.1.3.1 Development incentives in NUC

- Exemption from customs & other important duties
- Exemption from all taxes and duties on loans and credit facilities for the financing of projects
- Special privileges in capital allocation for projects as those under foreign investment and free zone law.
- Occupants of real estate in NUC are exempt from taxes on built properties for 10 years.
- Lands reclaimed within the boundaries of the NUC are exempted from land taxes & all additional taxes for 10 years
- Projects are exempted from the general tax on revenues.[1]

.1.3.2 Second generation of new cities

After launching the first generation of new cities (1977-1982), the concept of satellite cities and the second generation of new cities were planned also concentrating around the GCR and northern delta, but extending as well to the southern area of the agglomeration toward el Menya and Bani Sweif as shown in the following map.

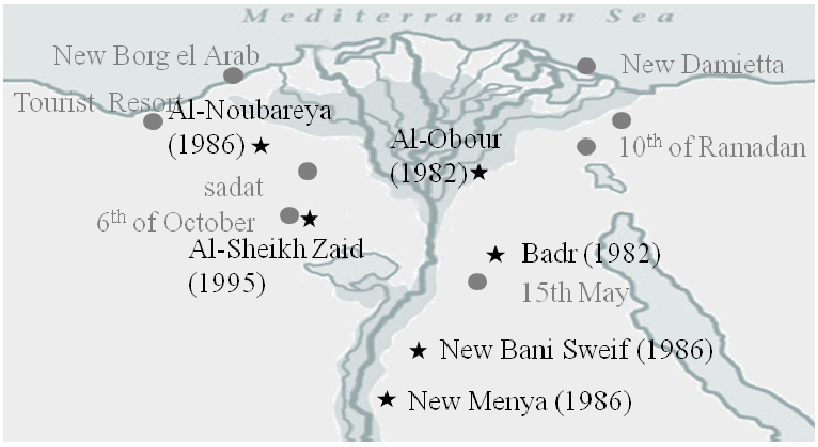

Figure 7: Second generation of new cities (1982-1995)

1 Ibid.

Before early 1990s, Most of the new cities were developed to attract the working classes through the construction of State subsidized low-cost housing blocks. Although there have always been areas in new cities allocated for middle and upper classes, but they have always been of second importance and were not taking up well.

In the early 1990s, with the change of ministers and increasing criticism of the quality and aesthetic of social housing, a much more "capitalist" mode of development was applied in new cities causing big changes in the target groups of new cities. Starting with Sheikh Zayed in 1995, the new city of target population 500,000 inhabitants was the first to target middle and upper class residents.[1]

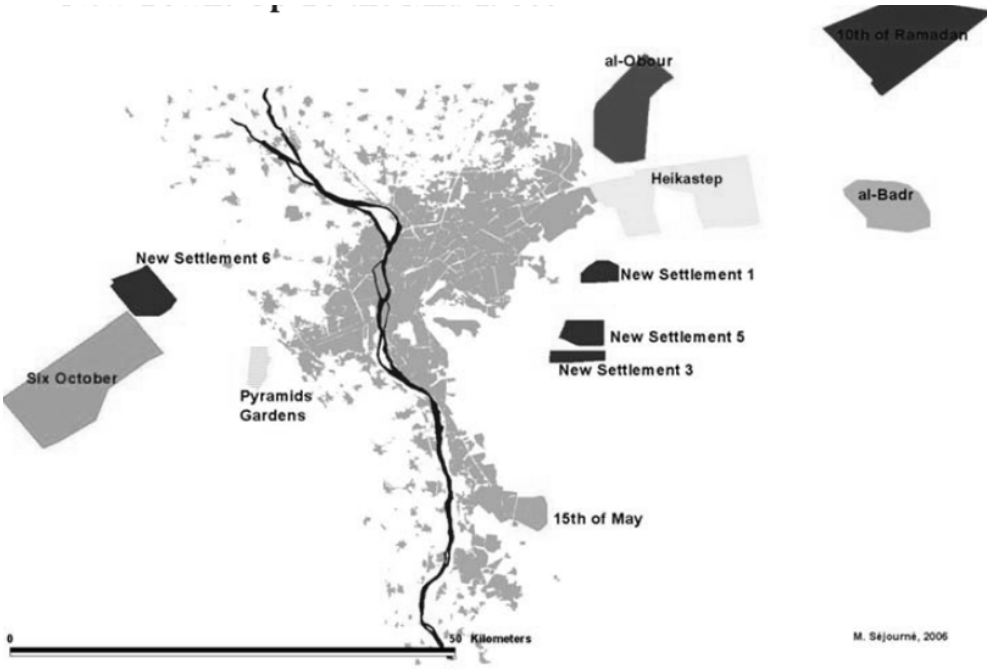

Figure 8: New cities in GCR (mid 1980s)

Source: David Sims, et al.,2006

1 The world bank, "Toward an urban sector strategy", Egypt, 2008

.1.3.3 1983 long term development Master plan

After 1973 the economy of Egypt enjoyed better prosperity due to oil revenues, Suez Canal income and Egyptian workers in Gulf region. Unfortunately the revenues were misused in a speculative way leading to vast expansions of the urban fabric of the city mainly on agricultural land beside replacement of small building in the city centre with high rise ones. This liberal policy made the social breakdown unbearable for the urban poor and lead to the infrastructure collapse even in rich areas.[1]

In 1981 – two years after the NUCA formation- a long term development master plan stated by the Ministry of development and construction and GOPP with the aid of IUERIF and OTUI French consultancy firms. [2]

The Plan aimed basically at controlling the rapid growth of population in GCR and using the private sector dynamism and resources to support the physical planning process.[3]

The main outcomes of the plan were the assuring of the importance of the implementation of the 1970 planned ring road, in addition to the establishment of the "New Towns". The concept aimed at transferring the massive urbanization process from agricultural land to desert ones by creating different economic and social incentives to attract population.

The master plan divided Cairo into 16 "Homogeneous Sectors" shown in Figure 9; with population of 500,000 to 2 million each (the existing population then was 9,385,000 in 1982) wrapped with the defined Cairo's ring road that binds the main old city and keep the new cities outside the ring[4].

1 United Nations Centre for Human Settlements, "Metropolitan planning and management in the developing world: spatial decentralization policy in Bombay and Cairo", UN HABITAT, Nairoubi, 1993,

2 El-Kouedi, Hazem, Madbouly, Mostafa and The World Bank, "Tackling the Shelter Challenge of Cities Thinking it Through Together", Cairo, 2007,

3 Sims, David and Séjourné, Marion, "Understanding Cairo", Cairo, 2006,

4 United Nations Centre for Human Settlements, "Metropolitan planning and management in the developing world: spatial decentralization policy in Bombay and Cairo", UN HABITAT, Nairoubi, 1993,

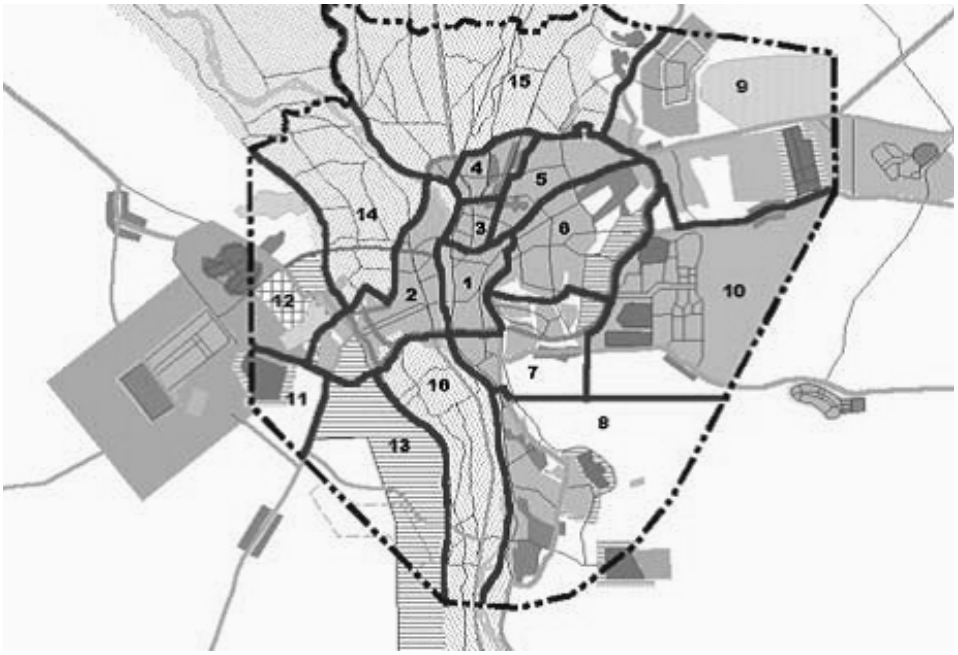

Figure 9: The 16 homogeneous sectors of GCR and 10 NUC

Source :Hazem El-Kouedi, et al.,2007

The term homogeneous sectors proposed by this plan expressed a "*delineated planning unit having somewhat common characteristics or homogeneous planning characteristics"*[1]

The Master Plan estimated the increase in population up to the year 2000 to 7.6 million which were proposed to be distributed as follows:

- New settlements should house 2 million inhabitants
- New satellite towns 0.9 million
- Agglomerated perimeter 3 million
- Agricultural lands 1 million[2]

Having the infrastructure prioritized, the plan proposed Urban Corridors that connects Cairo with external cities; North to Alexandria, east to Ismailia, Suez and Sokhna, South to Upper Egypt and south west to Fayoum and

1 Sims, David and Séjourné, Marion, "Understanding Cairo", Cairo, 2006,
2 United Nations Centre for Human Settlements, "Metropolitan planning and management in the developing world: spatial decentralization policy in Bombay and Cairo", UN HABITAT, Nairoubi, 1993,

Oasis. [1] In addition to 45 bridges, the first underground line and the sewage mega line.[2]

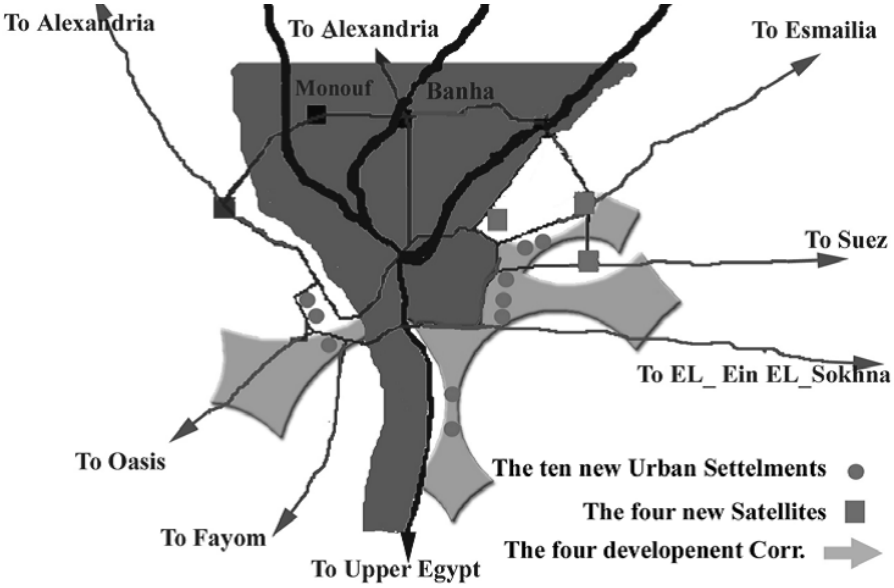

Figure 10: the development corridors and directions in the 1983 Master Plan for GCR

Source :Hazem El-Kouedi, et al.,2007

These development corridors played the main important role in defining NUC locations as they were built by developing the desert areas in the directions of those urban corridors. These urban structures are still today's main regional transportation axes.

The Master Plan board (Figure 11) shows that NUC were starting to get structured creating the main centers for the current NUC. East to Cairo two urban communities (first and third) called (Tagamoaat) formed the base for the future: New Cairo city, while October and Zayed cities were also creating a western urban pole. In the south, 15th of May was created with the 8th community

1 JICA, "The Strategic Urban Development Master Plan Study For Sustainable Development Of The Greater Cairo Region In The Arab Republic Of Egypt", Cairo, 2008

2 These projects were funded by USAID and some EEC countries

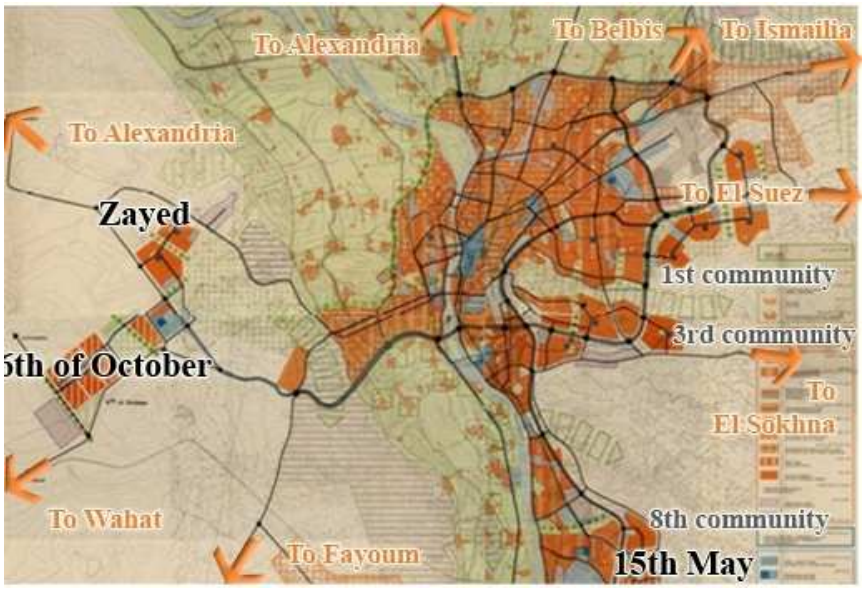

Figure 11: Long term development Master Plan 1983

Source: Hazem El-Kouedi, et al.,2007

Alteration: author

.1.3.4 Financing deficit in new cities

Since their early planning, new cities were planned to be self-financing projects through well managed, value capturing management. Unfortunately, the cities were mostly financed by the central government.

"The financing deficit in September 1989 was LE 22.5 million, which is 15.3 % of the value of the implemented work (debts of the state towards private enterprises).By 1985 the accumulated interests of these loans had reached LE 70 million."[1]

This deficit was also related to the land tariff system stated by NUCA; the land is sold at token priced insufficient to cover the primary cost of infrastructure. This - besides the already mentioned incentives for investors and inhabitants – was causing the loss of NUCA's resources as lands were sold at half of its price and industrial land was even cheaper (quarter of their original values).

1 United Nations Centre for Human Settlements, "Metropolitan planning and management in the developing world: spatial decentralization policy in Bombay and Cairo", UN HABITAT, Nairoubi, 1993,

.1.3.5 GCR Master Plan first update 1991

As a result of the previously explained deviations, the GOPP decided to do an update for the 1983 planning. From 1990 to 1991 the first revision of the 1983 plan was performed limited to minor land uses updates.

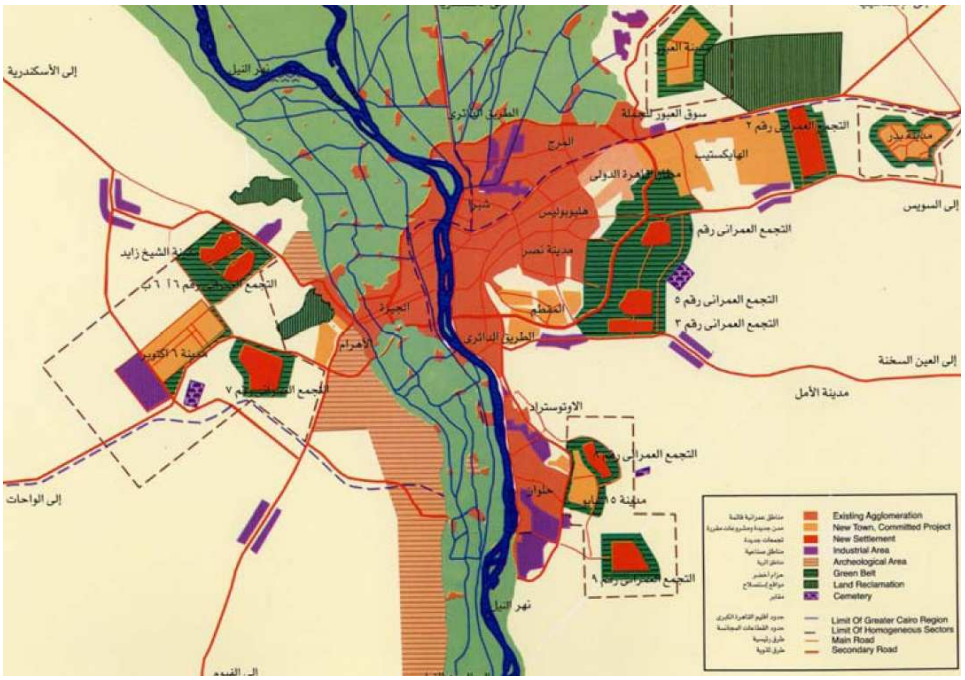

Figure 12: GCR Master Plan first update 1991

Source: Hazem El-Kouedi, et al.,2007

In this plan shown in Figure 12, the ring road was almost completed. The plan called for accommodating 4 million people in NUCs which meant that almost all of the increase in population should go to New cities while Cairo still hold for the main attraction pole. This of course was unachievable and was not met.[1]

1 JICA, "The Strategic Urban Development Master Plan Study For Sustainable Development Of The Greater Cairo Region In The Arab Republic Of Egypt", Cairo, 2008

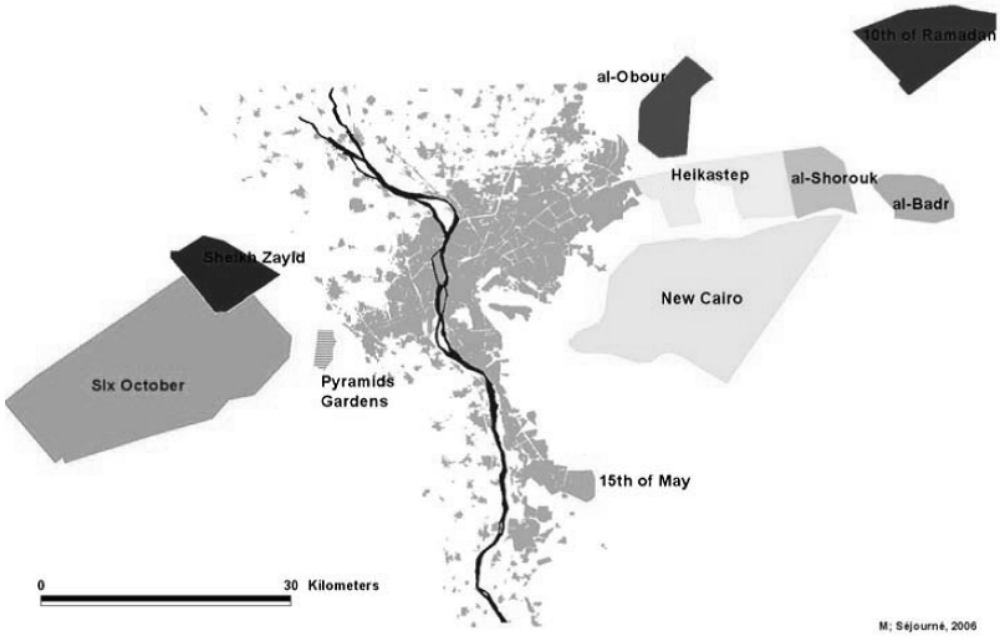

Figure 13: New cities in GCR (early 1990s)

Source: David Sims, et al.,2006

As seen from the previous plan for NUC in GCR in the early 1990s, the previously mentioned two communities in the east (1s &3rd) combined with the added 5th community to form New Cairo city and Sheikh Zayed -already formed by the two communities 6A and 6B- was growing to unify with the already expanding 6th of October city in the west. It is also important to point out the missing El Amal city which was planned in El Sokhna eastern development corridor but was never implemented.

.1.3.6 The new cities in the late 1990s

.1.3.6.1 Belated population shift

The target population for NUC for the 1989 was set to 520,000 inhabitants; however the actual number was only about 13% of that number (70,000 inh.) of which 80% were in 15th of May. At that time, the only growing new cities were Sadat city (for 12 years) & 10th of Ramadan (for 16 years). Al badr was newer and no works had begun in el Amal. [1] 6th of October and 15th May were already accommodating people, however el Obour was just starting.

In 1983 master plan, the population proposed for NUC in 2000 was 900,000 inhabitants, of which only 218,000 were achieved in 1996 census.[2]

Table 4: Target and Actual housing for NUC in 1991

city	Housing units belt by march 1991	Planned for Phase 1	Percentage
10th of Ramadan	14 997	33 547	44.7
15th May	19 133	38 544	49.6
6th October	14 053	34 171	41.1
Sadat	3 160	15 532	20.3

Source: United Nations Centre for Human Settlements,1993

.1.3.6.2 Industrial achievements

The industrial sector was achieving a better success, 500 factories were legitimized to employ 35,000 workers and work in infrastructure was already on site. However, this relative success left behind another problem which was that 60% of workers in those industrial areas did not live in the new settlements. In 1986 less that 7% of the approximate 17,000 industrial workers could move with their families to new cities. This was returned to many social reasons among which were the delay in housing building and the lack of services [3]

1 United Nations Centre for Human Settlements, "Metropolitan planning and management in the developing world: spatial decentralization policy in Bombay and Cairo", UN HABITAT, Nairoubi, 1993,

2 JICA, "The Strategic Urban Development Master Plan Study For Sustainable Development Of The Greater Cairo Region In The Arab Republic Of Egypt", Cairo, 2008, Ch.2 , p.25

3 United Nations Centre for Human Settlements, "Metropolitan planning and management in the developing world: spatial decentralization policy in Bombay and Cairo", UN HABITAT, Nairoubi, 1993,

.1.3.6.3 Services achievements

10th of Ramadan had only three schools of the projected 34 primary schools and one preparatory school. As for Sadat city, only 1 primary school of the 52 planned was operating and in 6th of October three schools out of 24.[1]

.1.3.6.4 Financial delaying cities' problems

The main reason behind the delaying of housing and social services in new towns goes back to the overestimated financial and administrative capacities of the government and the leaning on it to finance nearly all programs. This was explained by the fact that the authorities should have control on the housing market in the new cities and ensure the reasonable prices for the future. However, the delay of those units and the low productivity increased the cost of the units to levels that went beyond the average income of the target population and went to people who had saving accounts to cover 70-80% of the prices of the units. This created a kind of "people without houses and housed without people" in the new cities.

.1.3.7 The ongoing Master Plan 1997

As the population of GCR continued to grow massively reaching 13 million in 1996, .in 1997 a second revised master plan was needed. A new target was set to year 2020 with projected population 24 million. 5.8 million of the increase was set to be accommodated in NUCs, and the rest around the existing urban agglomeration.

1 Ibid.

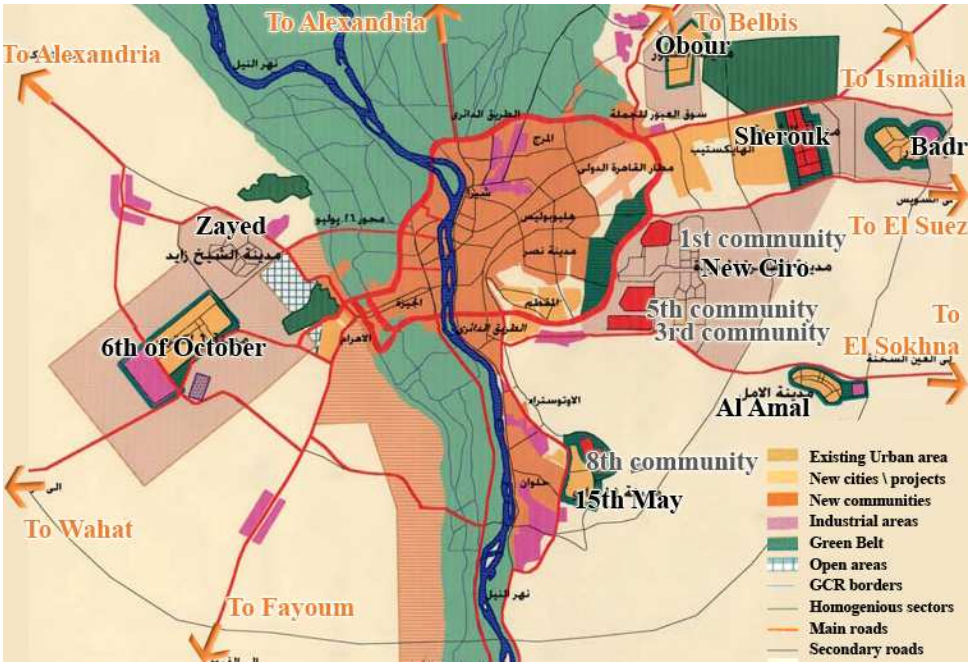

Figure 14: GCR Master Plan second update 1997

Source: Hazem El-Kouedi, et al.,2007

Alteration author

This Master plan proposed another ring road that combines the new cities inside in addition to the older ring road around the main Cairo agglomeration.[1]

1 JICA, "The Strategic Urban Development Master Plan Study For Sustainable Development Of The Greater Cairo Region In The Arab Republic Of Egypt", Cairo, 2008

.1.3.8 Third generation of new cities

With the changing policy, the boundaries of existing new towns and settlements were dramatically extended, particularly in those cities around Cairo which were considered to have development potential. Huge tracts of land were subdivided and sold at near market prices both to individuals and to developers.

New eastern areas of Cairo (New Tagamoaat) further extended and became cohesion creating New Cairo city in the desert east of the metropolis, with an area equals half the built-up area of existing Greater Cairo, and target population of 2 million. In addition to huge new settlements like El Shorouk (target population of 500,000 inhabitants) .

"Massive amounts of land in these extensions and new areas were sold throughout the 1990s and more is being currently being released. This has brought welcome revenues to the Ministry and the State Treasury. Also, this new policy signaled a fundamental shift, with new settlements around Cairo at least, becoming the preferred location for the new middle classes and the rich, with the creation of gated communities and up-market subdivisions."[1]

This growth in urbanization in the GCR was also accompanied by new cities being planned in southern Upper Egypt like New Fayoum, New Asyout, New Qena, Tiba and New Aswan. This was between the 1995-2000 years.

Currently three new cities (New akhmim, New luxor and Toshka) are also under construction which has been desided from 2000 till now. The following map shows the three generation of new cities in Egypt (1979-2010)

1 Public housing estates continue to be constructed in the new towns, and starting in 1996 the Mubarak Youth Housing and Future Foundation Housing became the main programs, providing higher standard public housing with more aesthetic facades.
The world bank, "Toward an urban sector strategy", Egypt, 2008

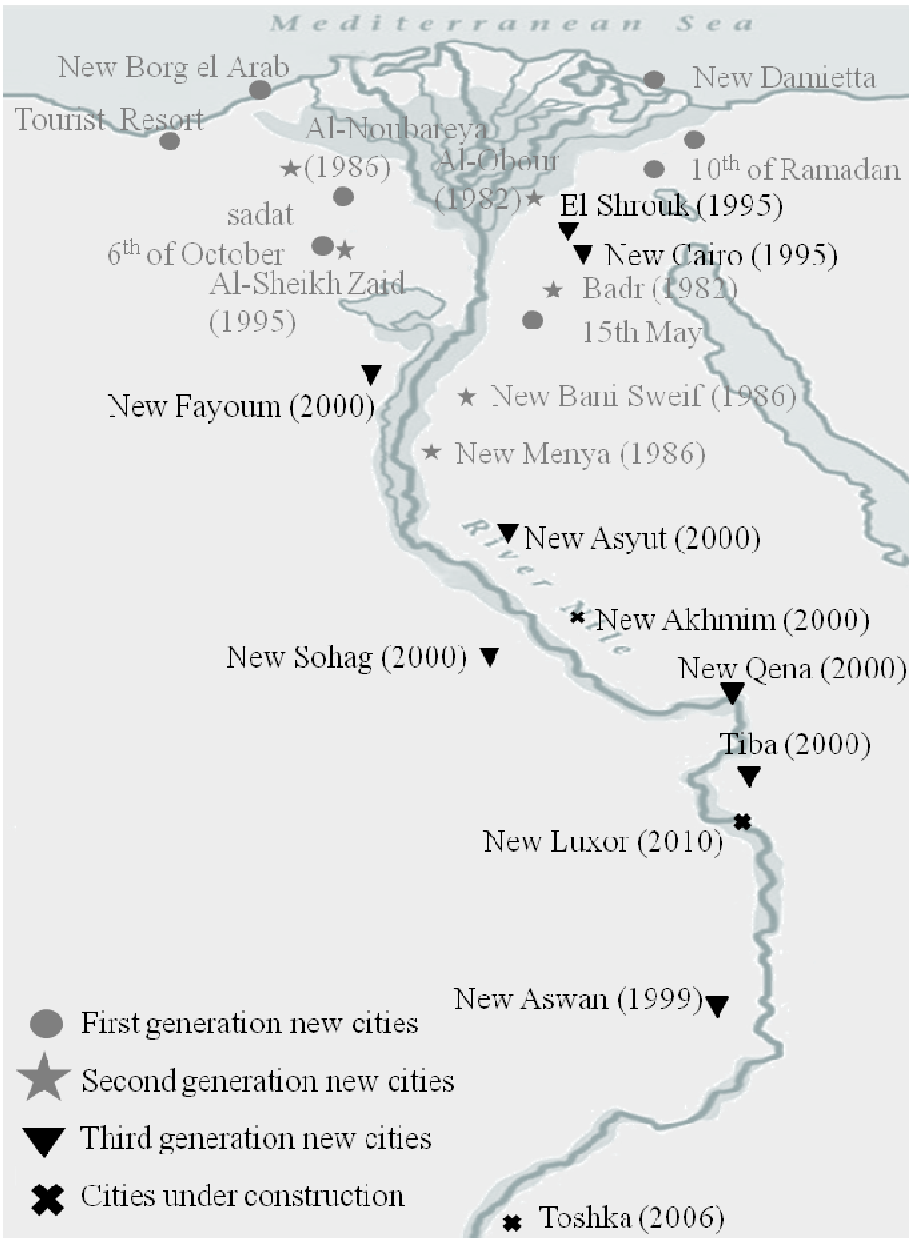

Figure 15: Three generations of new cities in Egypt

At present there are a total of 23 new towns which are functioning or under construction and about 40 other future new cities and communities spread over the Egyptian land. The GCR new Cities and new settlements' expansions are shown in the following map.

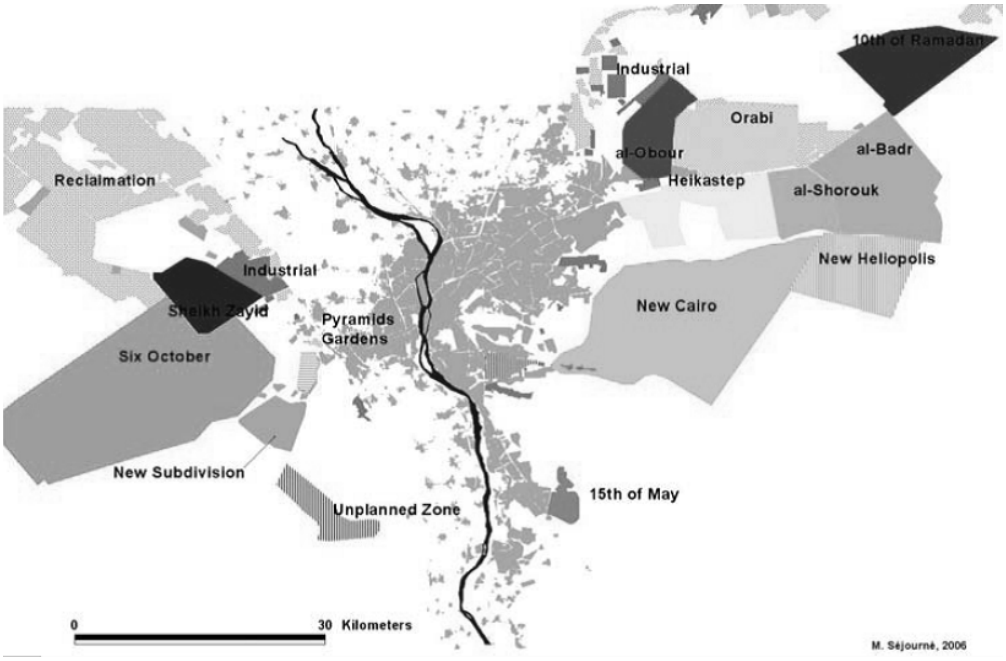

Figure 16: New cities in GCR (2000s)

Source: David Sims, et al.,2006

.1.4 NUC's Shift (2001-2007)

Currently as new cities around GCR continue to grow and expand, a shift in the attraction of population if finally starting to switch to New cities especially the ones in direct connection to Cairo. The recent master plan of GCR has become almost cohesion with such new cities as shown in the following figure.

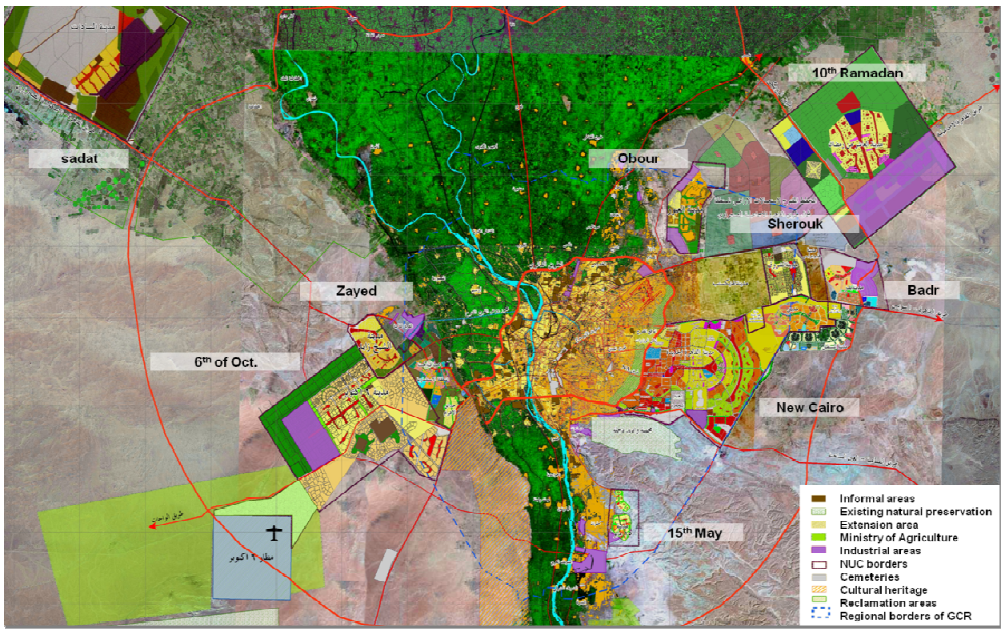

Figure 17: GCR Master Plan 2007

Source: Adel Nagib,2010

The Plan shows the size of GCR as explained by the vision of Cairo 2050 as having 75% of the population in the agglomeration that concentrates in a 20Km radius circle. The shift of new towns attraction of population will be illustrated in the following main issues.

.1.4.1 The population & urbanization shift to NUC (2001-2007)

It was discussed in various occasions of the study the continuous growth of population in GCR due to the obvious socio-economic attractiveness of the region. This growth has concentrated in the centre and the expanding informal areas around it in areas that are much coherent to the main pole or important activities. The following chart shows the growth of GCR in size and population from 1945 and until 2007.

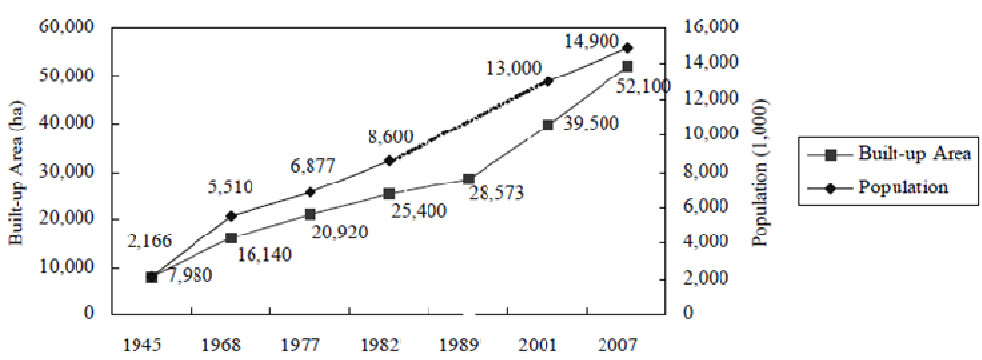

Chart 6: Trend of built up area & population in GCR (1945-2007)

Source: JICA Study, 2008 based on information from original master plans and satellite images analysis

The 2006 census showed that NUC's population is 601,000 with an annual growth rate of 10.7% compared to 1.7 for the main Cairo agglomeration. This means that a final shift of population targeted NUCs.

The growth in NUC from 2001 to 2007 is thus illustrated in the following chart, it is clear that the physical growth was finally redirected form the main agglomeration to NUC.

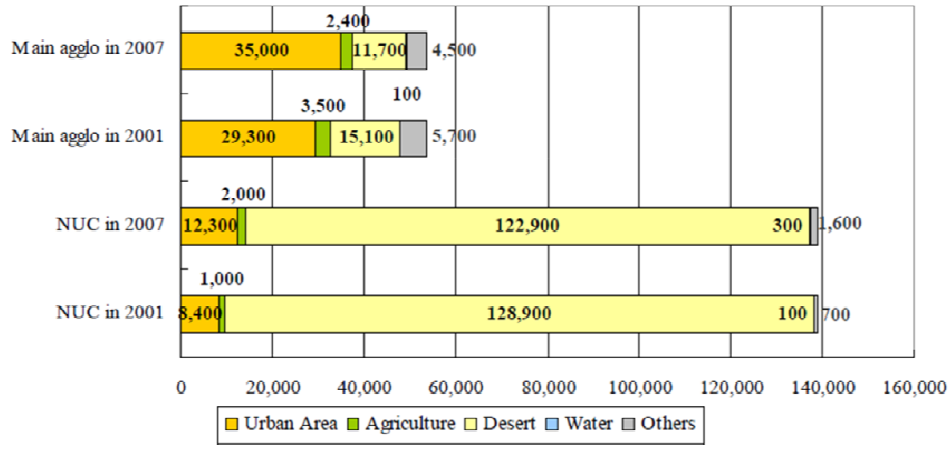

Chart 7: Land Cover by Built-up Area in 2001 and 2007 (ha)

Source: JICA Study,2008

The comparison of the urban change based on the previous graph between Main Agg. And NUC could be illustrated as follows:

Table 5: changes in land distribution of Cairo & NUC (2001-2007)

	Main Agg.	NUC
	Percentage of change (2001-2007)	
Urban areas	21	46
agriculture	-31.4	100
Desert	-22.5	-4.7
Others	-21	128.6

Source: author

This means that the rate of urbanization of NUC between 2001 and 2007 exceeded that of the main agglomeration and thus more desert areas were converted to different activities. This change in uses is distributes as shown in the following Chart 8:

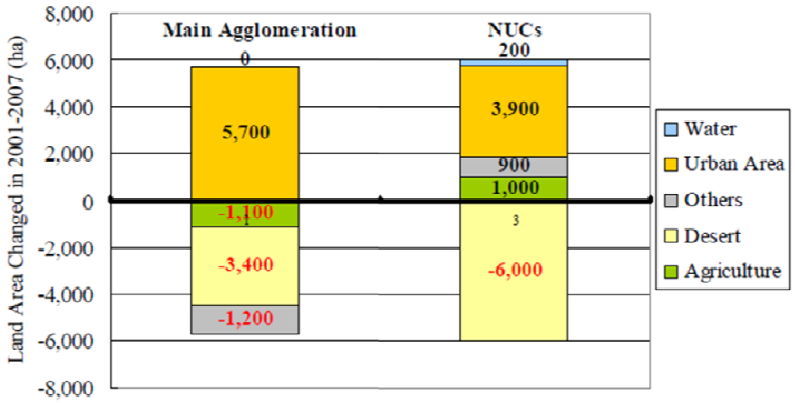

Chart 8: Share by Land Cover of each Built-up Area in 2001 and 2007 (%)

Source: JICA Study,2008

"Although there was an acceleration of population absorption in the 1996-2006 period into new cities, this increase only accounted for 4.3% of the national population increase over the same period. The other 95+% of the increase, a staggering 12.5 million persons, occurred elsewhere, almost exclusively in the already crowded towns and villages of the Nile Valley"[1].

1 Ibid.

.1.4.2 Housing stock and housing demand in new urban communities

Despite the figures that reflects the growth and success of NUC, a key issue still questions the true reflection of these figures on the real market. This could be explained through the obvious gap between the number of housing units that have been constructed and the ones that are being used.

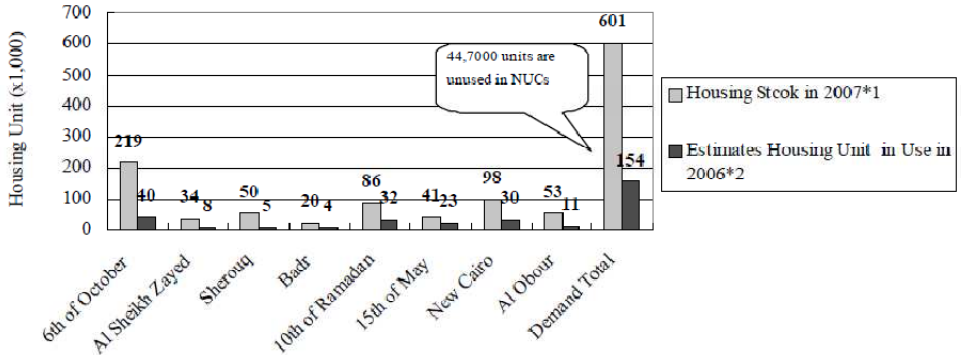

Chart 9: Gap between Housing Stock and Occupied Units Estimates from Census 2006 in NUCs

Source: JICA Study,2008 based on *1 MOHUDD, 2007 and *2 Census, CAPMAS, 2006

The previous graph shows that only about 25% of the 601,000 constructed in 2007 are being used. This could be explained by the relatively long process of occupation or due to speculative and future use of the dwellings.

.1.4.3 The industrial shift

In 2007, seven industrial areas exist in NUCs, five areas under governorates, and two public free zones in GCR. The number of registered factories is 13,483 with a total area of 76,297 ha. Among those registered factories, 3 % of factories can be categorized as large-scale which have an investment cost of more than LE10 million, or more than 500 employees.

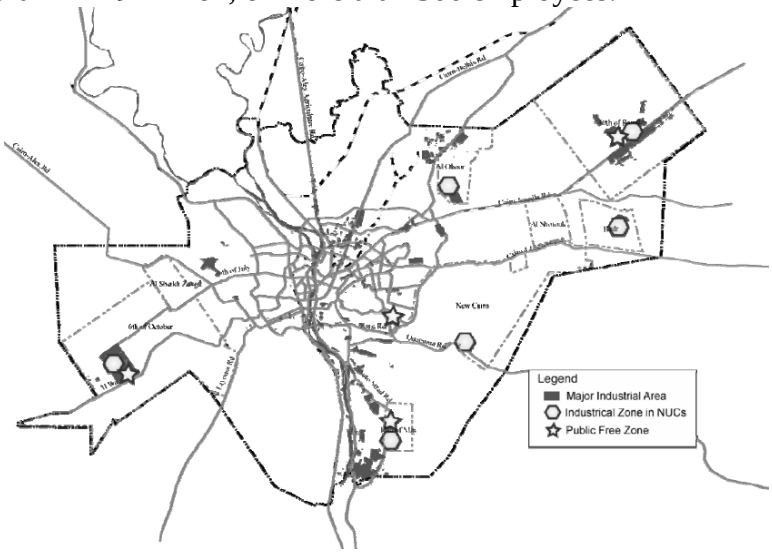

Figure 18: Location of Industrial Areas in GCR

Source: JICA Study,2008

Lately, and related to old original goals of NUCs, industrial areas are stabilizing in NUCs forming about 86% of the total areas for industries in cities such as Badr, 15th May, New Cairo, Obour, and 6th of October. (53% industrial area under operation and 47% to total area is still vacant for Investors.)[1]

"More than 2,500 factories created 264,000 job opportunities in NUCs by 2007. Total annual production value was estimated at LE 31 billion. Most of investment for the factories is concentrated on three NUCs: 6th of October, 10th of Ramadan, and Al Obour."[2]

1 JICA, "The Strategic Urban Development Master Plan Study For Sustainable Development Of The Greater Cairo Region In The Arab Republic Of Egypt", Cairo, 2008
2 Ibid.

.1.4.4 Administrative shift

When NUCA was created in 1979, the law stipulated that the towns would be managed by the town agencies under NUCA but once developed to revert to the municipal local administration under the relevant governorate. This was applied after the Presidential decree in April 2008 creating new governorates:

- 6th of October in the west (including 6th of October and Zayed cities as well as sections from the formerly Giza governorate)
- Helwan governorate in the east (including New Cairo, Badr, 15th May, and El Sherouk)[1]

The following map illustrates the existing governorates boundaries and the new cities included.

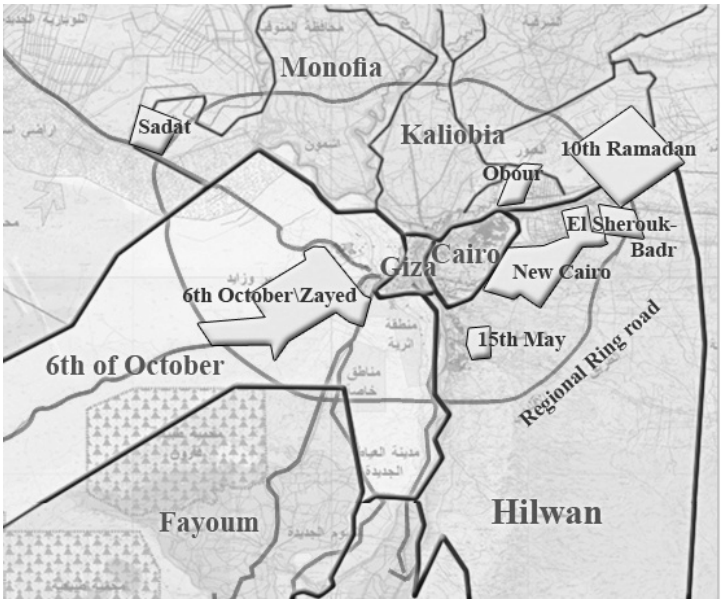

Figure 19: GCR new Governorates and NUC 2010

Source: AbdelMohsen Barada,2010
Alteration: Author

1 The world bank, "Toward an urban sector strategy", Egypt, 2008

.1.5 The changes of NUC in GCR from their original plans

As discussed earlier in this chapter; political, economic and social aspects affected the growth of new cities in GCR resulting in changes or deviations of the cities from their original plans and objectives.

Although this study will focus on 6th of October city, a review of the urban deviation in two other main new cities in GCR –New Cairo and 10th of Ramadan - will be addressed in this part of the study to show the general growth and changes that the new communities faced in GCR and guide the choice of the urban transformation tool that needs to be studied later in the research after studying the case study of 6th of October.

.1.5.1 New Cairo city

The New Cairo city –which is currently one of the largest and most successful new city within GCR- was first created from the early 1st ,5th and 3rd settlements around Cairo in the mid 1980s. Those settlements then expanded to include more residential districts of mainly middle and upper target classes together with integrated gated communities (such as Arabella and golf kattamhia). In the late 1980s areas that used to be green buffer zones between the three settlements were changed to house more residential and large investments with a large main spine that would house administration and recreational activities and bind together the northern and southern parts of the city. This extension included one of the earliest and most successful gated community; El Rehab on an area of 2357 fd.

The last and largest extension of the city was added in the 2000s with an area of about 40,000 fd (including Madinty gated community of 8000 fd) to the east of the city that includes large investments zones and integrated urban projects that were proposed by the latest master plan for the city.

The city is bounded from the west by the ring road, north by Cairo-Suez road and the south by kattamia-El Al Ein El sokhna road which left the east a direction of main growth of the city.

The map below shows the original three settlements (each of area of about 1400 fd and target population 250,000 inhabitant)[1] from which the city was formed and the different growth phases leading to its existing planning With an expected total population of 6 million inhabitant.

[1] Fareed, Mootaz and Hatem el Shafie, "An assessment of the New Cairo city", 1998

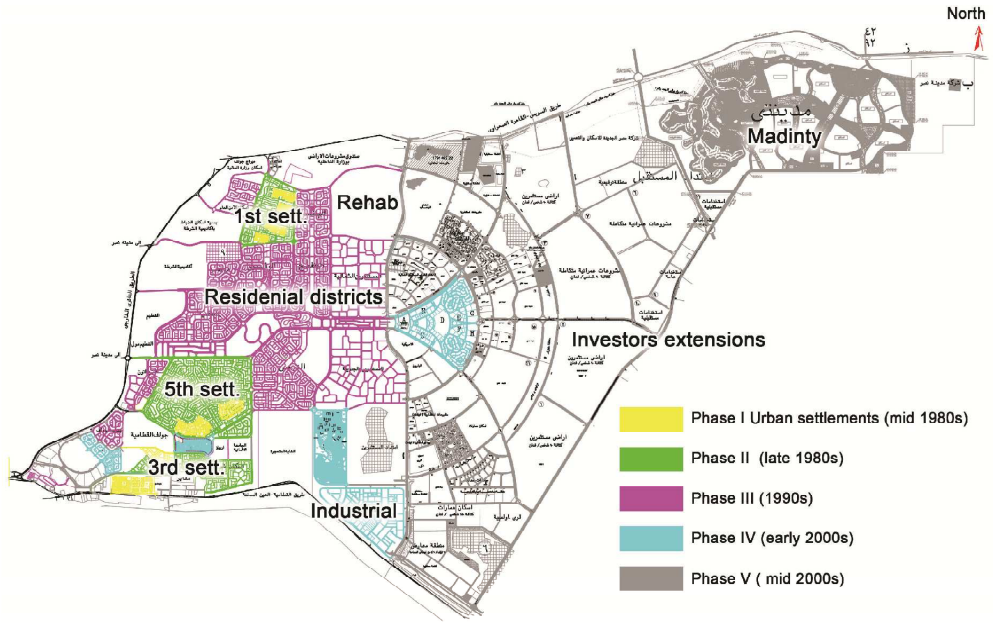

Figure 20 : Growth phases of New Cairo city

Source: Maps from New Urban communities authority, New Cairo city agency, 2010

Alteration: Author

As shown from the figure above, the city has grown dramatically where the residential area increased by about seven times, services by nearly 4.5 times the industry and investment by about 90% between the mid 1980s and early 2000 even before the last and largest extension of the city. These changes are shown in numbers in the table below.

Despite the huge changes of the city along its growing years, it is claimed that New Cairo city has grown smartly and successfully due to a number of factors that could be summarized as follows:

- The close location to exiting centers (Heliopolis, Nasr city, Mokkatam)
- Land use and needed activities (different housing levels, new economic activities, service oriented city)
- Expandability (especially to the east)
- Appropriate designed density
- Transportation and communication
- Appropriate Urban growth rate compared to international standards

Table 6 The development of New Cairo city

	New Settlements			Total of 3N.S.	New Cairo	Increasing Rate
	N.S.1	N.S.3	N.S.5			
Area (feddan)	1868	1808.7	2721	6397.7	27409	4.3
Target of population (inhabitants)	200.000	200.000	200.000	600.000	1.250.000	2.08
Residential Area (feddan)	781	556.3	1120	2457.3	16510	6.72
Services Area (feddan)	171	232.5	331	734.5	3400	4.63
Industrial Area (feddan)	374	104.5	873	1351.5	153	0.11
Investments Activities Area (feddan)	Non	Non	Non	Non	2681	
Housing Level	Economic-Medium-High Medium	Economic-Medium-High Medium	Economic-Medium-High Medium	Economic-Medium-High Medium	Economic - Medium - High Medium - High	

Source: Mootaz Fareed, et al.,1998

.1.5.2 10th of Ramadan city

The construction of the City was originally supposed to involve private investors and the Council of City Development. In later stages, however, the Council started to build whole quarters, especially for lower income groups. Today, vast desert areas, intended for buildings and mostly sold to private investors, are lying unused between four-track roads with a strip of greenery in between. This half-completed look characterizes all but the oldest quarters of 10th of Ramadan City. In contrast to these, where a diversity of housing styles prevails, the newer parts consist of mostly five-storey buildings intended for workers who can rent or buy a flat. These are lively quarters, as a large part of the working population of 10th of Ramadan City is residing there of late. In the older quarters, main houses and flats are empty. Owners wait for more profitable clients, such as entrepreneurs or foreigners working for a limited time in 10th of Ramadan City. Also, many inhabitants of villas spend most of the year in Cairo or other places. Lately, the Council of City Development has given preference to buyers or tenants working in 10th of Ramadan City in order to prevent speculation on land and housing.[1] The table below shows the population achievements in the city despite the large extensions of land shown in the maps below.

[1] Möller, Jochen, "Working and living in 10th of Ramadan City",Social science 33, 1998

Table 7: population achievements in 10th of Ramadan

	1986	1996	2006	GOPP 2005 estimate	Variation between estimated pop. (2005) and real pop (2006)	% Census 2006 of GOPP est. 2005
population	8509	47833	124120	500000	-375880	24.8%

Source: Jochen Möller,1998

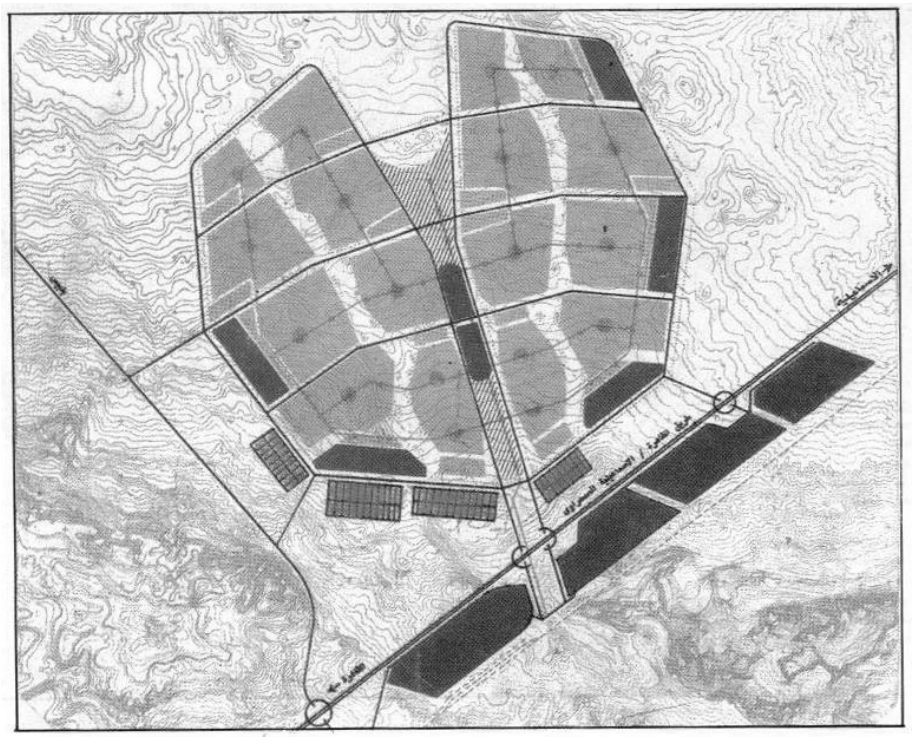

Figure 21 : Original planning of 10th of ramdan city

Source: City local authority

The original plan of the city included 95,000 fd. Aiming to become a main industrial hub of a target population 0.5 million inhabitants distributed over 16 residential districts around a main city spine. Each district includes 8-9 neighborhoods with a main center beside the industrial area and the green buffer zone.[1]

[1] Dardeery, Dalia Hussien El, "New cities and urban development mangement in Egypt", El ahram Cairo, 2004,

Figure 22 : Exiting planning for 10th of Ramadan city

Source: City local authority

Despite the questioned success of 10th of Ramadan city, the city has expanded vastly to add new areas of mainly industrial use from about 60,000 fd. to 94,762 fd. In 2009 with 18.47% industrial area but the residential sectors of the city remained unwanted and that was analyzed to be due to a number of factors of which:

1. The lack of reliable transportation systems, housing problems and tenure system failures, high cost of living, etc.
2. In contrast to 10th of Ramadan City, the worker's hometown still offers a variety of advantages : traditional frameworks providing easily accessible, mutual help and chances for informal income generation for the workers or other family members ;

3. Many workers feel insecure about job stability, and consequently look for alternatives.[1]

The extended industry and the failure to attract the residential population is an important result to the lack of urban management and coordination in the new cities in Egypt. From the previous table it is clear that population targets in the city were not achieved, however the following table shows the industrial area growth which is also shown in the new city master plan (Figure 22)

Table 8 : original and target industrial area in 10th of Ramadan

Establishment year	Original industrial area	New master plan 2017	Increase Percentage
1980	11 Km^2	23.41 Km^2	212.8%

Source: Dalia Hussien El Dardeery,2004

The main urban mass extended by 105.3% and the services zones 350% this was all taken from the green buffer and residential, commercial areas which decreased by 91.8% , 70.4% and 55% respectively which also resulted in canceling the main spine designed for the city.

.1.6 Strategic plans for new cities

As a result of the major changes that took place in the new cities and within the General strategy of the GOE of preparing strategic plans for the different cities of the country, in 2007 the MHUUD presented in NUCA and GOPP decided to prepare strategic master plans for main new cities directly related to GCR. The strategic Master Plan for New Cairo city and 6^{th} of October \Zayed cities as one city were chosen as pilot projects to illustrate the future visions for the main two eastern and western poles of the metropolis.

The projects were tendered to local consultants jointly with international consultancy firms. The plans were to provide analysis of the existing situation and come up with future visions for the cities then with strategies and projects to achieve the vision. The plans are to integrate the overall vision of the GCR 2050 and coordinate with ongoing plans for the governorates.

[1] Möller, Jochen, "Working and living in 10th of Ramadan City",Social science 33, 1998

The next chapter will explore the formation of the case study city (October city) and the main outcomes of the prepared strategic plans and outcome projects.

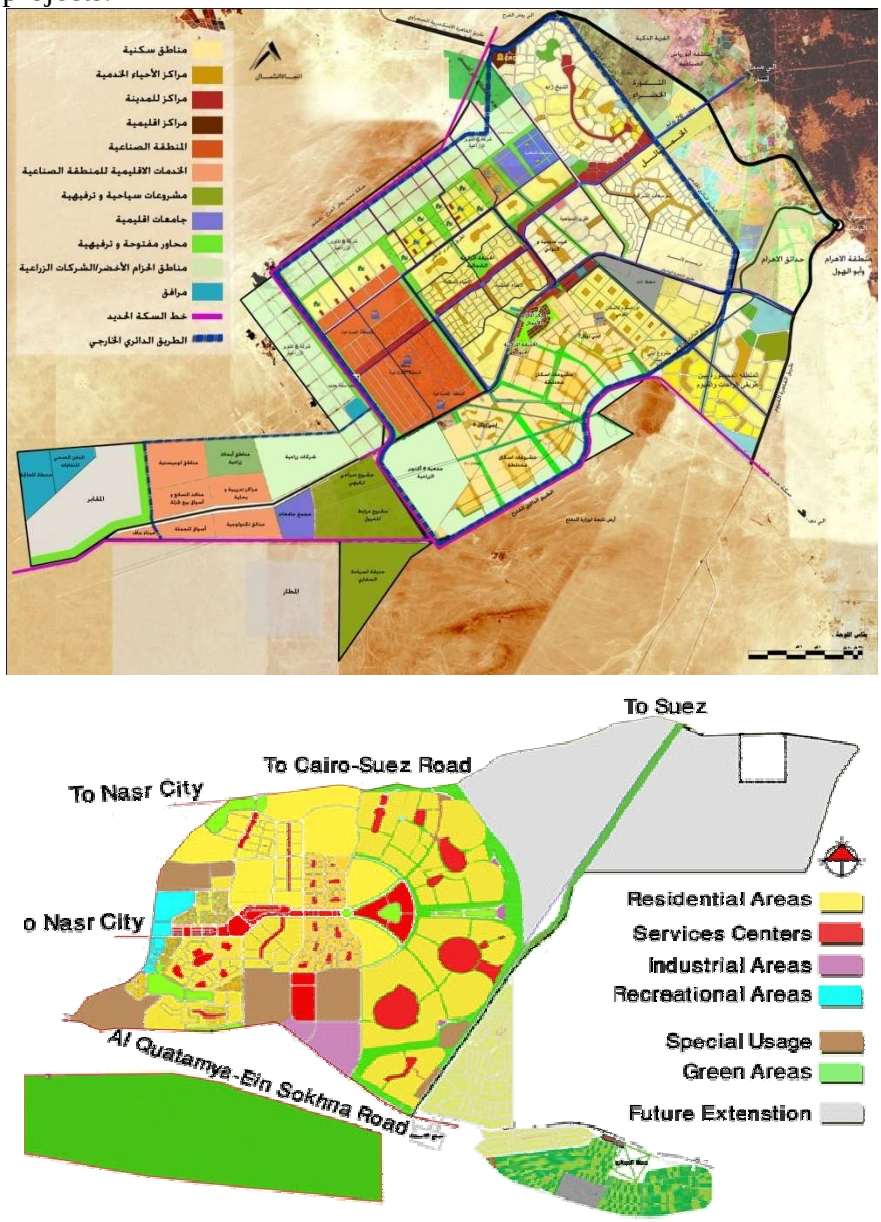

Figure 23: Strategic plan for October & new Cairo cities
Source: Adel Nagib,2010

Chapter II: 6th of October city development, existing status and aspired vision

In chapter I, main reasons behind the need of NUCs that attracts urbanization out of the narrow Nile valley were described. Among the proposed NUC were the satellite cities of which our case study 6th of October belongs.

.2.1 Original Planning, goals and Objectives for October city

6th of October was one of the 'first generation' new satellite towns in Egypt, located West of Cairo at a desert location about 40 km from the centre of the metropolis. In 1979 the presidential decree for the city borders illustrated an original urban mass area of 9,166 Fd - without the buffer zone or green belt - and target population 500,000 and the city was announced in 1981.[1]

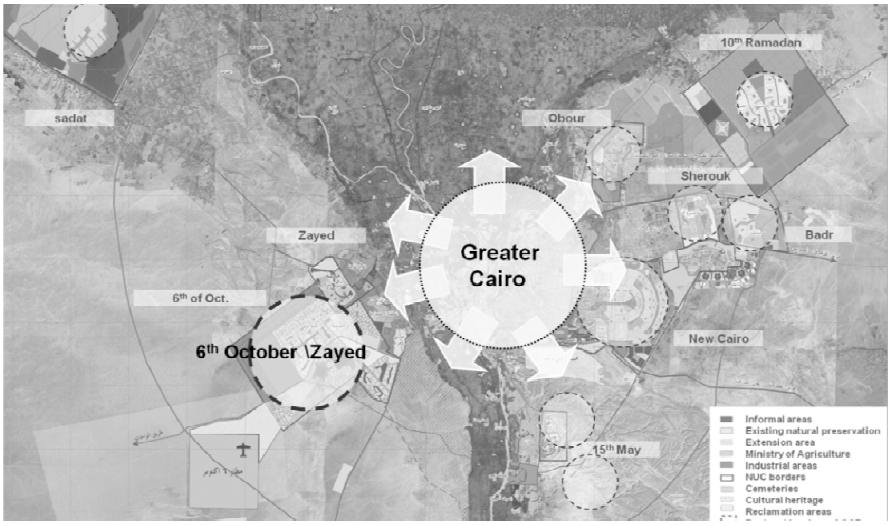

Figure 24: 6th of October city location within GCR

Source: Author

1 GOPP, "6th of October city, General structural plan", 1980

.2.1.1 Original Master Plan 1980

.2.1.1.1 Location

The location of October city was based on the concept of decentralization and shifting the urbanization to outer desert areas, however since October city was a satellite city it was well connected to Cairo through main corridors.

The next figure shows the regional connection and location of the city within GCR.

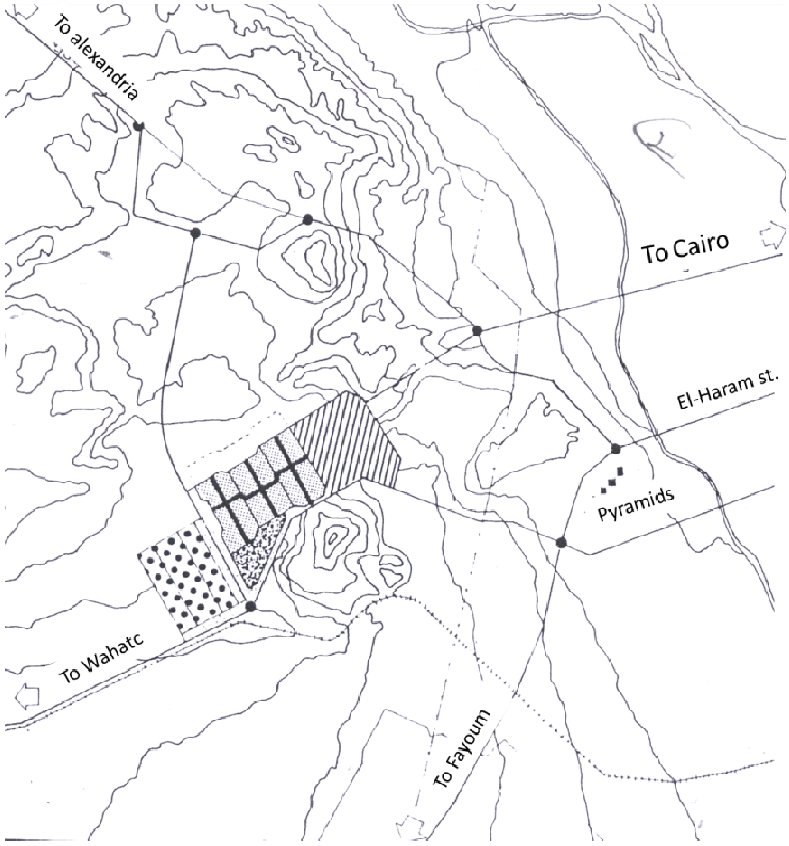

Figure 25: Regional connectivity of October city (1980)

Source: Ahmed Abdel Mohsen Wahdan,1980

.2.1.1.2 Land use Master Plan

The GOPP prepared the Master Plan for October city in 1980 after geographical and environmental studies. The plan was announced in 1981 and was the first to be totally designed by Egyptian consulting firms. The city was –like most other first generation towns- planned to be of an industrial base, thus it included within its master plan a large industrial zone in the

west.[1] The plan was based on linear planning units of direct uniform relation to the main services spine and that could easily be phased and managed. The roads networks were clearly integrated within the regional roads.

Figure 26 shows the Master Plan prepared in 1980, the concept of the Plan was based on a clear structured hierarchy of activities and services.

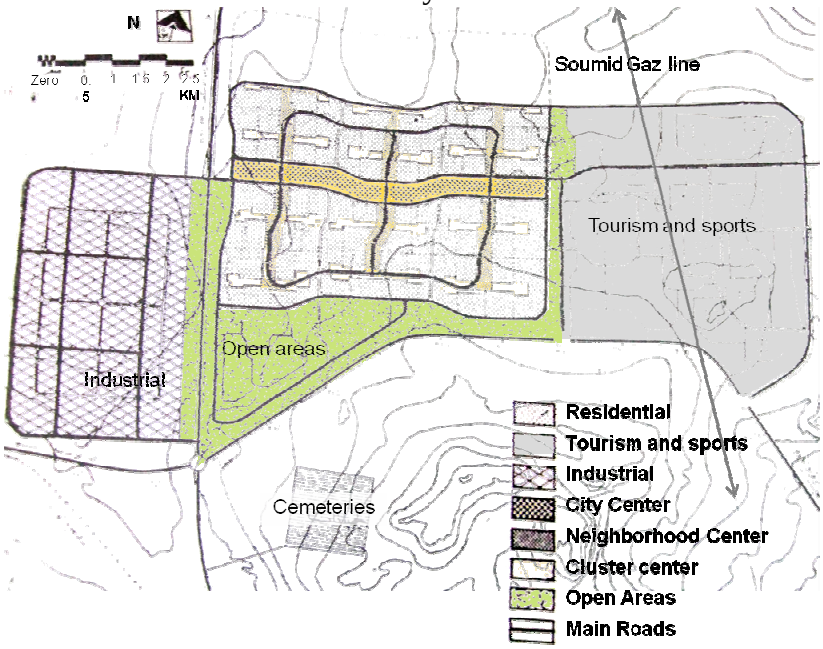

Figure 26: Original Master Plan for 6th of October city 1980

Source: Ahmed Abdel Mohsen Wahdan,1980

Alteration: Author

The land use distribution made for the main city (the residential areas) illustrates the distribution of services and open spaces in the city. The distribution shows a balanced land use variety with mixed uses and services. The main residential urban area of the city combines 4,254 Fd, located between the eastern tourism zone of 4,000 Fd and the western industrial area of 2,500 Fd. Besides the city southern Park (open areas) with an area of 700 Fd. [2]

1 The world bank, "Toward an urban sector strategy", Egypt, 2008
2 ElKewidi, Hazem, "Northern extensions for 6th of October city ",1998

The following table illustrates the land budget for the city.

Table 9: Original Master Plan Land Budget

Activity	components	Area (Fd)	Percentage	Standard m^2\Person
Residential		1176	10.31	21
Commercial	For Neighbourhoods	84	0.74	1
	For districts	72	0.63	0.84
	City centre	75	0.66	0.90
Open areas	For Neighbourhoods	378	3.32	4.5
	For districts	204	1.79	2.38
	City centre	138	1.21	1.65
Roads		1536	13.47	
Industrial zone		2500	21.93	
Tourism area		4000	35.09	
Mixed uses		1237	10.85	
Total		11400	100	
City Park		700		
Grand total		12100		

Source: Hazem ElKewidi,1998

.2.1.1.3 Housing and population

Despite having the city of an industrial base, it was important to classify the residential area and uses integrated within it. The following chart illustrated the distribution of uses within the main residential area of the city.

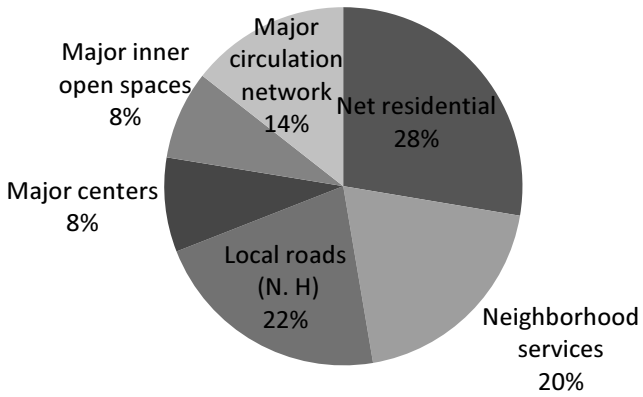

Chart 10: Land use distribution in the original residential area of 6 October

Source: Author based on city land budget (Ahmed Abdel Mohsen Wahdan,1980)

The residential area was basically forms of three sectors each containing four districts of 25-35 thousand inhabitants. The distribution of housing levels in these districts is explained in the following table.

Table 10: housing levels distribution of Original October plan

Housing level	Number of units	Target population	percentage
Economic (low cost)	35,000	160,580	37%
Middle & upper middle	59,000	212,660	49%
Upper class housing	24,000	60,760	14%

Source: Author based on data from Ahmed Abdel Mohsen Wahdan,1980

The district area various between 280-410 fd, and contains 6-8 neighbourhoods each combining 4-6 thousand inhabitants in an area of about 35 fd. Therefore the city included 12 residential districts combining 84 Neighbourhoods.[1] The residential hierarchy is shown in the following chart.

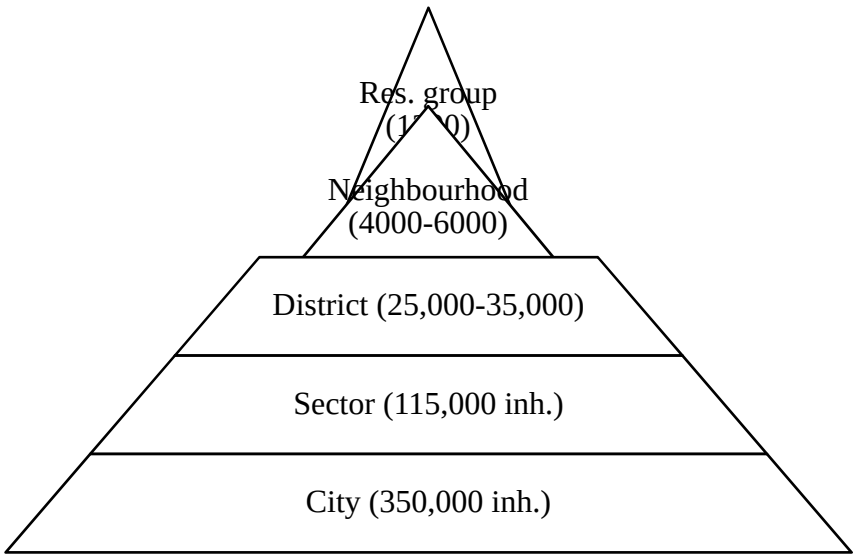

Chart 11: Residential population hierarchy

Source: Author based on data from Ahmed Abdel Mohsen Wahdan,1980

1 Ibid.

.2.1.1.4 Industrial area

Within the overall policy for industrial zones in Egypt, the 6th of October industrial area was defined to contain four main areas of certain industries;

- Zone 1: Food industries
- Zone 2: Pharmaceutical industries
- Zone3: Electronics industries
- Zone 4: mixed industries

These areas were distributed into three main phases of development; each phase contained a sector of all zones.

This was in addition to a linear storage zone of area 834.3 Fd parallel to all previous zones. The total area for the industrial zone was 2,500Fd.[1]

.2.1.1.5 Tourism\ Sport Area

The tourism area in the east of the residential area was planned as a tourism\sport area due to its closeness to the pyramids zone, its elevated topography (providing a better view to the heritage area), and the good climate away from any pollution sources.

The area was divides into three main zones:

- Resorts area:
  - East to Soumid gas line
  - includes 7 resorts, six of which allocated for upper class residential use with low densities and more green space and the 7th as a medical treatment resort
- Tourism projects
  - Lies between soumid gas line and residential areas of October city
  - Includes projects like children's village, theatre, children's library, Golf area, Horse club, integrated parks, etc.
- Sport clubs
  - Allocated in the northern part of the whole tourism zone
  - Includes a number of sports clubs and the social club of October city.[2]

[1] Ibid.

[2] GOPP, "6th of October city, General structural plan", 1980

.2.1.1.6 Roads Network

The roads network for the plan was based on the main linear concept of planning and a clear hierarchy of roads shown in the following figure. The main spine arterial road path through the neighbourhoods and off to the industrial area, the secondary arterial roads go through the districts and connect the various areas while ring roads carry the heavy regional traffic connecting October to the other regional cities (Cairo, Alexandria, El Fayoum and El Wahat). The Wahat railway passes through the south of the city for goods transport passing by the South of the industrial area of October city.

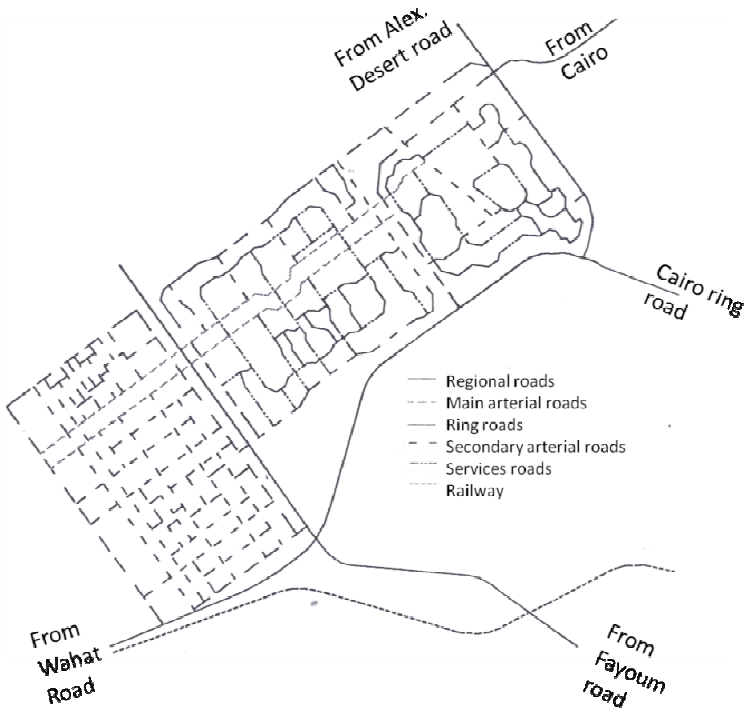

Figure 27: Roads network of October city (1980)

Source: Hazem ElKewidi,1998

Alteration: Author

The roads hierarchy classified by the plan were distributed as follows:

- Regional roads:
  - Eastern roads from Alexandria desert road
  - Cairo –Wahat road south to the city
  - Western road separating the urban mass from the Industrial zone

- Main distribution roads (66m wide)
  - The main 2 roads in the city central spine
- Main road (local distribution rosds) (54 m wide)
  - Inner ring road connecting districts' centres to the city centre spine
- Services roads (27 m wide)
  - The roads surrounding the districts
- Inner roads (18 m wide)
  - The roads dividing districts to neighbourhoods.[1]

1 ElKewidi, Hazem, "Northern extensions for 6th of October city ",1998

.2.2 Successive extensions and existing situation

.2.2.1 Physical growth \changes

Before even having the original plan implemented, and despite the very short time of detailed planning; some changes in the land use distribution and housing levels had already occurred.

.2.2.1.1 Early establishment

The city started its implementation in 1982 by the assigning of constructing about 3238 housing unit in the 7th district to start housing workers of the industrial area expected to start functioning in mid 1984. Since the original plan of the city was based on the concept of linear distribution, it was expected –and recommended-to have phases of development in a repetitive manner that goes with the planning and provides a comprehensive economic development sequence. However the implementation that had started with the 7th district moved to the 6th then the resorts area and 12th districts which are all located on far fringe areas and had left the city in an out of order shape.[1]

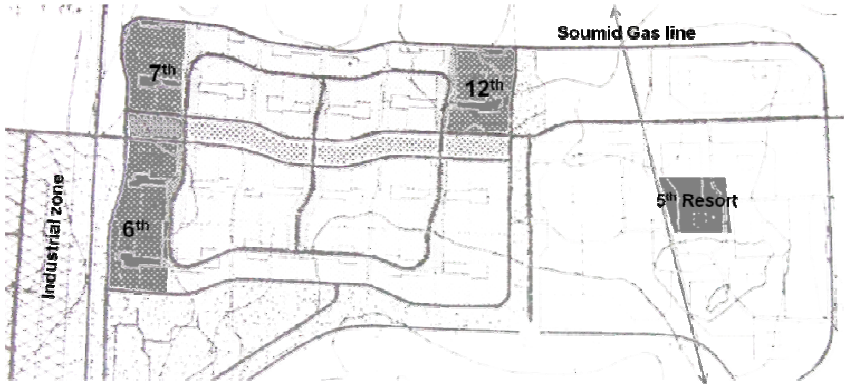

Figure 28: Early development phases in October City

Source: Author

At the early years of establishment, the city has gained unique attention that attracted demand. Hundreds of public and private sector factories were located in the town. The attention given to city encouraged housing, industrial and even regional uses investments leading to higher demands than what the city could then offer in terms of amount and activity.

Since most extensions were direct reaction to the market demands within a policy that longed to attract population and investment in new cities; the

1 Ibid.

extensions in October city were rapidly planned resulting in in-cohesive areas that lacks integration or comprehensive vision.

One of the main reasons behind planning the city originally in a linear manner was to facilitate the extension by adding new sectors and extending the central spine. However one major issue that was taken against the plan was disabling this advantage by blocking the two sides of the linear form by the industrial area in the west and the tourism zone in the east. This lead to an even more in-cohesive extension plans that first grew to the north then east, south and west. [1]

In 1990s, big changes were introduced to the city as a result of its growing demand; the city has dramatically extended on subdivided released land to the demanding market both to individuals and developers at near market prices. Between upper-class Gated communities and serviced plots subsidized low-cost housing, welcomed revenue to the ministry of housing and the state was brought and further investments on the NUCs infrastructure continued.

.2.2.1.2 Sheikh Zayed 1995

In 1995 Sheikh Zayed was established in the north east of the city aiming an ultimate population of 500,000 inhabitants. The city was formed originally from the two communities 16A and 16B.

Due to the location and activities connection of October and Zayed cities, Zayed is often considered as one of the districts or extension areas of October city though still each a separate agency and mayor under NUCA.

.2.2.1.3 Late 1990s Extensions

In the late 1990s a revised plan was performed which assessed the change and deviation from the original plan discussed earlier in this chapter. One major outcome of the plan was the northern extension area composed of a 1.1 km strip planned north to the residential area (on the city's original green belt\buffer zone). The area of the extensions was 2785 fd. Before this area was starting to develop[2] a new further northern extension area was planned on more than 3570 fd. Which was almost all allocated – but not implemented-. Before these development started, another huge eastern extension of about 5000 fd was planned aiming at upper class residential compounds[3]. Other uses were added to the city out of market demand and

1 Ibid.

2 Only Mubarak youth housing and one private housing compound had developed

3 Currently this area still has only three scattered projects under construction on less than 2% of the land.

directed attention to the city like media city, whole sale market, El Fardous residential military compound. [1]

.2.2.1.4 The southern and western extensions (2000-2009)

In the Early 2000s the area between Fayoum and wahat roads (currently called City Park) was added to the city and massive national housing programs started quickly allocated within the area. However late awareness to the distinctive location of the area encouraged a large tourism investment in a location close to the Pyramid zone.

Following this area further southern and western thousand of feddans were added to the city and new projects were allocated without a comprehensive plan or vision. The following map illustrates the growth of October city since its original plan in 1982 and till the recent city extensions in 2009.

Year	Phase	Area (fd)
1982	Original city	13,400
1995	SheikhZayed	9,330
1998	Northern Ext. Industrial ext.	2,785 4,000
Late 1990s:	Further northern ext. Eastern ext. El Zelhour Zayed ext.	3,570 5,000 2,820 2,800
2000	Area between Fayoum-Wahat	7,700
2005	Southern extensions	23,000 1,300
2006	Western Green forest	10,000
2009	Southern ext. Western Ext.	7,000 15,000
Green Belt		18,300
total		126,000

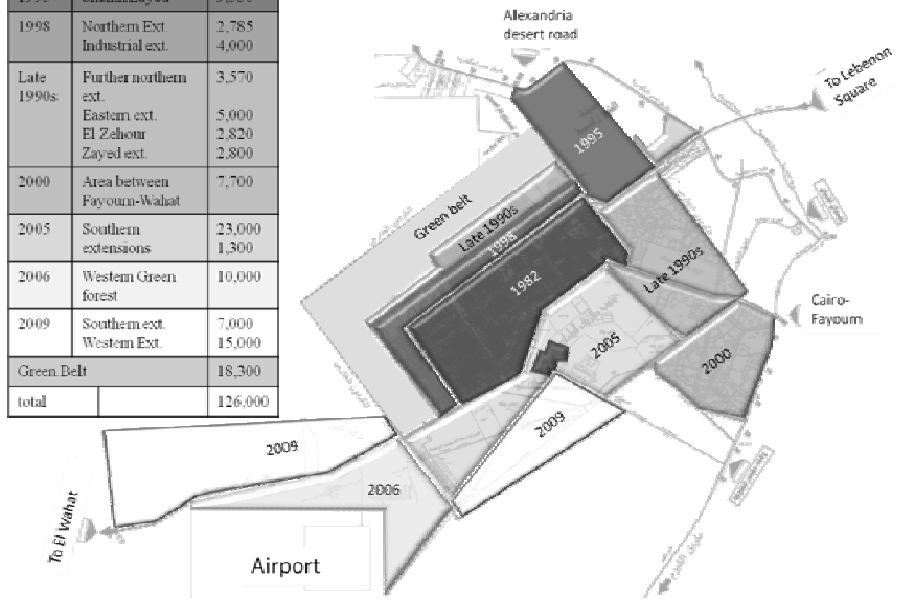

Figure 29: phases of development of October city
Source: Author

The early discussed scattered development and market driven execution policies had reached its peak in the city. The execution map alone could illustrate the management policy-if any- the city had faced during its years of growth.

[1] The world bank, "Toward an urban sector strategy", Egypt, 2008

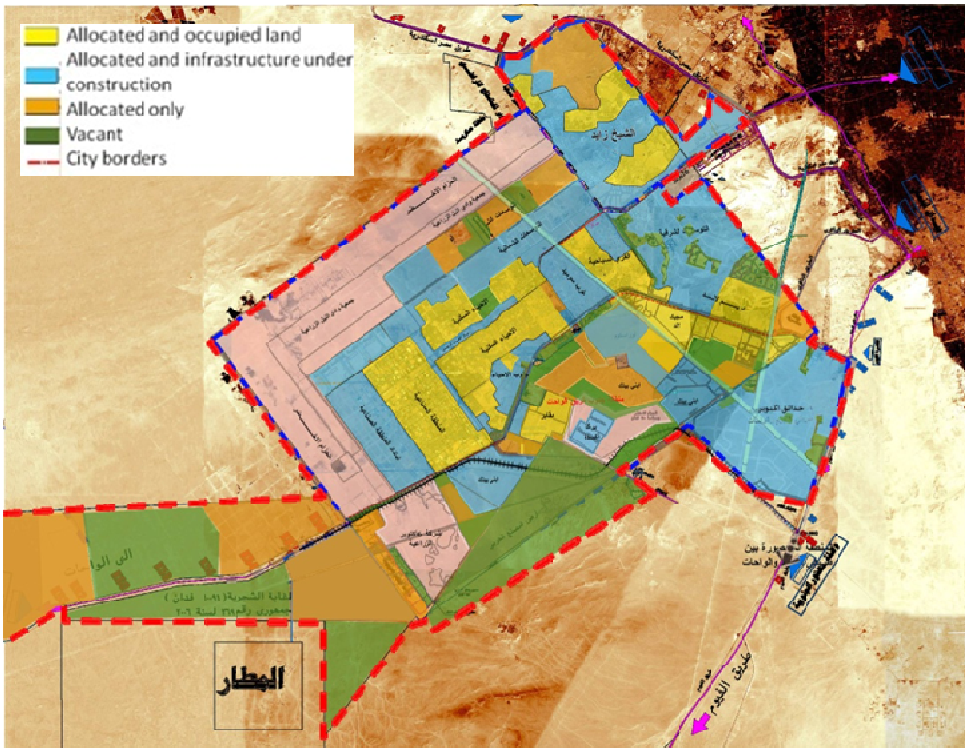

Figure 30: Execution map for October city

Source: MHUUD,2010

As clear from the figure, the vastly growing October city was failing to work together as a city due to the obvious unplanned development leading to huge resources losses and patchy inefficient city.

This phenomenon was explained by The World Bank,2008 that land prices for private entities were purely nominal - although recently land prices have been set to recover (at least partially) infrastructure costs or are sold through closed-envelope auctions- and terms of payment were very convenient, usually 10% down and the rest paid in equal installments over ten years, without interest. Despite stipulating that a project or venture must be built within a set period (usually three years) or the site is repossessed within sales contracts, this condition is only very rarely enforced and very few if any land allocations, whether to corporations or individuals, have been taken back through the city's history.

Moreover, the public allocated free land to the national housing programs or public sector projects which seems finished but have very low rates of

occupancy due to mislead target groups (that will be explained later in this chapter) or speculative purposes.[1]

.2.2.1.5 Existing Master Plan

The existing 2010 city map reflects the resulting lack of planning vision or development management in October city. Extension areas of the city turned to patchy plot shapes that could not function efficiently and would require the government to spend multiples of what should be spent to utilise those lands. Infrastructure networks, mass transit options or connectivity opportunities became a true challenge to achieve.

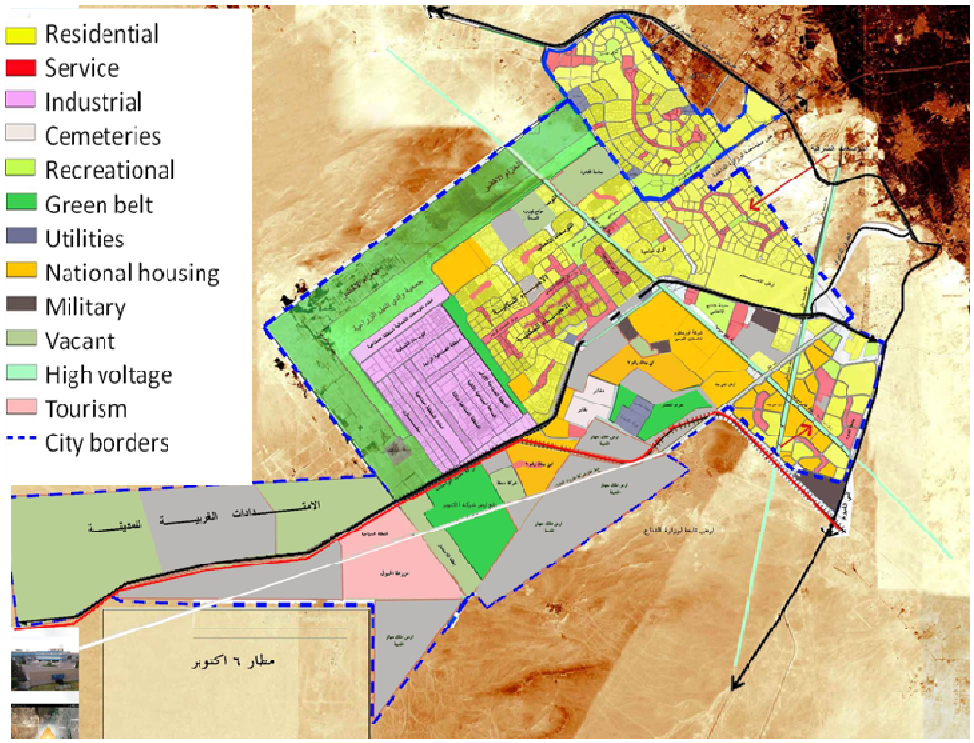

Figure 31: 6th of October Land use plan, 2010

Source: MHUUD,2010

[1] Ibid.

.2.2.2 Population

.2.2.2.1 Population growth (1986-2006)

During the first phases of the city establishment, the 1986 census declared 528 inhabitants[1]in October city. By 1996 and due to the given attention to the city- when Sheikh Zayed city was just starting- the population in October had reached 35,000. During the years of growth –and despite the unfulfilled population aspiration- October city was one of the most successful new cities. The 2006 Census registered 157,000 inhabitants, making Sixth of October the largest of all new towns in population terms. Adding up the population of Zayed, the total would be 187,000 inhabitants.

"Of *all the new towns in and around Greater Cairo, the population of Sheikh Zayed new town had a 2006 population which reached closest to GOPP's 2005 estimate (at 61.6%).*" This was explained due to the city's high portion of private developer's allocations who build attractive housing projects and gated communities for middle-to-high income groups and the resulting "prestige" factor and very little land subdivided for individual house construction. Another factor in its success has to do with its proximity to a number of new real estate schemes, including the Smart Village and commercial strip development at the beginning of the Alexandria Desert Highway and the numerous up-scale villa developments which are springing up further along this highway. [2]

However the population figures have always been an issue of discussion as different sources disagree on the count, but estimation close to reality was done by Mckinsey team based on NUCA; City Authority; Water Co; Electricity Co; site visits; and the team analysis is illustrated in the following chart.

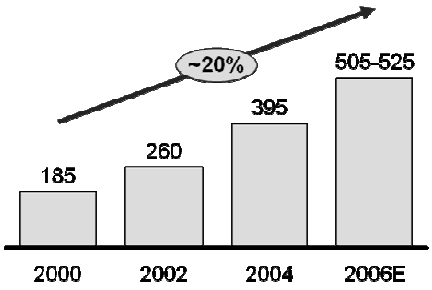

Figure 32: population growth for October\Zayed (2000-2006) thousand inh.

Source: McKinsey and Company, May 2007

1 1986 census

2 The world bank, "Toward an urban sector strategy", Egypt, 2008

.2.2.2.2 Social Segregation

The quick revenues could not hide the fact that further development in the city started to become unfeasible. In-cohesive land uses within the patchy development of extension areas lead to a highly costly infrastructure network, an almost impossible road hierarchy network and a resulted further low income demand for the land. After allocating most of the extension areas for the same low and middle low income groups, and housing more that 40% of the national housing program within the city, the few left over areas could not be different. Vacant areas were scattered around the social housing programs, often beside cemeteries, oxidation lakes or even garbage collection areas. As a result, these areas were as well judged for to stay for the same low income group, still costing huge amounts and adding up to the social problems of the true aimed target groups.

On the other hand, upper class demand found no other choice than green belt areas around and in the city which they started to convert and add up to the internal city growing gated communities which in return adds up to the growing *social segregation* in the city.

.2.2.2.3 Existing and target population

Currently (2010 data obtained from cities' authorities) the population of October city is about 700,000 inhabitant and almost equal to the current target population of Zayed. The total target population for the cities is estimates to be 6.5 million distributed over the 126,000 fd.

.2.2.3 Housing

.2.2.3.1 Execution plan deviation

In 1996The number of housing units in October was 53,000 dwelling, despite the well defined and distributed housing levels in the original residential area, target housing levels were changed in the districts. One main change was the addition of two linear upper class residential strips along the main central spine north and south to it. The following table shows the main housing changes that took place in the main residential area during the implementation phase.

Table 11: change in housing levels during execution phase

Residential district	Original plan housing level	Execution plan housing level
1st	Upper –Middle upper	Middle Upper-mixed
2nd	Middle upper- middle	Mixed
3rd	Middle upper- middle	Mixed
4th	Middle upper- middle	Mixed
5th	Middle-economic	Mixed
6th	Economic –low cost	Low cost
7th	Upper-middle upper	Middle-middle upper
8th	Middle upper	Middle-middle upper
9th	Middle upper	Low cost
10th	Middle upper	Low cost
11th	Middle-economic	Low cost
12th	Economic-low cost	Low cost

Source: Hazem ElKewidi,1998

As shown from the table, most of the changes was directed to lower income class, this was accompanied by major changes in areas, population and densities within the residential zone.

The number of dwellings in October city jumped to 126,000 units in 2006 but the occupancy of these dwellings was still at a low rate of 1.23 persons\dwelling.[1] The change in population between the two censuses and sheikh Zayed population is illustrated in the following table:

1 The average family size is 4.3 (For comparison, the average occupancy for all of Giza Governorate in 2006 was 2.74 persons per unit due to general high vacancy in egypt.)
Ibid.

Table 12: Population and Dwelling Units 1996 and 2006[1]

	1996			2006		
	Population	No. of Units	Persons\ Unit	Population	No. of Units	Persons\ Unit
Six October First Qism				38,666	51,385	0.75
Six October Second Qism				118,469	75,492	1.57
Total Six October	35,353	53,729	0.66	157135	126,877	1.23
Sheikh Zayid	0	0	0	29,499	30,735	0.96
Giza Governorate	4,784,099	1,527,198	3.13	6,272,571	2,284,658	2.74

Source: Census of Egypt (2006 preliminary results).

.2.2.3.2 Speculative allocations

In 2007, only about 14% of the largely extended city remained unallocated[2] while most of these allocations were of speculative or investment purposes. And due to the difficult leasing policies in Egypt, owners wouldn't even rent their properties. Therefore huge areas of the city were left vacant or in long status of being under construction. Even public housing programs were directed to this speculative system.

1 Note that the numbers of dwelling units in 2006 have been reduced by the number of establishments, to correct for the fact that in the 2006 Census the number of dwelling units included shops and garages.

2 "Unlocking the Full Potential of 6th of October and Sheikh Zayed", Cairo, May 2007

.2.2.3.3 Housing Levels distribution

The current housing levels illustrated in the figure below shows a majority of economic (low cost) housing in the city followed by upper middle and upper.

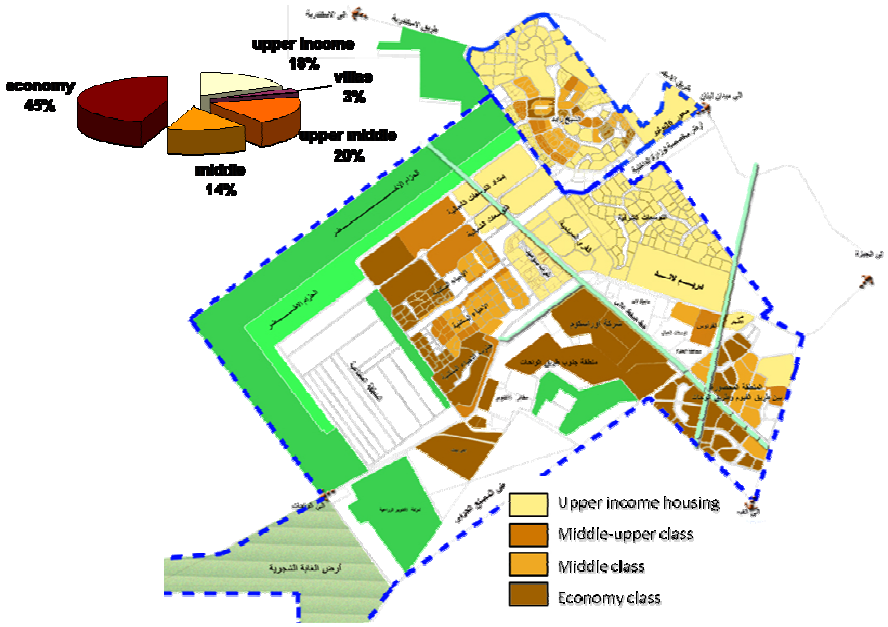

Figure 33: housing levels distribution

Source: MHUUD,2010

Comparing the ratios of the existing housing levels distribution with Table 10: housing levels distribution of Original October plan, the deviation from the plan is obvious.

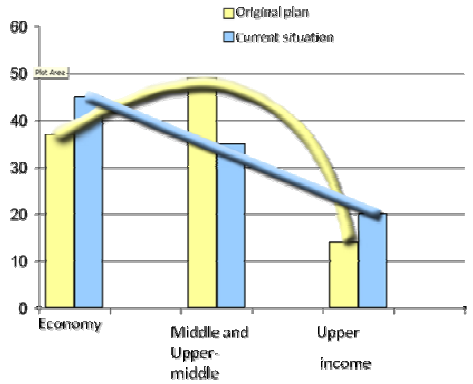

Chart 12: Original and actual housing levels

Source: MHUUD,2010

.2.2.3.4 Unfulfilled target group

However, the further demand of low cost (economic housing) is explained by the fact that the economic housing is still above the potentials of the target groups, thus it is in essence not economic anymore. This is well explained through the following example provided by McKinsey and Company,May 2007 illustrating the 30% gap between offered housing and target group potentials.

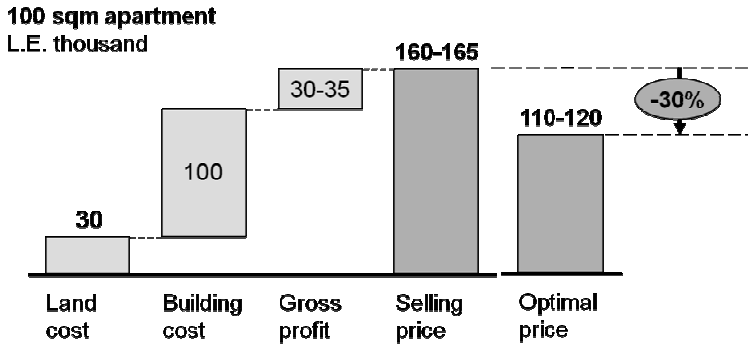

Chart 13: The gap between offered housing and target group

Source: McKinsey and Company,May 2007

This was based on Assumptions that:

- Land acquisition cost = LE 600 per sqm
- footprint ratio= 50%
- Building configuration= 4 floors, 2 apartment per floor
- Building cost= LE 1000 per m^2
- Developer margin =18-22%[1]

"Virtually all privately-built housing units available on the market are completely unaffordable to the large majority of Cairo's households, even if finance were to be available." [2]

1 As resulting from survey and interviews with developers and contractors
[2] The world bank, "Toward an urban sector strategy", Egypt, 2008

.2.2.4 Services

Despite the original standards set for new cities to have better access to local and regional services, the actual executed services were less than designed. The services building were built by the government according to residential occupancy and some areas were left without services. Also the linear planning concept for services distribution were not applies in all sectors (like districts 7 and 12)

Table 13: Services deviation (m^2)[1]

Land use	Original plan	Execution plan	New cities standards
Residential	**14.11**	**9.17**	**21**
Commercial services in neighbourhoods	1	0.65	1
Commercial services in districts	0.86	0.52	0.84
Commercial services in city centre	0.9	0.5	0.9
General services in neighbourhoods	4.5	2.92	4.5
General services in districts	1.79	1.16	1.75
General services in city centre	1.97	1.27	1.76
Open spaces in neighbourhoods	4.5	2.92	4.5
Open spaces in districts	2.45	1.59	2.38
Open spaces in city centre	1.65	1.22	1.65
Total services area	**19.62**	**12.57**	**19.28**
Total	33.73	21.92	40.28

Source: Hazem ElKewidi,1998

The table shows the general decrease in inhabitant share of service which added up to the decline in housing levels in the city in explained earlier.

[1] ElKewidi, Hazem, "Northern extensions for 6th of October city ",1998

.2.2.5 Roads network & public transport

Despite the implementation of the originally designed road network, few inconvenient issues were raised; most importantly that the network didn't respect Somid gas line and its setbacks, also the ring road system didn't work for the industrial area which needed the currently implemented grid network and finally the misused Wahat railway passing to the south of the industrial area. The accessibility to the city thus turned into a growing problem for the city.

Although the 26 July Street Extension (*el mahwar*) was built in 1999 specifically to improve the Sixth of October's road links to Cairo, and even though private minibuses now serve the city on a regular basis, inter-city public transit remains a problem.[1]

Currently projects to study the overall master plan for roads networks and transportation in the city are under study to come up with comprehensive solution and phases to connect the city internally and regionally.

[1] The world bank, "Toward an urban sector strategy", Egypt, 2008

.2.2.6 Industrial sector

As explained earlier, 6th of October was established on a basic industrial activity. The original industrial area was about 2,500 fd west to the city.

.2.2.6.1 Early development issues

The first phase of Industrial area was completed as planned while the second phase and third phases were less corresponding. Later, a fifth industrial area was introduced on 312.6 fd. North to the forth zone. While the industrial zone was achieving quite a success, some implementation issues were facing the development.

- The owners of the factories did not build necessary services zones which lead to the misuse of nearby land (storing, loading and emptying, parking, etc.)
- The liquid waste of the factories was disposed in the sewage system without being treated
- Most of the workers in industrial areas did not live in the city and commute from and to the city daily (net daily inflow of 35-40 thousand workers from Greater Cairo)[1] creating a huge gap between industrial and housing markets in the city illustrated in the following chart.

  This was due:
  - to the lack of provided housing facilities by owners -fearing the strict leasing laws-
  - The housing ownership prices which was higher than workers income and was transferred to factories' owners leading to the increase in the cost of production in the city.[2]

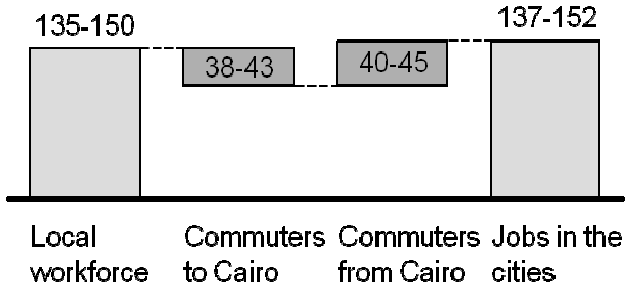

Chart 14: commuter workers from\to the city (thousand)

Source: McKinsey and Company,May 2007

1 "Unlocking the Full Potential of 6th of October and Sheikh Zayed", Cairo, May 2007
2 ElKewidi, Hazem, "Northern extensions for 6th of October city ",1998

.2.2.6.2 Existing Industrial zone

Despite the commuting problem, the industrial area of October city currently holds a very important position within new cities in terms of number of workers and annual production.

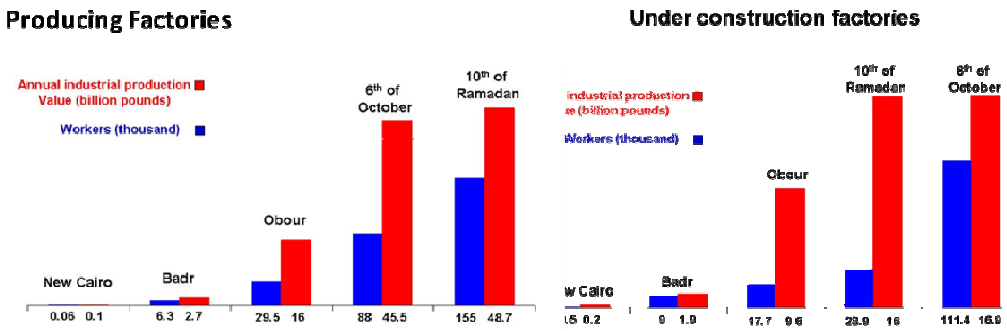

Chart 15: industrial comparisons in NUC

Source: MHUUD,2010

The existing industrial zone in the city still has an unleashed potential through areas that are still under construction or only allocated. It is feasible to create about 286,000 additional jobs in the industrial zone of the city.[1]

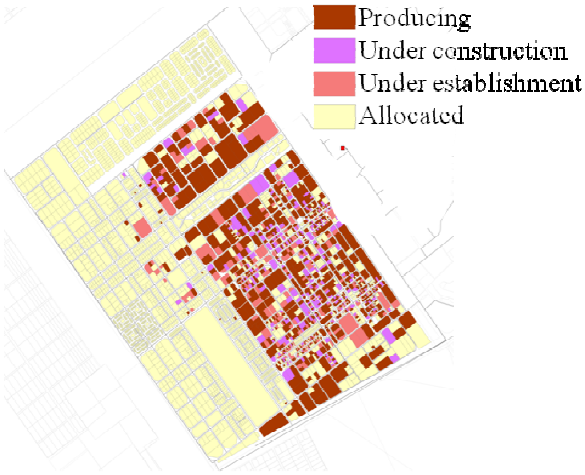

Figure 34: industrial area in October city

Source: MHUUD,2010

[1] "Unlocking the Full Potential of 6th of October and Sheikh Zayed", Cairo, May 2007

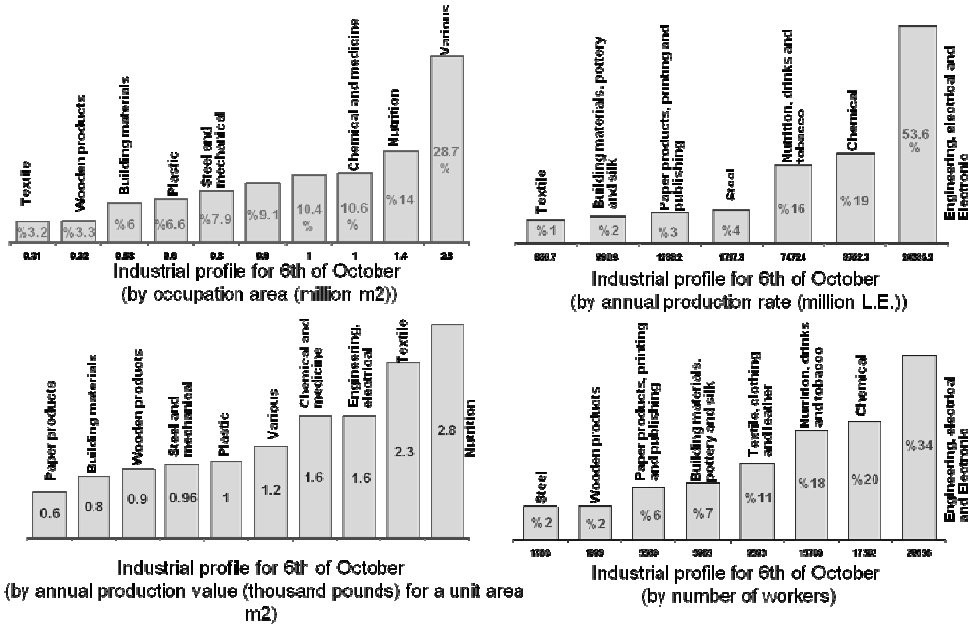

Chart 16: Industrial profile of October city

Source: MHUUD,2010

2.2.7 Legislative framework

Under the 1979 low of NUCA, the city authority of October city performed the following main tasks:

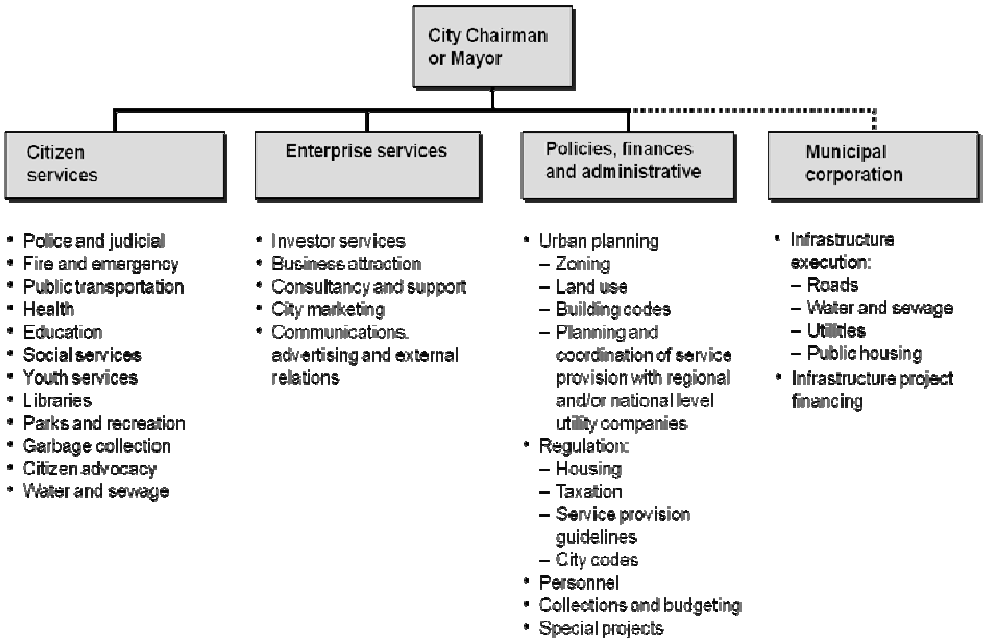

Chart 17: Administrative chart of October authority

Source: McKinsey and Company,May 2007

After the presidential decree of 6th of October governorate in 2009, the city has become under the administrative control of the authority, NUCA, the governorate and the GOPP.

2.3 Strategic plan and vision

At the beginning of 2007, MHUUD seemed to have decided to declare its awareness of the previous management mistakes. The ministry commissioned international management and planning consultants to prepare a strategic plan revitalizing the city. The plans aimed at setting up a clear vision and aspiration for 6th of October city, defining constraints, setting objectives and planning strategies. The outcome of the study was very promising; providing a physical and economic transformation for the city to become *'A symbol of Egyptian aspirations for a better life*'; Creating new connections and interfaces to become a national hub and landmark, while providing all necessary functions and services to become a self sustaining city operating independently within the Greater Cairo Region.[1]

Behind this promising aspiration lies the important question that this research is to address; how can this plan be implemented? The most common problems of resources; Land and finance were facing the project.

this study was started aiming at exploring an efficient urban transformation tool that would answer the research question and as well transfer the urban experience of a new Egyptian city and the political, financial urban challenges it faces.

2.3.1. Background

In 2007 when the Government (represented in the GOPP and NUCA) decided to start its action towards facing the challenges of the city, Local and international chosen consultancy firms performed a comprehensive study. The study was based on previous city reports and plans in addition to close studying of the city existing situation analysis. Stakeholders meetings and discussions were performed to help define the problems and opportunities for the city and shape its future needs and vision. This vision had to also be integrated within the GRC goals and objectives defined in the Cairo vision 2050 and its studies.

The following items will review the main vision and strategies proposed by the plan and explained in MHUUD,2010.

2.3.1.1. Objectives and approach

The strategic plan outcomes –which were redirected after the newly added areas in 2009 and the governorate creation -aimed to define the long term

1 "The strategic plan for 6th of October\Zayed city (existing situation analysis)", Cairo, Egypt, 2010
"Unlocking the Full Potential of 6th of October and Sheikh Zayed", Cairo, May 2007

goals and provide a guideline for the future development of 6th October and Sheikh Zayed cities. This was planned to be achieved through developing national landmark qualities that efficiently use the city's regional and local potentials and make sure the city grows in a *smart* manner within a well planned transit-oriented urban development. It was also essential to integrate mixed use development densities while incorporate present developments to create a comprehensive new identity for the city. Thus economic, financial, educational districts were to build on the strengths of 6th October within a convenient and reliable public transit for inter and intra city travel.

2.3.1.2. Vision

After studying the previous reports and city profile, a vision for October city 2027 was defined;

'October city would be the national hub and landmark for the western Cairo Region that also provides all necessary functions and services to become a self sustaining city.'

The vision was stated in clear points to easily relate to during the study:

- City of Opportunity
- New quality of life for 6th October (live, work, and play), providing quality services to residents and visitors of 6th October
- 6th October as regional, national, international center / hub
- Necessary connections for 6th October as a transit oriented development (internal and external: road system, railway, mass transit, airport)
- Special functions as highlights and magnets for the development of 6th October (CBD, exhibition center, opera, museum, stadium complex, logistic centre, …)
- Overall sustainable and ecological city development
- Compact, livable, manageable city

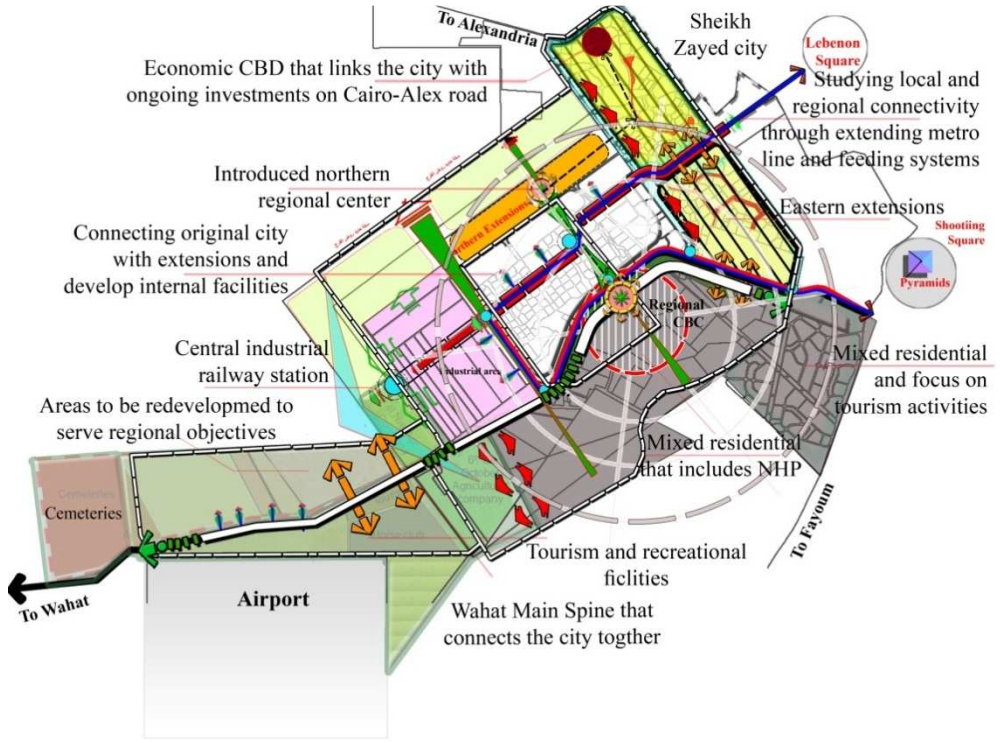

Figure 35: Vision map for October city

Source: MHUUD,2010

2.3.1.3. The basis and concepts targeted to achieve October's vision and development

It is very important for this research to clearly define the basic concepts needed to achieve the vision for October city. Throughout the study those concepts will be used to measure the success of proposed urban tools within the city. The concepts could be categorized into social, economic and physical approaches.

2.3.1.3.1. Social objectives' concepts for October city

Those are the concepts and objectives related to the Social vision for the city. The achievement of those objectives would add up the value of the city socially, making it more desirable for the future inhabiting communities.

2.3.1.3.2. Characteristic and Functional New City

The strategic plan for the city aimed at a characteristic, functional and identifiable urban areas and neighbourhoods creating a sense of place and enhancing the quality of life. Thus encourage residents, families and investment activity. This is further enhanced by services centres, open spaces and studied public transit catchments areas with job centres.

2.3.1.3.3. Quality of Public Open Spaces

Public open space (including development opportunities within open space) is a key factor toward raising the quality of life within October and setting the city apart from Cairo City.

2.3.1.3.4. Economic and Physical objectives' concepts for October city

Besides having the city be desirable for its target groups, it is also important to have a successful urban economic city; a factor that would guarantee the sustainability and smart future growth of the city. The following concepts are the major objectives explained by MHUUD,2010 in the strategic plan report.

a) Linkage to Existing Areas

The new vision has to take existing urban areas into consideration and link the new to the old to enhance the overall structure of 6th Oct and Sheikh Zayed for the benefit of the entire NUC. Physical and functional linkages should be promoted between its individual elements.

b) Ratio of Built-up area / Total Land

The economic viability of the concept will depend on the efficient use of the available land area of 6th October and Sheikh Zayed cities and the enhancement of the value of developed sites by open spaces and large buildable functioning land areas.

c) New City Image

The generation of national and international *investment interest* on the marketplace through a new city image with a strong urban form of 6th October will be a critical factor for its success story and for it to appeal to a creative and highly skilled workforce within the worldwide ionic images competition.

d) Viability of Public Transit System

Finally it was important to stress on the fact that a target population of about 4 million needs to have a well organized reliable public transit system internally and for regional connectivity. This requires a planned road network hierarchy and infrastructure basis. A system of inner and outer ring roads with feeding arterial roads could support the mass transit systems and its sub systems.

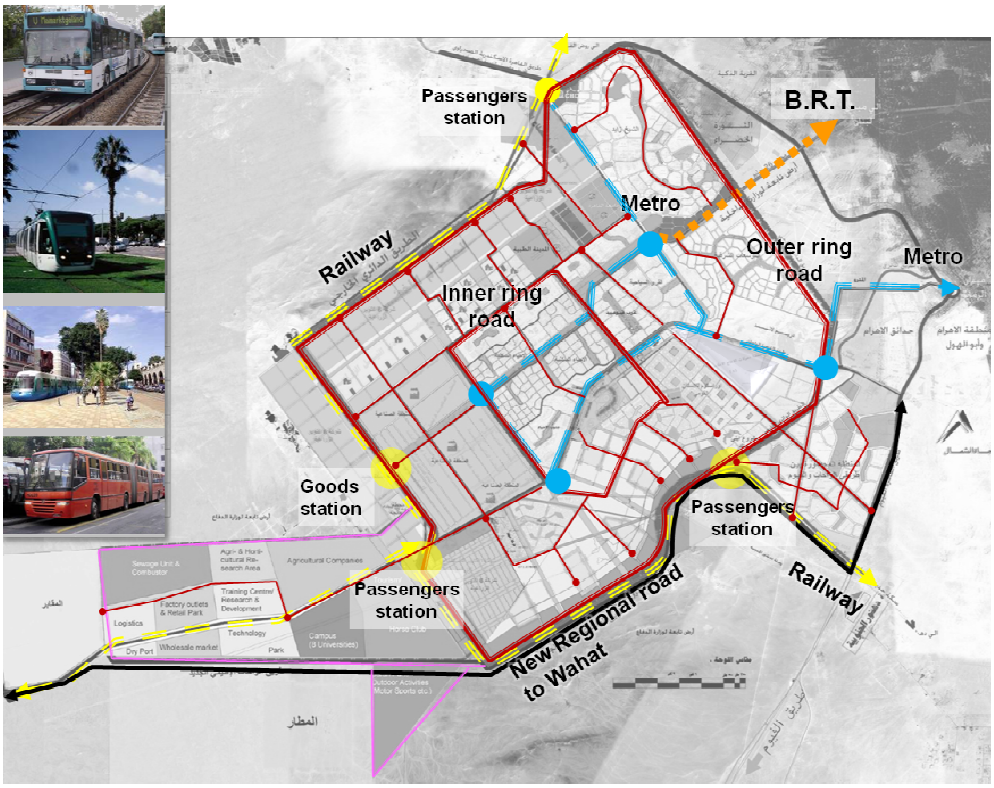

Figure 36: local and regional city connectivity

Source: MHUUD,2010

2.3.1.4. Master Plan for 6th of October city

After defining a clear vision and objectives for the city, a new strategic master plan was prepared. The pan included a new master plan for the city, detailed investment projects and the required phases of development. Before approving the plan, it was discussed in several public meetings with different stakeholders to make sure it addresses the city comprehensively.

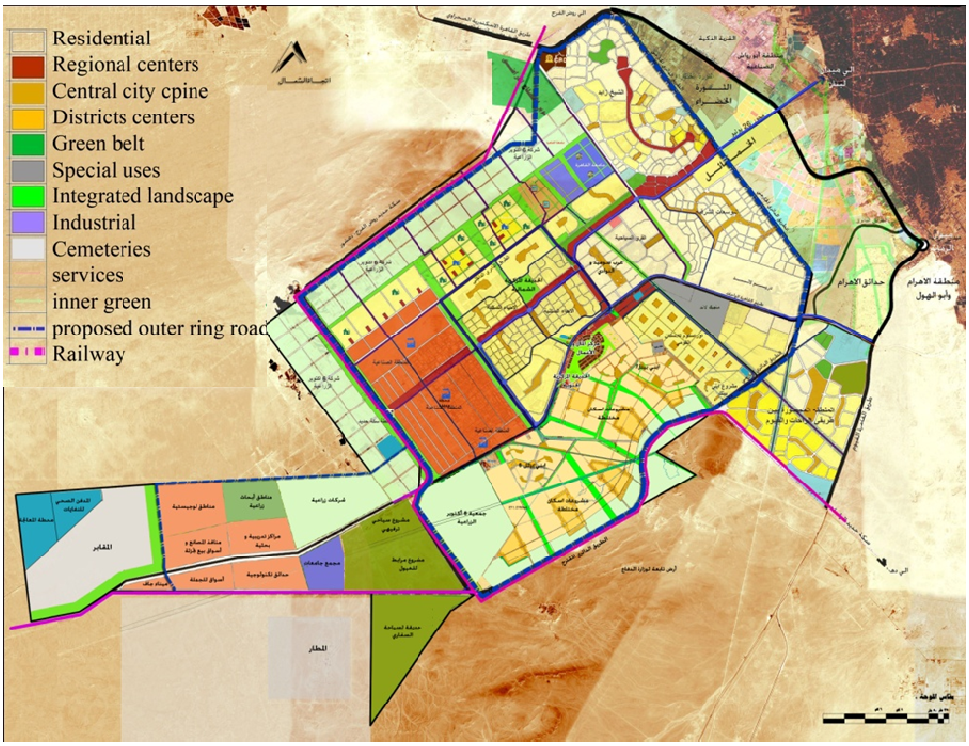

Figure 37: Master plan map

Source: MHUUD,2010

2.4. Main challenges facing the efficient application of the city vision

Having achieved a detailed study that could perform a true urban transformation for the city to a better, more functioning and efficient one; it seemed that the solution to the city's challenges was achieved. However, the true challenge had only begun.

2.4.1. Land allocations

In 2007 when the study had begun, it was requested by the central government to stop any further land allocations until the outcome of the strategic plan is released with its development guidelines. Among various non integrated stakeholders this was not achieved; land allocation for national housing program could not be stopped, other land allocations had to continue growing to finance further investment and maintain the politically supported developments.

2.4.2. Added areas

The situation became even more critical after adding new extension areas to the city by the presidential decree no. 89\2009 to add about 23,000 new feddans of desert land to the city. The problem was now doubled; old areas were already suffering from an inefficient patchy style development while new potential disasters were on the door.[1]

The problems currently facing the city could be summarized as:-

- Despite the newly added areas to the city, there is still shortage in the available areas within the city urban mass (9% only left), in addition to having the available land *scattered* within the patchy plot shapes which makes it very hard and expensive to integrate and use.
- The government had already invested in the infrastructure of extension areas. Allocating new budgets (even if available) to projects that opposes their previous policy would be a clear recognition of their decision mistakes.
- The government had commitments to the National Housing Project having most of the program allocated in October city.

1 Illustrated in Figure 29: phases of development of October city

2.4.3. Land availability in the city

The following figure illustrates the land availability in the city. Even if those plots still have low occupancy rates but ownership is already distributed to different tenure systems and would be very difficult to redevelop. Allocated unoccupied land to either government or private sector could be more feasible as investments are not yet large in those areas, however ownerships are complicated and most of the public lands are needed for the national housing project. Finally Non-allocated lands are the ones available to be assigned for strategic projects by the municipality, but as previously emphasised are not enough and badly located.

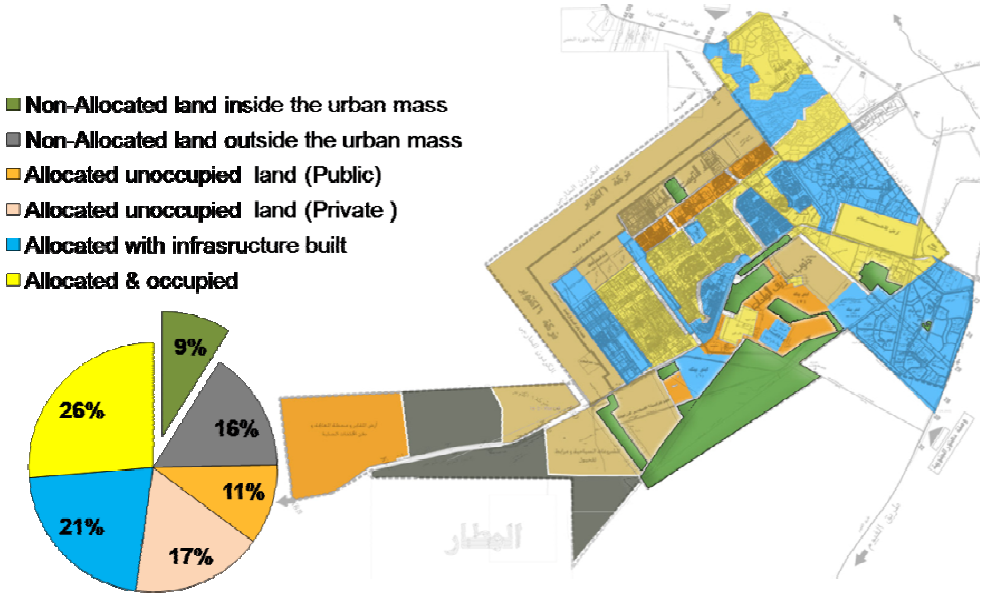

Figure 38: Land Availability in October city (2010)

Source: Author

2.4.4. The need for an urban development tool

Therefore, a development tool was needed to help the city overcome its growing challenges and achieve its defined objectives. A tool that is able to transform the city from its current urban state to a better aspiration through the efficient use of its resources. The main characteristics required for this tool is to be able to:-

- Provide adequate land for the development of the strategic plan projects (the figure below shows the proposed plan and project and the current available land)
- Integrate the government's commitments
- Use as minimum external financing as possible.

Chapter three will illustrate different urban land reassembling tools that could be used to support the future development of the city and compare them aiming to select the most appropriate one for the case study.

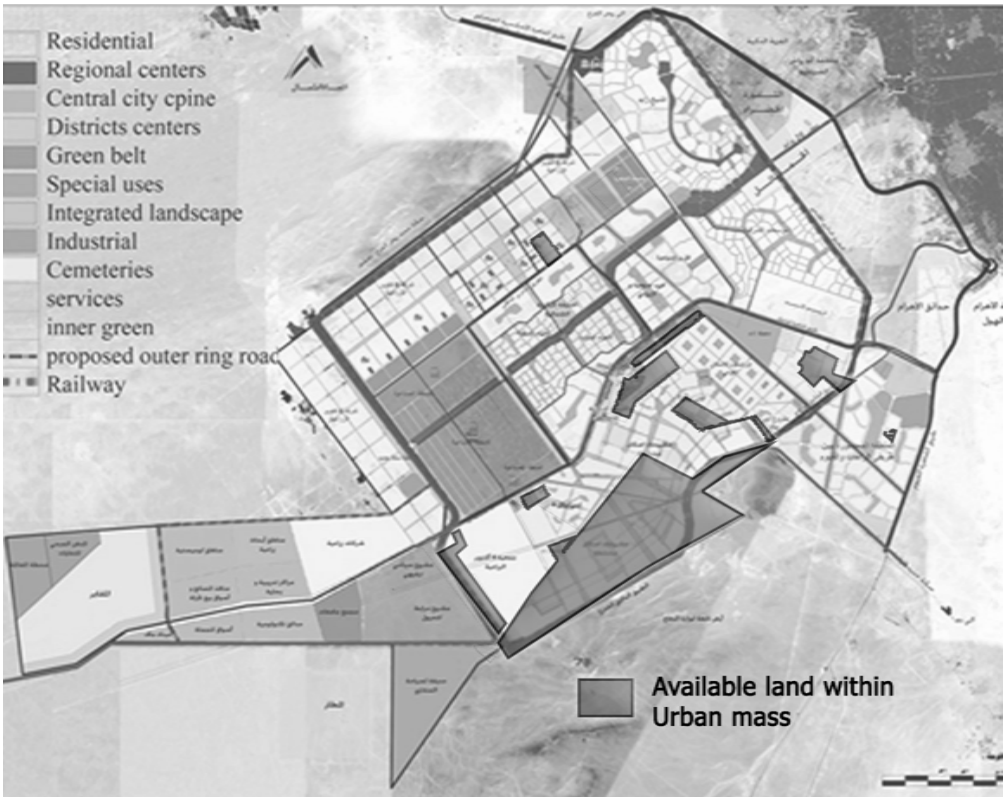

Figure 39 : Master plan and available land in October city

Source: Author

Part II: Guiding future urban transformations in new cities

Chapter III: Land reassembling tools

As concluded from the former chapter, the main problem that is facing the implementation of the future vision and objectives for October city is the availability of sufficient adequate land for the urban needs of the future projects and the redistribution of some existing uses and utilities that impede the envisioned quality of life and sustainable development. The thing that should also be considered is the multiple ownership of land among public, private and associations parties.

This problem of land acquisition methods have been faced by governments all through history and was often accompanied by financing and administrative capacity issues especially in developing countries.

3.1 Urban development tools applied for reassembling and urban development projects

The basic aim behind land acquisition by government –or local authorities- is often the provision of public services and infrastructure to undergoing development that had grown with an organic or informal manner and thus the positive urban transformation of these areas to the defined new urban form. Most of the time radical change to the physical structure of old inner city areas or expanded informal suburban zones is required. As a result, governments and municipalities have –for ages- searched for methods through which transformations could be applied to inefficiently planned urban zones.

"There needs to be some way in which the fabric of cities can be amended and re-structured to meet the ever-changing needs of the population. The means by which land can be reassembled for urban development has become a worldwide need"[1]

[1] Anglia Ruskin University, "Land readjustment as a global land tool: focus on the Middle East", UK, 2007

In different countries around the globe, basically three methods are often used to face such an issue and to acquire land:

a) Compensation method, (compulsory purchase)
b) Voluntary method, (voluntary cooperation between land-owners)
c) Land readjustment method,[1]

Between these methods there is of course a wide variety of other detailed ways of getting around the target, but most of the different tools underlie the main concepts of these three approaches which will be illustrated.

The choice of the best method depends on the size of the redevelopment, resources –financial and human - availability and the type of land owners involved.

This chapter will explain the three approaches for land acquisition providing a simplified application example - relevant in concept to the case study- that compares between them and conclude the most appropriate method to be used in the case study.

[1] Yomralioglu, T., Tudes, T., Uzun, B. and Eren, E., "Land Readjustment Implementations In Turkey", Ankara, 1996, P.150-161

3.1.1 Compensation method (Compulsory purchase)

When governments needs land for the general public constructions, compulsory purchase –often called expropriation- is often the first solution that comes in mind. In the 1950s and 1960s, compulsory purchase orders (CPOs) were used by many local authorities to reassemble central sites for different uses within planned development.

The process simply identifies the landowners who have property in the development area and inform them with the expropriation decision. Land valuation and assessment then takes place according to the applied laws and the amount of compensation is defined. Unsurprisingly of course land owners always argue that the values do not reflect the real value of their properties and cases are usually taken to courts.[1]

However,*"From the government perspective, the compensation method provides a practical solution to land acquisition, because it is a short cut method that is easy to implement by the force of the act."*[2]

3.1.1.1 Advantages

- A rapid land tool for government in urgent land provision,
- Usually supported by strong acts that facilitates the application
- An efficient method in small land development projects.

3.1.1.2 Disadvantages

- An expensive method for the government (A readily available budget is always required),
- Since it is a mandatory land-acquisition process which uses legal force and usually accompanied by disagreements it could often be refused politically,
- The process causes land valuation disputes between government and landowners. This delays the implementation of project,
- Land speculation occurs in project areas.[3]

1 Ibid.

2 Yomralioglu, Tahsin, Uzun, Bayram and Nisanci, Recep, "Land Valuation Issues Of Exprpriation Applications In Turkey", Compulsory Purchase and Compensation, Trabzon, 2007

3 Yomralioglu, T., Tudes, T., Uzun, B. and Eren, E., "Land Readjustment Implementations In Turkey", Ankara, 1996, P.150-161

3.1.2 Voluntary Method

Voluntary land acquisition method is usually applied when individual landowners agree on plot sharing\redistribution and site layout without the need for recourse to the statutory body.[1]

The concept goes back to the neoclassical economy theory - early 1900s - stating that "*As urban economics has developed over the last 20 years or so the assumption has almost invariably been made that the land market works smoothly and efficiently to ensure that each parcel of land is used by the activity which can pay the highest rent*"[2] i.e. the land remains at its *highest and best use*. This concept basically transforms the burdens of planning and zoning regulations from municipalities to the market or Landowners.

However the concept was later proven not very efficient as many owners simply do not do the rational reaction acts or present the *positive owners*, some *passive owners* have different goals –if any- than the normal rational ones the theory proposed; the simplest of which would be land speculation.[3]

Voluntary land acquisition basis the method on assuming that land owners would handle the burden of negotiation and approval to the better planning situation, since this better planning is usually from the perspective of owners' personal benefits, the new distribution layout has to be then examined by the municipality for approval ensuring the realization of the public interest. If the checked land parcels do not provide the requirements, then landowners should find out some alternative solutions to provide zoning requirements.

In this case, there are a few options that can be followed by landowners in order to obtain have a construction permit. These options are as follows:[4]

3.1.2.1 Private subdivision:

This case is applied when a single land owner has an adequately large parcel which contradicts zoning requirements, like in the example given below if it blocks a planned street that passes through the land. The parcel should then be divided into more suitable new lots (A and C in the example) and the area covering the public use is contributed to the public use (area B). the new subdivisions are finally rechecked and approved by the relevant municipal administration.

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[1] Louw, Erik, "Land assembly for urban transformation—The case of 's-Hertogenbosch in The Netherlands",Land use policy,2006

2 Evans, Alan, "urban Economics", Basil Blackwell, Oxford, 1985,

3 Adams, David, "Urban Planning and the Development Process", UCL press, london, 1994,

[4] Yomralioglu, T., Tudes, T., Uzun, B. and Eren, E., "Land Readjustment Implementations In Turkey", Ankara, 1996, P.150-161

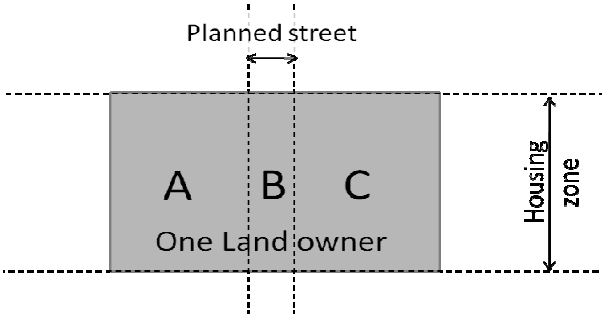


Figure 40: Private subdivision illustration

Source: Author

3.1.2.2 Consolidation of land portions:

This process is almost the contradictory case of the previous private subdivision; it is thus applied when small land parcels do not have sufficient area for the planning objectives. A consolidation or combining process can then be applied among adjoining land parcels. This of course requires agreements among interested landowners. In the example below, landowners A,B and C would go on an consolidation process while Landowner D could use his land without going into the process. However the overall proposed plan should be approved and checked by the municipality for the four landowners to obtain their approval.

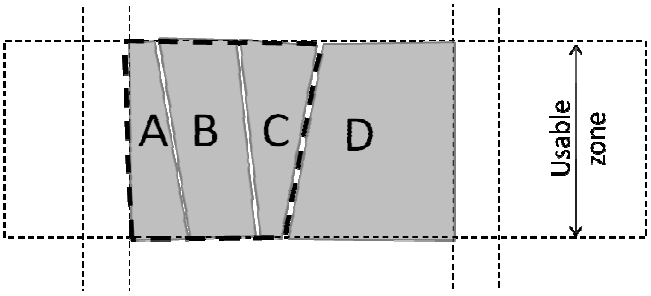


Figure 41: Consolidation concept illustration

Source: Author

3.1.2.3 Boundary exchanging:

This method is applied when some land parcels have irregular inefficient shape; as a result parts of the land require to be exchanged among landowners to provide regular useable shapes for their land upon their mutual benefit and agreement.

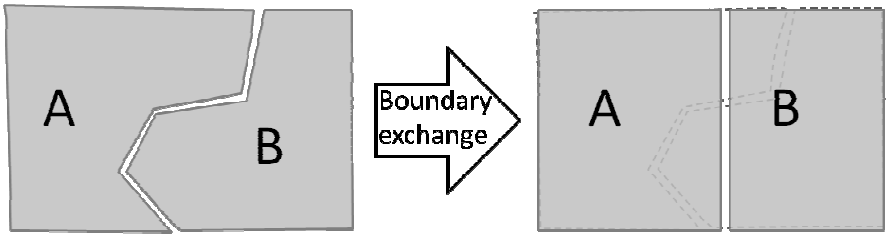


Figure 42: Boundary exchange illustration

Source: Author

3.1.2.4 Advantages of Voluntary land acquisition method

- Inexpensive land-acquisition way for government,
- Instead of the government, individual landowners are more actively involved in the land development process,
- New site lots for housing purposes are produced,
- A cadastral parcel is transferred to a site lot so that the legal position of the parcel changes increasing tax revenue,
- The government obtains required public use land freely, without any compensation.

3.1.2.5 Disadvantages

- The landowners control development according to their personal benefits which do not always line with the public benefit even it applies the zoning or general municipal regulations.
- Requires active and flexible municipal control updated with urban planning goals and objectives which is often missed in developing countries
- A time-consuming approach to land development process for a large project area,
- Landowners are under an obligation that if the existing parcel covers a public-use area, the covered portion of land should be dedicated to public use resulting in loss of revenue to landowners.

3.1.3 Land Readjustment Method

Land readjustment (LR) is another land acquisition method that was first introduced to enable irregularly shaped plots to be integrated and re-planned comprehensively providing usable land parcels and required public services and infrastructure by the increment of the increased value of lands that accompanies the redevelopment process.[1]

An illustrative figure below, explains the main concept of the LR process:

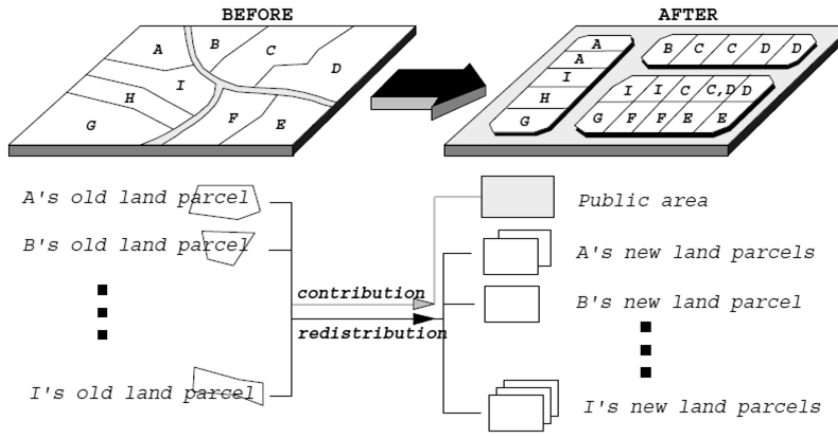


Figure 43: LR tool illustration

Source: Tahsin Yomralioglu, et al.,2007

Since LR was adopted to overcome the disadvantages of other acquisition tools and specially focus on the fair distribution of benefits among the owners and the society, it basically combines the benefits of the redevelopment planning and distributes them among owners according to their share of involvement or cooperation i.e. the value of their lands before LR scheme. However in few cases if some owners still refuse to join the LR scheme expropriation laws are often used and their compensation is calculated according to the old value of land before the LR development.

3.1.3.1 Benefits of a well adopted LR system

The major benefits of LR systems for both municipalities and land owners could be summarised as follows:[2]

[1] Adams, David, Disberry, Alan, Hutchison, Norman and Munjoma, Thomas, "Managing Urban Land: The Case for Urban Partnership Zones",Regional Studies,0034-3404, 2001
[2] Hong, Yu-Hung and Needham, Barrie, "Analyzing Land Readjustment

Financially

- Reinforce the self funding mandate and facilitate fully-serviced urban development without direct public funding
- Provide with revenues that could cross finance other related projects
- Minimise the transaction costs by providing an ideal governance structure in the redevelopment process and thus reducing development risk costs
- Efficiently and innovatively usage of land and creating new economic interest and combining the assembly and re-parcelling of land for better planning
- After the project, land values increase very rapidly and land become more valuable for landowners and Tax revenue increases within project area.
- It distributes the financial benefits of development (also known as betterment, or the added value that can be created by planning permission) between land owners and the development agency

Socially

- Basic public services are supplied to new lots and new social services are brought into to the project area
- Help minimize the political and social costs of urban renewal and disputes about land planning injustices are reduced
- Promotes participation for the overall public and private benefits
- Equitable assigning of property rights with proper registration (Land rights are transferred after the re-plotting).
- A zoning plan is realised in a short time, and urban land development projects are achieved rapidly.

Economic, Law and Collective action", Lincoln Institute of Land Policy, Cambridge, Massachusetts, 2007,

Anglia Ruskin University, "Land readjustment as a global land tool: focus on the Middle East", UK, 2007

Yomralioglu, Tahsin, "A Nominal Asset Value-Based Approach for Land Readjustment and Its Implementation Using Geographical Information Systems", Publisher, Place Published, 1993

3.1.3.2 Shortcomings of LR system

Most of the issues raised from the application of LR systems were related to the poor management of the process; this includes information management shortages and transparency deficiency or disability to transfer the concept properly to the stake holders. In limited cases the LR process fails to achieve its objectives due to the rejection of owners to participate, since the main concept of the scheme is based on creating beneficial incentives for the owners to ensure their welcoming of the project and their accompanied fairly distributed benefits.

T. Yomralioglu, et al.,1996 explained disadvantages of LR that can be summarized as follows:

- The repulsion of landowners to give up parts of their lands to public uses or to contribute when they are not involved in the planning process
- In large LR projects, due to the wide range of affected parties (some of which would have to find alternative shelters) political decision makers hesitate to take such decisions specially before an approaching election.
- Available municipal resources such as technical persons, budget, and equipment are not always sufficient to carry out a LR project
- Land valuation methods have to be clear and acceptable by all participants as well as the redistribution (or reallocation of the plots) the process is usually complicated and requires well trained technical planning staff.

However, in cases where the above shortcomings are well taken into consideration, LR schemes are usually more successful and comprehensive compared to other earlier explained transformation tools.

The following part of the study will provide a simple example –well related to our case study of October city- and compare the application of different transformation tools explained to come up with the most efficient tool to be applied on the case study.

3.2. Comparative example of urban transformation tools

To compare between the previously explained tools, an illustrative example that has similar main circumstances of our given case study will apply the three main concepts where the one that achieves the best and most efficient results will be chosen. As explained in chapter II the main challenges that faces the vision implementation in October city is the fragmented shapes of the existing plots and the lack of adequate areas for public services and infrastructure.

The following example shows a future development plan of a simplified area that needed to be reassembled. The original plot shapes is shown in dashed lines while the new vision plan is in continuous ones. The new plan suggests a regular formed plots and streets with an inner public park among owners.

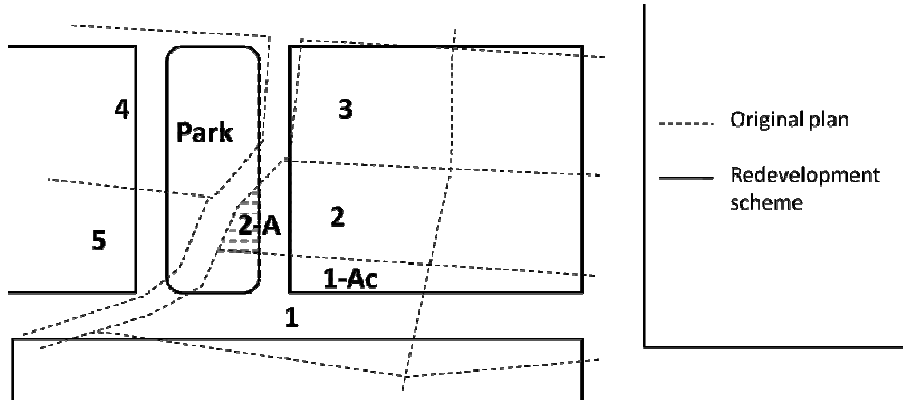


Figure 44: comparative example of urban transformation tools

Source: Tahsin Yomralioglu, et al.,2007

Alteration: Author

3.2.1 Compulsory purchase

If the government decided to apply a compulsory purchase scheme, plot 1 shall all be expropriated and compensated for while the part 2A of the land 2 will be compensated. The land owner though might refuse claiming that the remaining land would be insufficient for development and ask for either a high extra compensation or compensation for the whole land (which the government doesn't need but might have to acquire) similarly land owners 4 and 5 will have will probably raise the case to court which might result in the implementation of the project but in a very costly –financially and politically- and time consuming manner. In addition, land owner 3 will gain all the benefits of the redevelopment without having to pay extra fees or share in the costs. Even if increment taxes or betterment charges are applied, the cost paid by this plot usually is not compared to the cost or effect paid by other plots beside the unshared social and reallocation consequences of the project.

3.2.2 Voluntary exchange

In the case of the proposal of a voluntary exchange to gain better land use permit for example. Land owner 1 will never be interested in the exchange, as its remaining part 1A would not be sufficient for development -and probably not even well paid for by owner 2 if consolidation is applied- Land owner 2 might be ready to give up his portion of land 2A to gain the new permit and land owner 3 again remains winning without having to join the exchange program. Therefore obvious issues regarding the interested parties will hold back the development.

3.2.3 Land Readjustment

Applying land readjustment, the value of each land before the development plan will be examined and approved then the landowners will each have shares in the projects with the value of their land. After development, the newly distributed plots of lands will have higher values, some owners would retain their shares in form of smaller newly developed areas while others – owners of originally small or low value land- would find their shares had become more profitable if invested somewhere else as their value have generally increased by the development but they are still small compared to needed shares for redeveloped plots, therefore its wiser to invest them in a cheaper area. Finally after the reallocation of shares all original land owners have equal amount of profit from the project and the government had also benefited from the development by self financed public services and infrastructure offered through the capture of the increased value of land after LR.

3.3. Conclusion and recommended tool

To evaluate the three tools with reference to the case study, a simple comparison table was performed to measure the potential achievements of each tool and select the most efficient one. (3 best achieved and 1 least achieved)

Table 14: comparison of different transformation tools

Assessment factor	Compulsory purchase	Voluntary exchange	Land readjustment
Achieving redevelopment scheme	3	3	3
Financial burden on government	1	3	3
Provided public services	2	2	3
Fair distribution of increased value	1	2	3
Fast redevelopment	3	1	2
Supported politically	1	3	2
Avoid Land speculation	2	1	3
Easily managed	3	2	1
Provide extra revenues	1	2	3
Creation of new acids	1	2	3
Promoted participation	1	2	3
Total	19	23	29

Source: Author

The values given in the table above are based on comparative analysis referring to the circumstances of the case study so that they don't represent net values, but rather comparative values.

The result therefore, concludes that LR scheme is the most appropriate urban tool to be applied to October case study[1]. Before the application, the next part of the research will first further illustrate the typical process and international experiences of LR tool.

[1] Land readjustment was chosen in the case of October city due to its illustrated details and requirements. Other cases in other new cities could require a different reassembling or redevelopment tool depending on the targets and scale of the application

3.4 Land Readjustment

After choosing LR for the application on October city, and explaining the social, economic and physical benefits gained through the successful application of LR schemes. This chapter will explain the main concept and process of LR systems, the history and background will also be discussed in order to illustrate the reasons behind system evolving.

3.4.1 Background and definition of Land Readjustment

LR as a concept reflected the necessity need for an alternative land development technique to deal with outdated, inefficient and patchy shaped allocated or developed land plots. With the many reasons creating these problems, governments, landowners and developers have tried different approaches to reform those areas with a main common goal of resources efficient use. With their various tools explained earlier; Voluntary arrangements, expropriation (compulsory purchase), betterment charges, land assembly and other techniques were widely tested but often did not work either for being financially non affordable, causing social inequity or facing enforcement disability.

The fact is that when it comes to land, the value of a number of plots is not equal to the sum of their values; instead according to their configuration it could be less or more. Accordingly, people do not benefit from redevelopment by the same rates. So the fair system is to make sure that the resulting sum value of land to be redeveloped is considerably increasing and that this increase is fairly distributed socially and financially among participants according to their inputs.

More than 100 years ago Franz Adickes, the previous Lord Mayor of Frankfurt am Main, created a law to force landowners to participate in so called *land readjustment* projects. The basic idea of this instrument is to exchange the plots of the landowners and not to expropriate them. [1]

One of the key elements behind the LR approach success is its flexibility as an application. Since the early twentieth century LR has been used and adapted to local situations and objectives. This is why a wide variety of definitions for LR exists according to the contexts and constrains overcome. However, some definitions focused on the main concept of the LR as explained in the former part of the study;

[1] MÜLLER-JÖKEL, Rainer, "Land Readjustment – A Win-Win-Strategy for Sustainable Urban Development", FIG Working Week 2004, 2004

"Land Readjustment is a system which enables fragmented and irregularly shaped plots to be consolidated for the creation of service and usable parcels. Land is then redistributed to the original landowners, with public infrastructure costs borne collectively by the increase in development value, on a pro-rata basis" [1]

And the UNCHS (Habitat),1990 definition:

"Under land readjustment programmes, undeveloped areas, usually an urban fringe can be designated for improvement, including the rearrangement of plots, the grading of land, the construction of roads and the provision of infrastructure. Instead of paying a betterment levy, landholders must surrender part of their land to the local authority as payment for the improvements. The local authority can then resell this portion of land to recoup the improvement costs."

3.4.2 LR Process

The general process of LR could be explained through the following chart:

[1] Adams, David, "Urban Planning and the Development Process", UCL press, london, 1994,

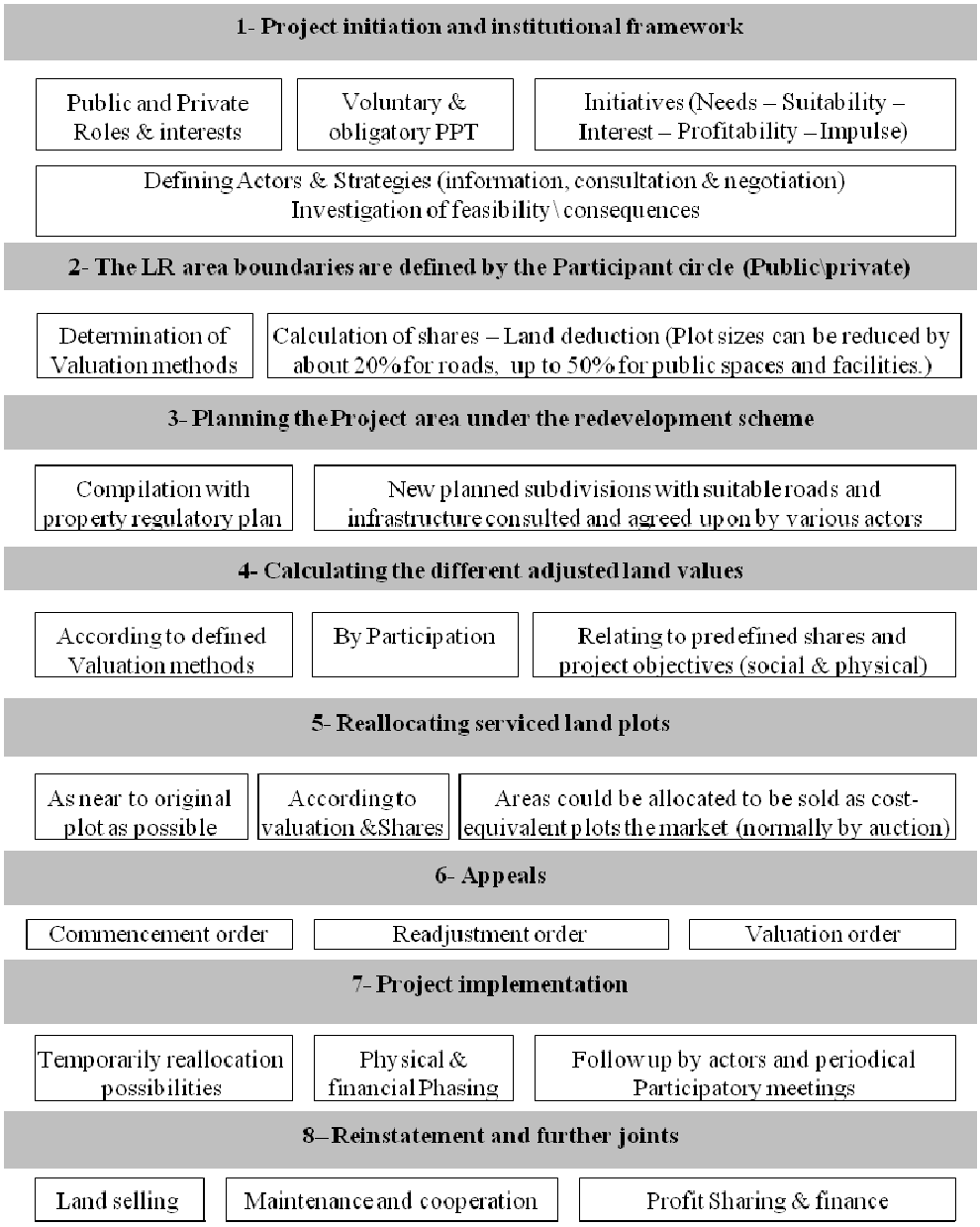


Chart 18: LR general process

Source: Author [1]

[1] Based on Anglia Ruskin University, "Land readjustment as a global land tool: focus on the Middle East", UK, 2007, Larsson, Gerhard, "Land readjustment: A modern approach to urbanisation", Avebury, England, 1993,

Since this study focus on the elements of the process that enable LR systems to provide social and economic benefits, Chart 19 illustrates the simplified process and the key issues that provide the socio-economic success.

At the beginning of the project, it is very important to define the institutional frame work and actors involved and the roles of public and private parties, once the process has started, one or more *main actors* must actively prosecute it and commit the resources which this requires. These main actors are generally the initiators (possibly together with additional interests), a circle of disposed *co-actors, passive participants, counter-actors and Authorities* are grouped according to the case[1].

[1] Larsson, Gerhard, "Land readjustment: A modern approach to urbanisation", Avebury, England, 1993,

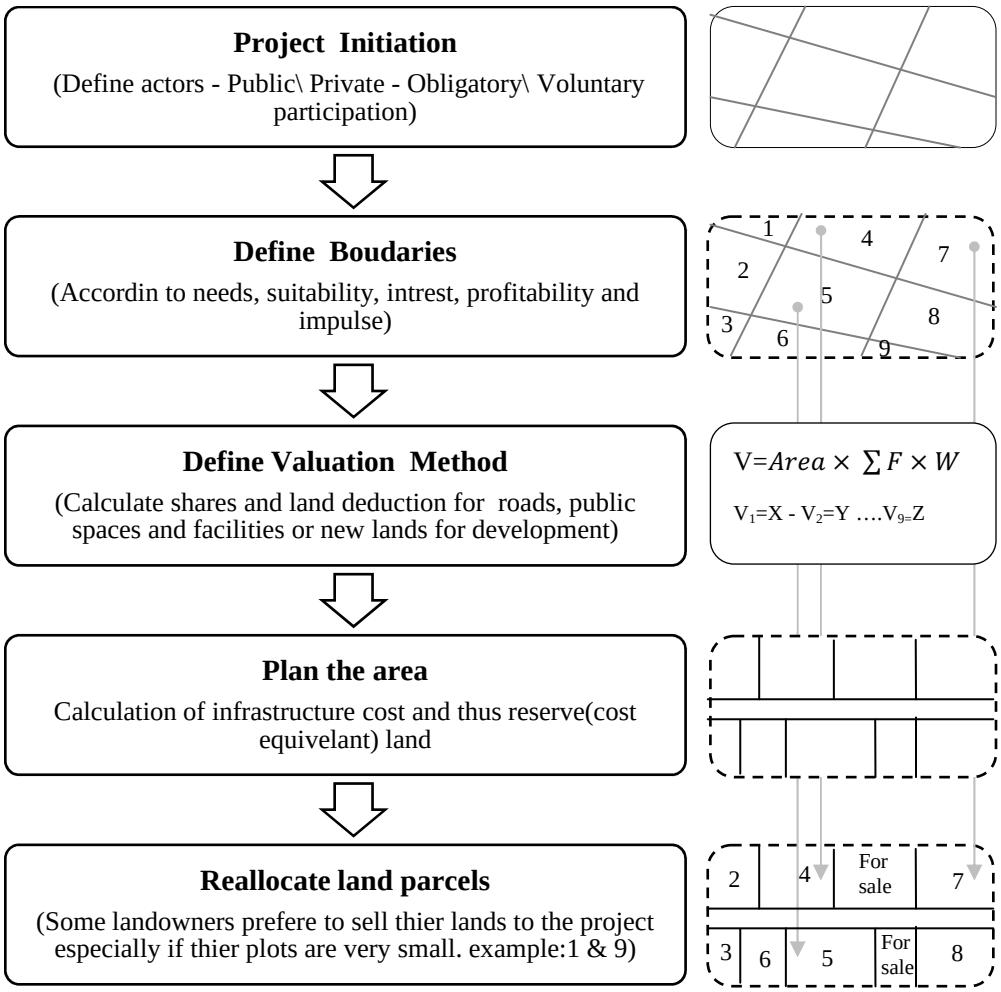


Chart 19: LR conceptual process

Source: Author

One important factor also for a successful LR application is to maintain it as participatory and transparent as possible throughout the process and especially in the valuation and deduction stages.

Chapter IV: Lessons from international experience and cases

Having started in Germany in 1902, LR was transformed to the rest of Europe and Japan, and then applied to other Asian countries, including Korea, Indonesia, Nepal, Thailand, Malaysia and –with limited success- in the USA.[1]

4.1 Comparing international examples of LR application

The following table in compares the Key characteristics of applied LR around the globe. This table helped choosing the two international examples explained in this chapter. This choice was based on how relevant the circumstances and lessons learned are to support October case study. [2]

[1] Anglia Ruskin University, "Land readjustment as a global land tool: focus on the Middle East", UK, 2007

[2] Table below Based on readings and tables from Turk, Sevkiye Sence, "An Examination for Efficient Applicability of the Land Readjustment Method at the International Context",Journal of Planning Literature,No. 3, 229-242 2008 and Carolina, Alba, "The Role of Land Readjustment in Japan and its possibilities of application in Colombia", Division of Architecture and Urban Design – Hokkaido University, Hokkaido 2005, with additional information from Anglia Ruskin University, "Land readjustment as a global land tool: focus on the Middle East", UK, 2007

Table 15 : comparing LR applications around the world

	Term applied	Legal structure	Sector undertaking LR projects	Participation landowners	Cost recovery	Amount of land contribution	Assistance and support of the public	The way of distribution stage	valuation
Japan	Kukakuseiri	LR Act of 1982	Individuals - Associations - Local Gov. Admin. Agencies - Public corporations	Compulsory for LR with public initiative At least 2\3 of both landowners & lessees (by number \ area)	Cost-equivalent land for cost of the project	20 % deduction for communal land, 10 % set aside of cost equivalent land)	National and prefectural subsidy Low, zero interest loan	Value basis - Area basis	Valuation by street value Amount of area for area basis
Germany	Baulandumlegung	Baugesetzbuch (1987)	Mainly Local Gov. - Land owners - Developers	Local gov. (always) - Land owners - Developers	Land contribution - Cost equivalent land	Not more than 30 % of market\area value	All procedural costs	Value basis - Area basis	Market value (pre- and post readjustment)
France	Associations Foncieres Urbains	Article L 322-1-10 in the Code de l'Urbanisme (1985)	Individual landowners - A group of landowners	Voluntary participation (the support of at least 2/3 or 1/2 of landowners)	Land contribution for public use Cost-equivalent land for cost of the project	not determined	State awards grants at the initial stage	Value basis	A value fix by assembly of land owners before and after LR
Sweden		A Joint Development Act (1987)	Landowners - Associations	Voluntary participation	Land contribution	not determined	Preparatory investigation loans at initial stage	Value basis	market value of before and after LR
South Korea	Land Readjustment (Realignment)	LR Act (1966)	Private land owners - Associations of landowners - Municipal \provincial Gov. - Ministry of Construction	Compulsory for LR with public initiative At least 2/3 of both landowners and lessees (by number and area)	Cost-equivalent land for cost of the project Land contribution for low cost housing	24 -28 % deduction for communal & 8-10 % aside of cost equivalent land)	Initial costs are covered by local governments, but these costs must be charged to the project	Value basis	Market value of land
Columbia	Reajuste de Tierras	Based on Law 388 of 1997	Local Gov. - Admin. Board - private financial entity	Compulsory	Receives serviced plots to develop social housing program	54% for collective uses (roads, protected areas, green and recreation areas & amenities)	Initial costs covered by local gov. but must be charged to the project	Area basis	Amount of area for area basis (1.87 US for expropriation, 5US for participation)
Turkey	Land Readjustment	18th article of Development Act (1985)	Municipality - Special Provincial Admin.	Compulsory	Land contribution for public space	Max. 40 % (the extra diff. must be expropriated by the municipality)	All procedural costs	Area basis	Amount of area for area basis

	Term applied	Legal structure	Sector undertaking LR projects	Participation landowners	Cost recovery	Amount of land contribution	Assistance and support of the public	The way of distribution stage	valuation
Lebanon	**Palestine/Israel**	**Nepal**	**Indonesia**	**Taiwan**	**India**				
Re-urbanize	Re-parcellation	Land Plotting	Land Consolidation	Land Consolidation	Plot reconstitution				
National Law 117 of 1991 to create real estate companies for redev.of areas destroyed by war.	1965 Israel Planning and Building Law based on 1921 Town Planning Ordinance LR provisions	Dev. Committee Act 2013 (1954) The Town Dev. Act 2045 Para. 12, Land Reform Act 2021 and Bylaw 2060	No law authorize and regulate LR	Articles 56, 76, and 161 of bylaws to Equalization of Urban Land Rights Law (1957)	Mahastra (1966 Regional & Town Planning Act) Gujurat (1976 Town Planning & Urban Dev. Act)				
Private development company	The state	Committee of landowners – Municipalities	Municipalities	Local governments - Land owners	Local governments				
property owners and occupants in a compulsory association with property investors	Compulsory (but land-owners rejecting could call for the public authority to acquire their interest)	Majority of land owners consent	Landowner consent (100 percent landowner agreement)	At least one-half of landowners (by number and area) must consent to an application	Voluntary participation				
	Land contribution (equivalent land for cost of the project at the beginning only)	Land contribution for public space Cost-equivalent land for cost of the project	Land contribution for public use	Land contribution equivalent land for cost of the project	Land contribution for public space				
	Municipalities can claim a minimum of 40% of the land (sometimes up to 60-70% for schools & other public facilities)	not determined - Contribution share depends on total cost to be shared by all the landowners	20 % of previous land holding of landowners	The proportion of land is not more than 40 % for public purposes and for cost-equivalent land	Up to half of increment in value				
Raise investment capital from both property owners and non-owners		Assistance and support of public is nonexistent	All procedural costs (outside of land contribution) by local authority		All extra costs (outside of half of the increment value) are borne by local authority				
Shares are given to share holders (can sell their holdings in the stock market and buy back land from the company or elsewhere)	Value basis	Value basis	Area basis	Value basis - Area basis	Value basis				
Location -Physical Properties - Upgrading costs - marketable price	the valuation took account of the degree of slope	Valuation value by street value	Amount of area for area basis	Pre-adjustment value (location, access, siting, sunlight, development feasibility)	original plot value, semi-plot value, & final plot value are determined; by a simple formula				

4.2 Choosing relevant international examples

Analyzing the previous table 15, an important aspect for choosing the case studies was the relevancy to October case especially with regards to the main challenges, objectives and the legislative framework.

In the Columbian case a very interesting factor supported the choice of the example, which was the main objective of achieving the national housing program within a better planning scheme. The created services plots from the project were given to the housing program and instead of financing the whole thing, the government just pays for the initial costs and the project is then self financed through the readjustment increased value.

This experience is well needed to be further experimented as the problem of achieving the objectives of national housing project is a major issue in October city which housed more that 40% of the project most of which poorly planned and requires better financing techniques to reach their target groups.

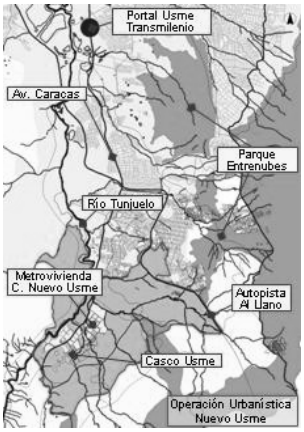
A second case of Beirut redevelopment was chosen due to the importance of being managed by the private sector. As later parts of this chapter will further explain, Solidere private company was in charge of the process.

The reason behind the choice of Beirut example lies in the important lessons learned from this strong involvement of the private sector and the main financial advantages and social disadvantages that followed this scheme.

The two chosen examples will be illustrated in the next section of the study, with special focus on the socio-economic consequences and the lessons learned from the experience.

4.3 The Colombian experience in 'Nuevo Usme' [1]

Usme is an area in the southeast of Bogota, which has around 450 thousand inhabitants (in 2006), occupying some 1,000 hectares, 90% of which are developed by pirate developers. In June 2000 the city's master plan allocated another 800 hectares land for *urban expansion*.



4.3.1 Problems facing the land market in Usme

National housing policies developed in Colombia since the beginning of the 1990s. However over the time, lack of serviced land at prices accessible for the lower-income population turned into a growing problem. The following table summarizes the main physical, social and economic problem facing the land , market in Usme.

1 This case study is analyzed based on an article by Copello, María Mercedes Maldonado, "Mobilization of land value increment for provision of serviced land for social housing", Universidad Nacional de Colombia- Bogota, Bogotá,, 2006,
And a translated report by Lungo, Mario and Smolka, Martim O., "Land Value and Large Urban Projects: The Latin American Experience",Land Lines, Newsletter of the Lincoln Institute of Land Policy,1, 2005

Table 16: Problems in land market in Columbia

Physiscal	• Informal settlements, outside the law and the occupation of high-risk areas is the predominant mechanism to access land, and housing for the majority • Reduction in development standards (densities have reached higher levels in formal developments than in informal ones) • Regularization and upgrading, end up transferring substantial resources to landowners
Economic	• The subsidy mechanism for social housing is facing growing difficulties • Lack of serviced land at prices accessible for the lower-income population • Enclosed residential complexes transfers the maintenance costs from the local jurisdiction to the poorest families ading to thier low income and unemploymet problems
Social	• Lack of adequate conditions for urban life and of social integration for the majority of city dwellers • Problems of management, control and even of corruption in providing social housing • social exclusion in informal settlements

The informal Subdivisions were carried out by developers who buy up large areas of land at rural prices to sell without any infrastructure or services before indifference or impotence, when there is no open complicity with the municipal and national public administrations.

These growing urban problems lead the local government to start the search for alternatives to achieve greater efficiency in the processes for producing serviced land for social housing.

4.3.2 LR process in 'Nuevo Usme'

- Aim: To recover "socially created" land value, geared toward supporting a social housing policy.
- Budget: 115 million US dollars,
- Duration: 8 years
- Area: 800-hectare

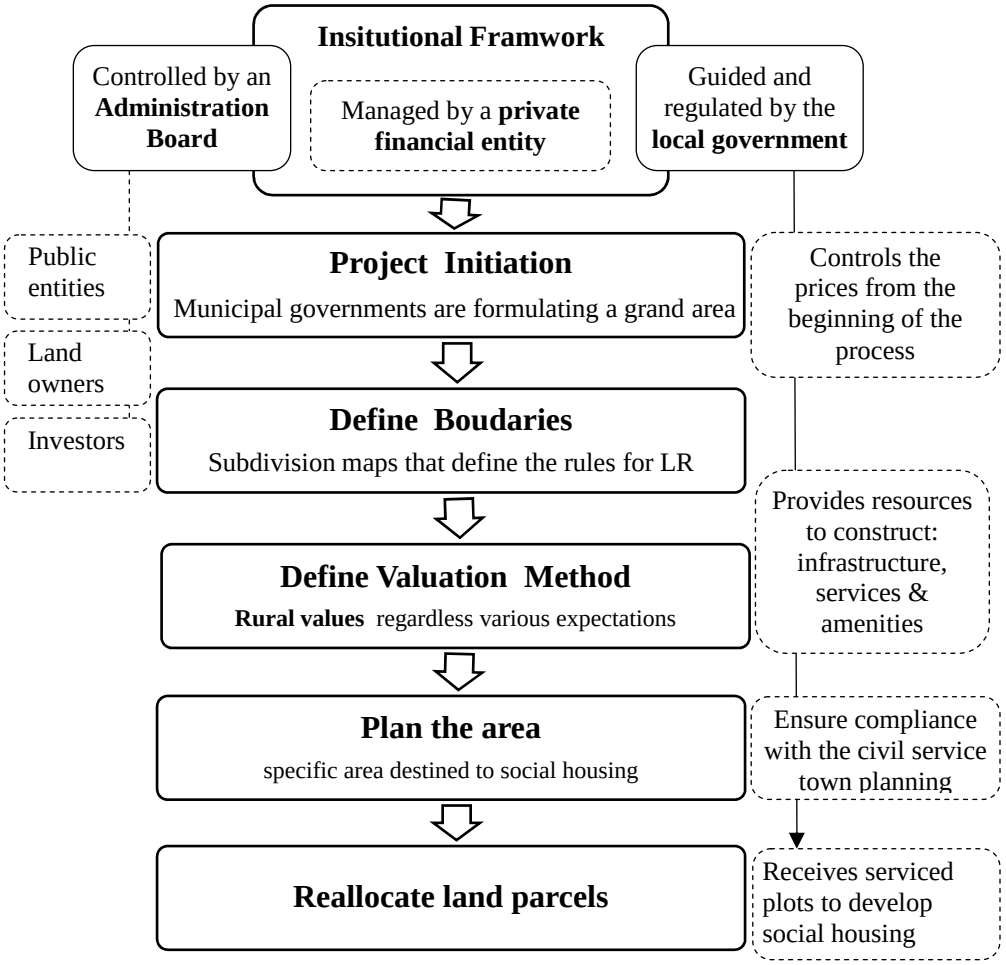


Chart 20: The LR process in Usme operation

Source: Author

4.3.3 New planning proposal and land use distribution for Usme

The proposed land budget after development of the Usme area was distributed between public and private different uses as follows:

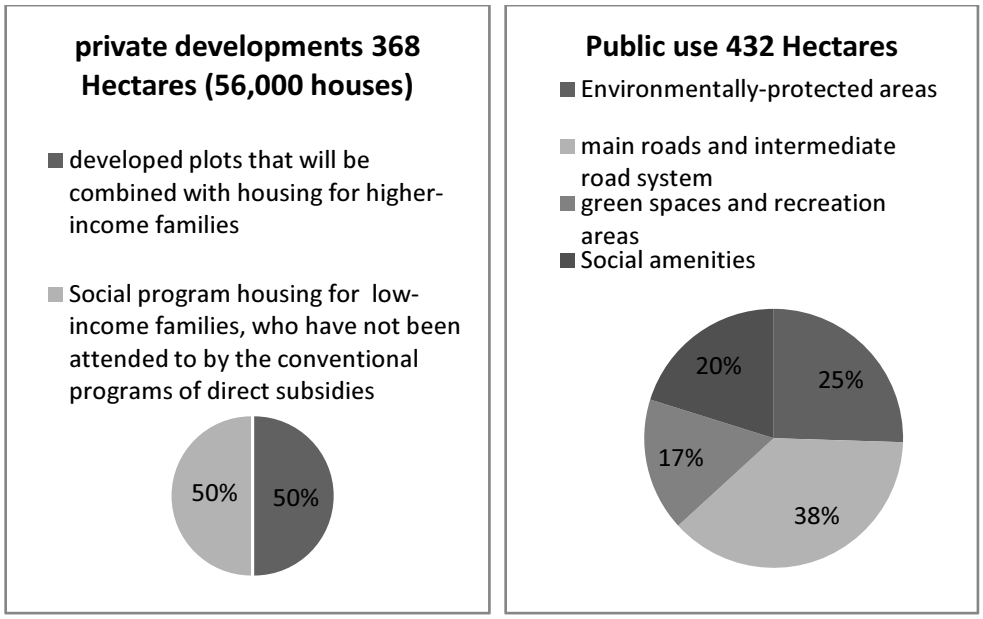


Chart 21: Land use distribution of Usme project

Source: María Mercedes Maldonado Copello,2006

Alteration: Author

As clear from the new land use distribution, a more mixed development and integrated housing levels are proposed. The social housing program is achieved within the different housing levels which minimized the social segregation and encourage population attraction. This mixing in uses and levels is one of the most important objectives for the vision of the strategic plan in October city, which could benefit from the Columbian experience greatly in this regard.

The land use maps below shows the new planning for the Usme area and clearly illustrates the mixed use development distribution.

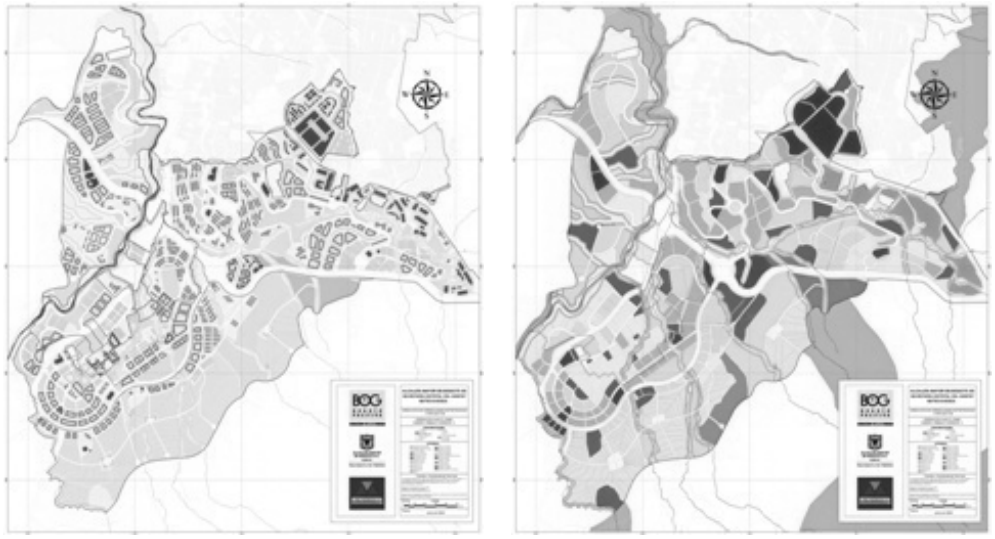


Figure 45: proposed Land use plan for New Usme

Source: María Mercedes Maldonado Copello,2006

4.3.4 The Benefits gained from LR operation in Usme

The project of Usme is considered an experience to be replicated. A Spanish document by María Mercedes Maldonado Copello,2005 states that it has become a demonstration project fed by different inputs of the network of researchers from Latin America and the Lincoln Institute of the Caribbean, Colombian NGOs and universities. Supported by the Lincoln Institute, the Operation is transformed into opportunities for reflection, discussion and production of public information on issues related to land policies.

The physical, financial and social benefits are summarized as follows.

4.3.4.1 Physical and Financial benefits

As illustrated in the previous Land budget chart, Operación Usme creates a mixed use integrated plan providing services legal affordable land for the low income parties. This saves the area from the informal predominant development mechanism which would have provided occupation rates of 70% (560 has, instead of the 368 has). In addition to having the Municipality investing in upgrading programs, and spend almost three times more than the investment predicted initially when the land was still empty.

Moreover, the operation generated employment for the population, including rural uses or urban agriculture in the transition areas. The following table shows a summary of the comparison between land values and development costs, calculated upon the total land.

Table 17: Land values and development costs in Usme

	US$/M^2
Commercial price of Rural land	0.60
Price at which pirate subdividers buy from the peasants	0.85
Average value at which the land was valued once the project announcement mechanism was applied.	1.87
Value at which the land will be recognized for the landowners who participate voluntarily in the land readjustment	5.00
Price at which the speculators sell the land to the low-income families	21.00-28.88
Cost of the investments in exterior development per m^2	16.40
Average value of the urban serviced land in the L.R.	21

Source: María Mercedes Maldonado Copello,2006

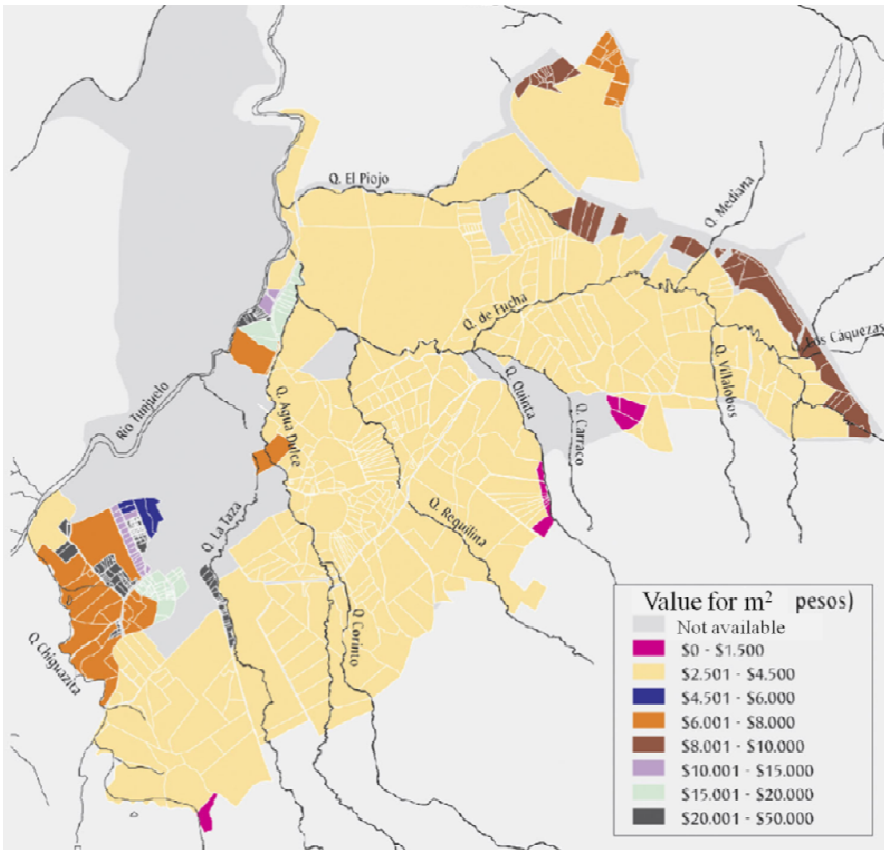


Figure 46: Results of the appraisal reference[1]

Source: María Mercedes Maldonado Copello,2005

1 (values in Colombian pesos, U.S. $ 1 = $ 2,600)

4.3.4.2 Social benefits

- Assuring better conditions for social integration
- Equal "remuneration" for land to all of the owners, regardless of the final destination of the land
- Awarding subsidies on serviced land, and so breaking dependency on subsidies to buy housing and, especially, breaking dependence on bank credit.

4.3.5 Lessons learned:

- When LR aims at providing social housing programs, it is important to previously identify and register the beneficiaries and the land areas required for the program to control land prices which becomes a tool to encourage landowners to join LR.
- Working on a large scale makes it easier to have general control of land prices and the development of the finance operations, as well as the mix of social housing with higher-income housing and with non-residential uses, in an attempt to break the strong processes of the city's socio-spatial segregation and to generate employment within the same area.
- Value capture tools could support Municipality to recover the increase in land price as a tax mechanism in the more profitable areas of the city and give them to the production of serviced land in areas like Usme.
- It is important that regulation of land uses is kept flexible enough to allow recognition of different alternatives for land and popular housing, without creating subsequent irregularity.
- Although a certain level of institutional development is needed, but no greater than that needed for the titling and up upgrading programs or even for managing the direct subsidies

4.4 The Solidere Region in Beirut, Lebanon

Beirut is the capital and largest city of Lebanon with a population of over 2.1 million as of 2007 located on a peninsula at the midpoint of Lebanon's coastline with the Mediterranean Sea.[1]

4.4.1 Post war Beirut

The Lebanese civil war (1975-91) left Beirut severely damaged and divided into territories where all sectors of the city; industry, agriculture, finance, banking and tourism stood still by the physically damaged central district of the city. The redevelopment of the city centre was seen as a political necessity, but was complicated by many factors explained and summarized as follows:

- The extreme fragmentation of property rights between multi-generational family ownerships, and by complex tenancy structures.
- More than 50% of the land parcels (1560 parcels) are less than 250 m^2.
- Around 20,000 people (refugees) lived in squatter developments
- All infrastructures in the central area were damaged or idle which is very hard to reconstruct and acquires a large sum of upfront investment (estimated 565 US dollars -1993).
- The country suffered from unemployment and a affected financial and stock market
- High level of sea and shore pollution[2]

The British model of the LDDC partially influenced the move in Beirut to hand the central area over to a private development company. Municipalities were empowered by Lebanon's national Law 117 of 1991 to create real estate companies for redevelopment of areas destroyed by war.[3]

[1] http://en.wikipedia.org/wiki/Beirut

[2] Yazbek, Karim Antoine, "Private-Public Large-Scale Downtown Redevelopment in the Middle East", Publisher, Place Published, 1994

[3] Anglia Ruskin University, "Land readjustment as a global land tool: focus on the Middle East", UK, 2007

4.4.2 Social and economic objectives for the downtown LR

Although the project was awarded to Solidere (private developer) but the government had objectives to integrated social and economic objectives comprising the traditional Beirut city centre plus its modern extension on the waterfront as described in the project profile [1] as a project that basically:

- involves the installation of a complete modern infrastructure
- provides an urban design framework for new construction and for the restoration of preserved and historic buildings
- dwells on the formation of public spaces and creates belvederes, promenades and trails
- preserves its surviving building and townscape features
- ensures the harmonious integration of traditional and modern architecture
- offers a flexible, market-oriented development framework which encourages the emergence of a sustainable environment
- accommodates a broad mix of land uses ranging from business and institutional to residential, cultural and recreational facilities

4.4.3 LR development in downtown Beirut

- Aim: To assemble land around the newly developed city centre *(BDC)* 'island of modernity' applying the Post was master plan
- Area: 440 hectares
- Target Population: 40,000 (Job opportunities: 100,000)
- Duration: 25 years - Phase 1 (1994-1999)

The following chart explains the main LR process applied in Beirut's downtown centre.

1 http://www.solidere.com/project/mastplan.html

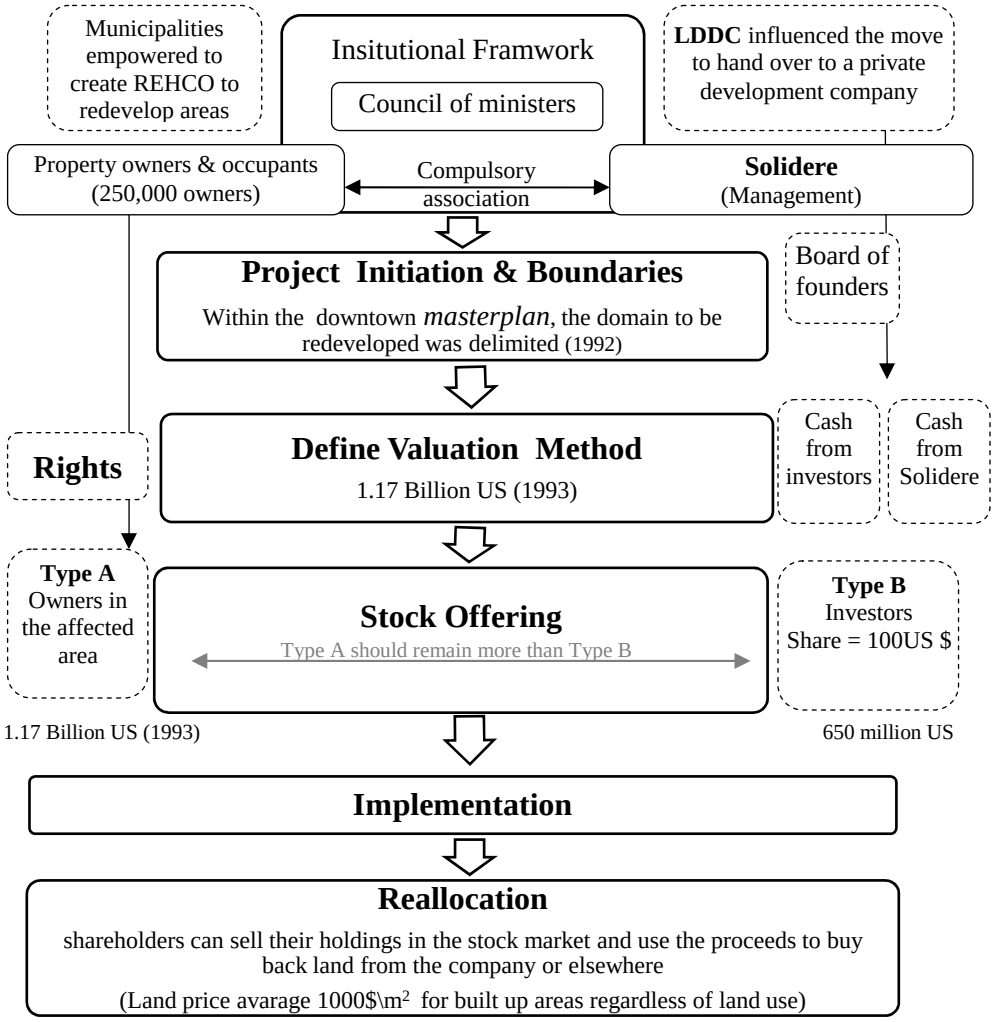


Chart 22: LR process in Beirut, Lebanon

Source: Author [1]

To help increase Solidere's stock's value, the company offered an incentive plan by which shareholders could buy land at a discounted rate in downtown Beirut using Solidere shares as a portion of the purchase amount.

1 based on writings by Yazbek, Karim Antoine, "Private-Public Large-Scale Downtown Redevelopment in the Middle East", Publisher, Place Published, 1994, Anglia Ruskin University, "Land readjustment as a global land tool: focus on the Middle East", UK, 2007 and Hong, Yu-Hung, "Sharing Vs. eminent domain", , Stanton, Michael, "Heavy Manners: Beirut, War, and Real Estate",Log,2007

Investors profited doubly through the discount in land pricing and the higher market valuation of the shares.

4.4.4 Land Valuation in Beirut downtown project

Since the project in Beirut involved a number of private and public owners, it was very important to define the land valuation method before the stock offering.

This was done by an appraisal committee as illustrated below:

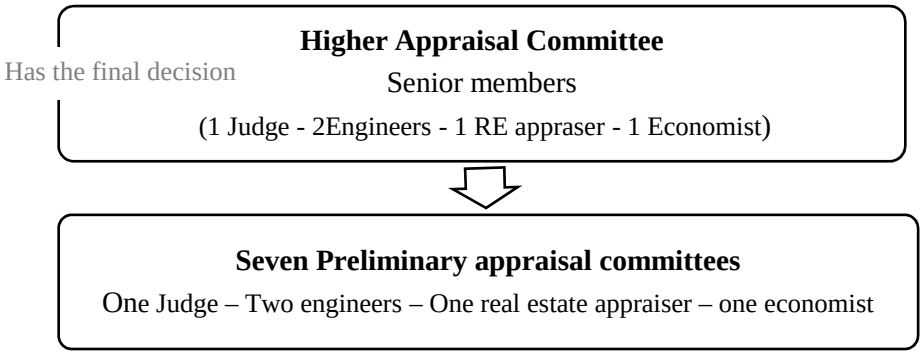


Chart 23 : valuation criteria in Beirut project

Source: Karim Antoine Yazbek,1994

Criteria:

- Location of the parcel
- Physical Properties of the Land (empty – erect structure – intact building- …)
- Upgrading costs needed to restore the property
- The price of land to be marketable with respect to the surrounding regions

Discounted cash flow methods were then used to estimate the values in present figures.

4.4.5 Master plan and land use

The land uses for the new project showed a new distribution of city functions and economic activities. A master plan that provides a new city centre and aimed at bringing life to the city with an attractive waterfront as shown in the figure below.

Figure 47: Land use plan for Birut central district

Source: http://www.solidere.com/project/mastplan.html

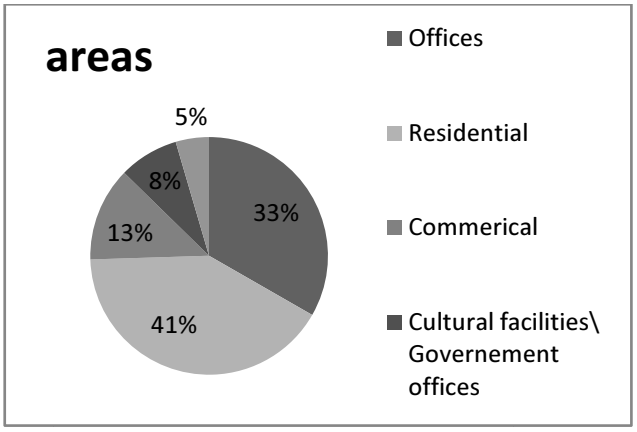
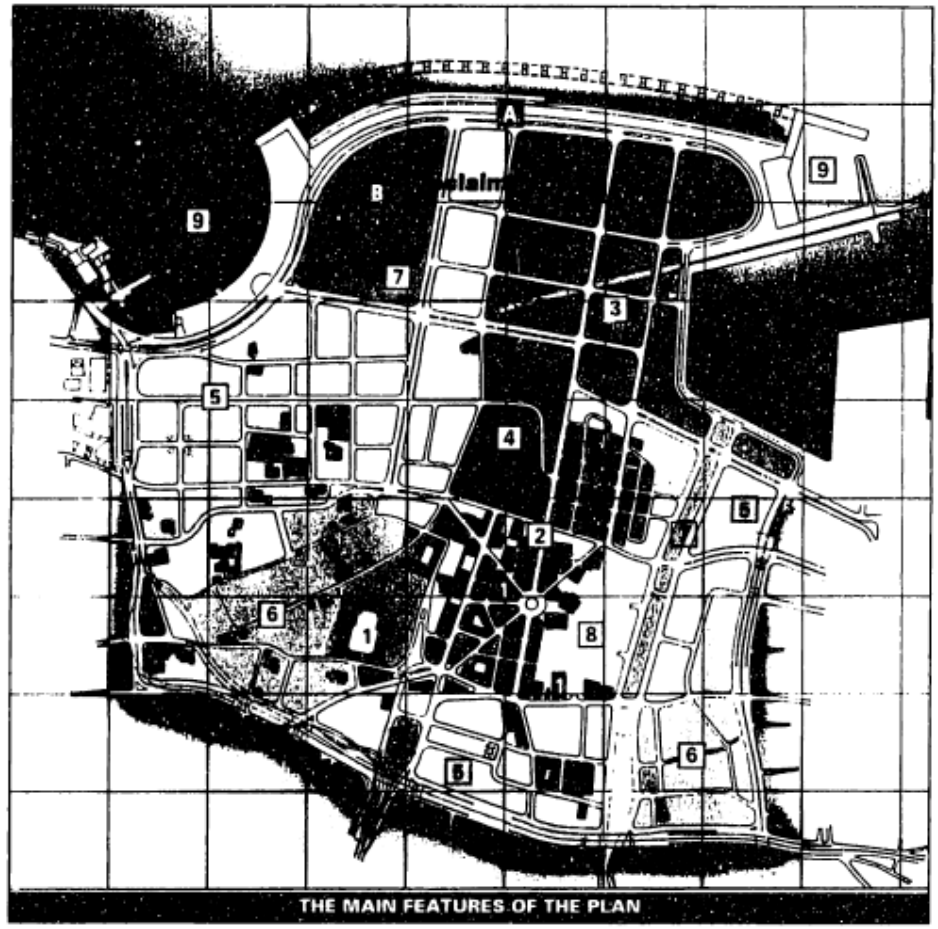


Chart 24: LAnd budget for Beirut LR project

Source: Karim Antoine Yazbek,1994



1 **Public & religious buildings**

2 **Preserved historic core of the city** (pedestrian priority area)

3 **Financial district** (mixed use of offices, recreational & shopping facilities)

4 **Traditional old souks area** (pedestrian - retail area)

5 **Mixed use areas** (commercial, office, hotel, residential)

6 **Residential area**

7 **Public parks & squares**

8 **Archeological excavation area**

9 **Marina**

A **Tree-lined sea-side promenade**

B **Sea-side park**

Figure 48: Main features of Beirut plan

4.4.6 Criticism of Beirut's BCD project

No doubt that the political decision to engage the private sector helped providing the financial support, flexible investment opportunities and profitability to the project. However the project was heavily criticized for its lack of public consultation and community involvement. The social and economic criticism described by can be summarised as follows:

4.4.6.1 Social

In its attempt to create a new modern CBD Solidere has bulldozed the debris into the sea, and is using the ruins to build a new foundation that no one can claim because the sea does not belong to anyone. The new Downtown has been made to absorb the history of the war and in the process it has emptied it of meaning. It revives the regional past (Phoenician and Greek) to erase the local past (the war) and to launch this new Beirut into a global future that will owe its regeneration to *Solidere*.[1] Rob Home adds, 'The dissolution of historic patterns of property removed the heritage and memory of the old city, a pattern typical of radical central area redevelopments, as economic activity moves to the suburbs.' Michael Stanton,2007 also explains that more than a thousand buildings were demolished in peacetime, many with explosives, even though most were relatively undamaged by the civil war that had gnawed at the city for 15 years. [2]

On the side, some of the original land owners of the area were interviewed by Karim Antoine Yazbek,1994. Their criticism to the project can be summarized in three main points:

- Landowners felt their personal freedom was directly attacked and that it was an expropriation process
- Land transmutation into paper that would not yield any worthwhile dividends before ten years did not work for a lot of landowners
- Since Solidere will sell the land to the highest offer always (to increase shareholders wealth), former right holders are thrown out of the centre and replaced by wealthy people.

[1] Cooke, Miriam, "Beirut Reborn: The Political Aesthetics of Auto-Destruction",The Yale Journal of Criticism,2, 2002
[2] Stanton, Michael, "Heavy Manners: Beirut, War, and Real Estate",Log,2007

4.4.6.2 Economic

The same study explained economic shortcomings of the project, mainly:

- The government gave Solidere tax exempt for 10 years and the same for all dividends and capital gains made by shareholders among other incentives. This was seen as a necessity to attract foreign investment but on the other hand swept enormous financial revenues from the state's treasury.
- Solidere was responsible for the management and control of the issuing of contacts and for the direct supervision of all contractors involved in the process of infrastructure rebuilding without any state control on the cost.
- Consultants have criticized the prices offered by Solidere (after implementation) are unrealistically high and do not recognize the role of land use and location in affecting demand. [1]

4.4.7 Lessons learned

It is clear that the political conflicts and social divisions in Beirut were also reflected in its LR application. The experience is a rich one with a lot of lessons to be learned, among which is the importance of balancing the benefits of engaging private sector. This could be achieved through empowering public involvement and integrating social impact of the project beside financial and political benefits. It is also very critical to maintain LR process a transparent one with common goals and objectives that eventually serves the public and reflects their needs.

[1] Smyth, Gareth, "Building a new Beirut", http://www.ameinfo.com/16661.html,

Part III: Applying LR on 6th of October city

Ch. V: 6th of October Southern plan with LR scheme

5.1 Site boundaries definition

Having explained the reason behind choosing LR for October city and learning from relevant international experience, LR system is to be applied to the city by government initiation in order to implement the key outcome projects of the General strategic plan for the city. The LR scheme would aim also at creating revenues to the municipality to finance other outcome projects in the city as phased in the plans approved in 2008.

Exploring the existing city situation, objectives and challenges explained in chapter II, the study should first begin with the site boundaries definition.

The land use Figure 31: 6th of October Land use plan, 2010 shows the existing urban land distribution for the city, the area south to El Wahat road is chosen for the application. The reasons behind this site definition are illustrated below.

- The area to be studies has the most inefficient planning pattern that would result in serious future development constrains,
- The area is not yet completely occupied providing an easier potential for development readjustment,
- A newly added area adjacent to the southern extension could be seen as a true potential for balancing land uses and densities for the zone (most of the existing land is allocated only for national housing program)
- The study area has potential regional connectivity to GCR, El Wahat and El Fayuom.

Figure 49: Study area definition

Source: Author (Base map from city authority)

As explained in chapter II, 6th of October development policy had lead to inefficient land allocations -especially in the southern extension area- Resulting in the shortage of adequate land to develop the strategic plan projects. This chapter will propose LR system as a tool to rearrange the southern extension area and provide the needed land, finance for infrastructure and other strategic projects and a better function city. The chapter will conclude the benefits October will gain from this LR application.

5.2 LR Application in October city

The following chart proposes the LR process to be applied in October city followed by an illustration for the elements of the main process.

The detailed allocations of the area are illustrated below

5.2.1 Landownership in LR project area, October city

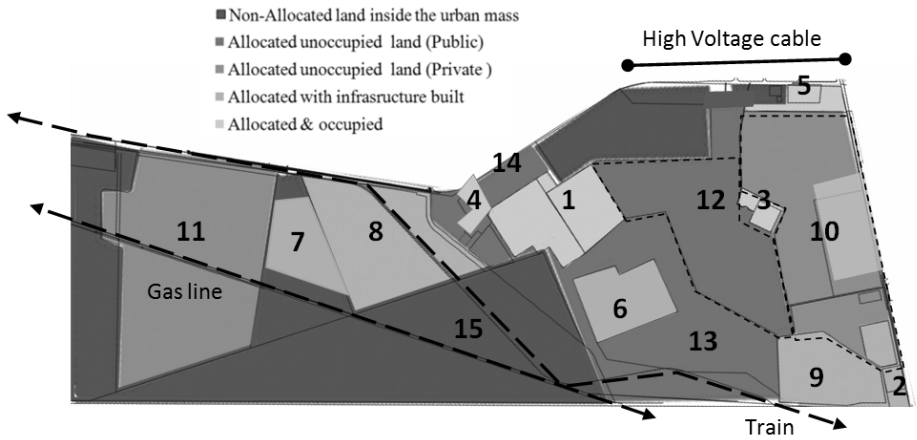


Figure 50: Land allocations in study area

Source: Author

Table 18: Land allocations in study area

Allocated and Occupied	Allocated with infrastructure built	Allocated unoccupied Private land	Allocated unoccupied Public land	Non-allocated land
1. Cemeteries (still new but some cemeteries are occupied) 2. Gas distribution unit 3. Military zone 4. Governmental very low income housing 5. Main Electricity unit	6. Sewage unit & oxidation lakes (only parts are built) 7. Degla Housing project (part of NHP) 210 hectares 8. NHP Area = 645 hectares 9. NHP Area = 273 hectares	10. Orascom project for NHP (840 Hectares- only shaded quarter is built up) 11. 6th Oct Agricultural association	12. NHP Area = 536 hectares - 15600 Units 13. Allocated for Green belt 14. Allocated for the most needy families (very poor families)	15. Most of it is areas that are recently added to the city in addition to the main central area on el wahat road.

5.2.2 Proposed LR scheme for October city

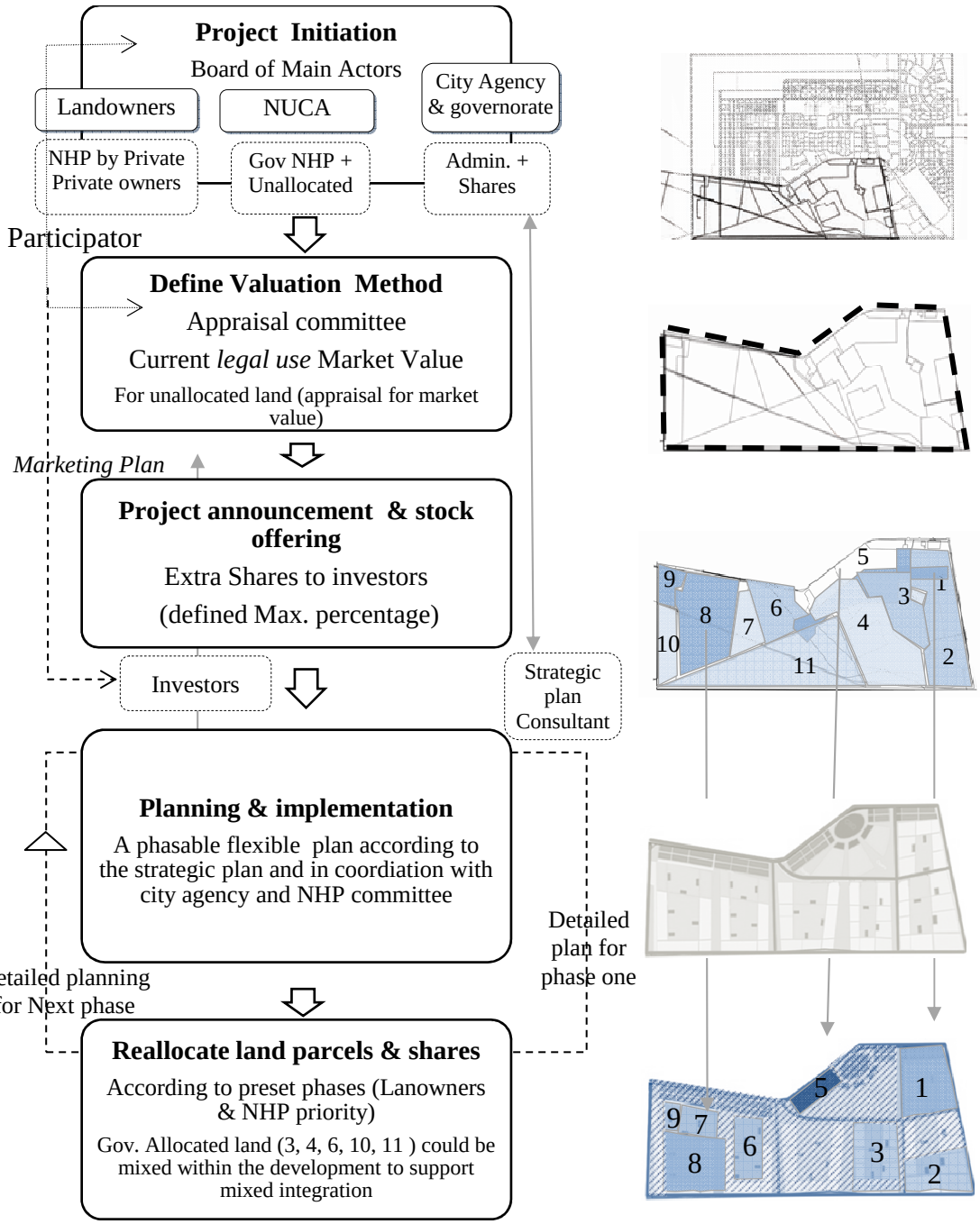


Chart 25:Proposed LR scheme in October city

Source: Author

5.2.2.1 Project initiation

The project is initiated after having the prefeasibility studies that would project preliminary figures for cost, financing options in addition to defining boundaries and main activities. Before announcing the project, NUCA should identify and register the beneficiaries and the land areas required for the NHP provided by the government or through private investors in the city.

Table 19: Actors involved in LR

Main Actors	• Central Government represented in NUCA as one of the main Landowners (NHP land representatives and unallocated land that belongs to NUCA) • Initiating Landowners (with maximum shares and interest) • City Agency and the governorate will Manage the project and have the first right to buy shares in the project before it is announced to the public. This aims at having a stronger local power and control over future city projects.
Co-actors	• Other Land owners • Representatives from Governmental authorities with land in the project area or will be engaged in rehabilitation projects[1] (Ministry of Electricity, Ministry of Petroleum, Military, etc) • Strategic plan consultants (to make sure the plan reflects the strategic needs of the city and coordinate provided finance to other priority projects in the city)

Source: Author

It is very important while defining the boundaries of the project to put into consideration physical and socio-economic homogeneous areas, these aspects were the main basis for limiting the project area to the southern extension zone or the area south to El Wahat road as it involves the main urban planning physical problem as well as areas of national housing project and other activities that would support the project by integration such as the 6h of October agricultural company and main city utilities (cemeteries and sewage units).

1 Projects suggested in the strategic plan to rehabilitate the area and prepare it for investment like moving the sewage unit, cemeteries, train, gas line, high cable lines from the middle of the urban mass.

5.2.2.2 Define Valuation method

When the project actors are mobilised, valuation method is then decided. A special appraisal committee will be assigned to define basic values which are then negotiated in within main actors' board. The value of lands would be based on its legal market value[1] before the project announcement depending on the land use, location, surrounding values, area and physical land properties.

5.2.2.3 Project announcement & stock offering

In this stage, the project is announced and shares are offered in market; first to the City Agency, governorate, NUCA, landowners and finally to the public sector. The share prices and allowed percentage for various stakeholders are set in participation with main initiators (Main Actors). This is done through a marketing plan for the project.

5.2.2.4 Planning and implementing

Since the project is of a very big area (22.5 thousand fd), A flexible plan is designed in close coordination with the strategic plan for the city. The plan should be one that is easily phased and managed throughout the process. Implementation priority would be given according to preset criteria but basically to original landowners and NHP beneficiaries.

5.2.2.5 Reallocating

Reallocation plan will be set from early stages of the project parallel to the implementation plan and according to the valuation of new areas. These plans will define when new investment lands will be available for the share holders to decide either to keep them or sell their shares. This system should be flexible so that investors and landowners would have options to invest in other parts of the city and links into other development plans and closely coordinated with the marketing plan for the project.

1 Some areas have high expectations for changing land use (like the agriculture company), however those areas are valued for the market value of their legal land use.

Chapter VI: The concluded benefits for 6th of October by applying LR scheme

Since the main goal of the LR application in October city is to achieve the strategic plan objectives, the benefits gained to the city will be based on preset criterion that is weighted according to the prioritized objectives of the strategic plan. The LR plan is then compared with the existing city profile and the implementation plan that would have been without LR. This comparison is based on a point system that reflects the benefits added to the city in figures.

6.1 Defining evaluation criteria

The main objectives of the strategic plan and evaluation factors for its success are summarized from the preliminary report by the planning consultancy[1]

Table 20 : October strategic plan main objectives

Aspect	Strategic plan Main Objectives (evaluation factors)	Factor Weight
Physical	Develop national landmark qualities (unique New City Image)	5
	Viability of public transit system (TOD)	5
	Incorporate the present developments to create a comprehensive new sustainable identity for the city (linkage to existing areas)	3
Economic	Create an Economic, financial and educational districts	5
	Efficient use of built up area with reference to the total land	4
	Development phases	2
	Efficient and well functioning infrastructure network	4
	Necessity for reallocation	3
Social	Promote integrated social groups through mix of densities and uses.	4
	City with a new character and identity	3
	Quality of public and open spaces	2

Source: Author

1 "The strategic plan for 6th of October\Zayed city (existing situation analysis)", Cairo, Egypt, 2010

6.2 Comparing the study area with\without LR scheme

To evaluate the added benefits to the city through this application, the weights given to the factors stated above in the strategic plan were used, those factors were defined (from 1 to 5) according to their priorities and will be used in the assessment of the benefits gained to the city by LR application using the following equation:

$$\text{Value of plan} = \sum F \times W$$

- F is the **set criteria;** the degree to which each concept satisfies the criteria (Very good =3 points, good =2 points, average =1 point)
- W is its **factor weight;** the criteria importance ranges from 5 for very important to 1 for normal importance

6.2.1 Calculations of Benefits gained to the city

First Plans are evaluated according to their fulfillment to the strategic objectives for the city. This should be done in more details with specified criteria. In this schedule assessment of strategic plan was taken as a guide line as shown in Table 21: comparing city profiles with\withour LR:

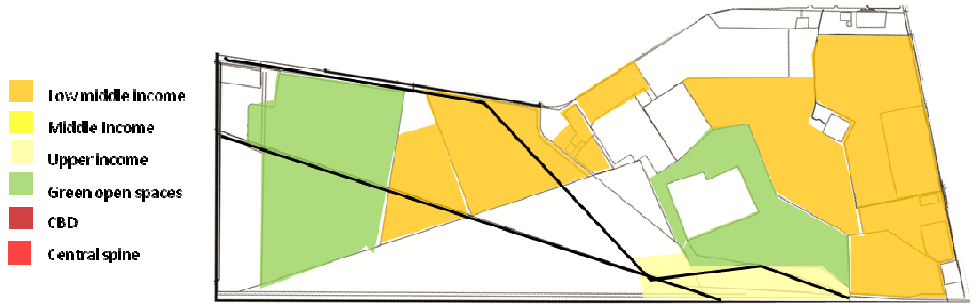


Figure 51: Existing project area land use

Source: Author

As shown in the figure, the exiting land use is basically formed of low income social houses (NHP) beside the city's main utilities (cemeteries, sewage unit, gaz lines,etc).

Even the open spaces in this planning reflects areas that do not target the social benefit of the inhabitants of October city; As 6th of October western agricultural association is based on the concept of having a small palace for upper class with a surrounding agricultural land as a new introduced form of gated communities. As for the eastern green belt for the sewage unit, it is also just a green buffer for the unit to limit development within the polluted range for the oxidation lakes.

If the new vision for October city is to be implemented without LR application, the result would be only a new patches of missing activities within the inefficient planning areas left. However, the main objectives of creating new mixed uses and social activities could be integrated. The figure below shows the proposed distribution of Uses within the existing uses.

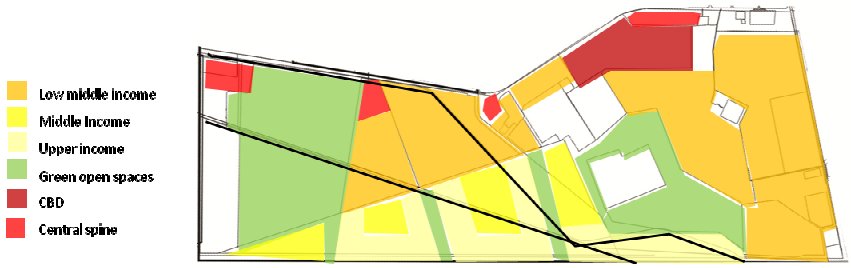


Figure 52: Direct implementation plan (without LR)

Source: Author [1]

The final plan –shown below- is the envisioned master plan for the southern area by the consultancy team, the plan that could only be achieved through the proposed LR theme to get over the problem of land allocations and inefficient planning.

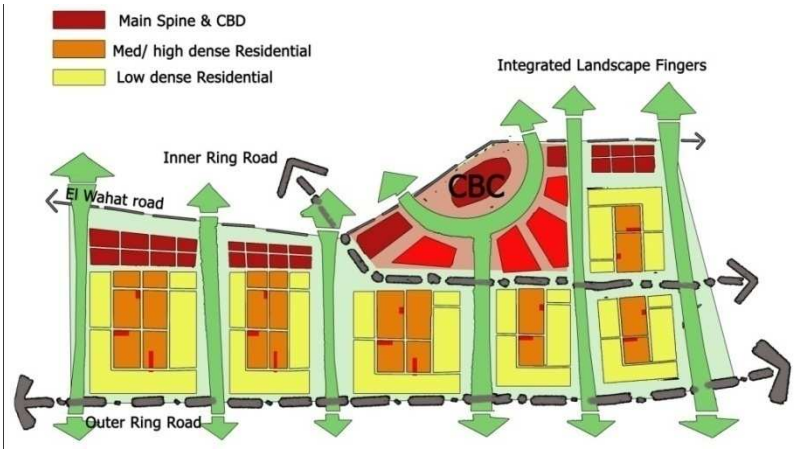


Figure 53: LR concept plan

Source: Author (Based on Strategic plan)

The comparison between these three cases is calculated as explained earlier to evaluate the numerical value of each alternative and the numerical added value by LR application.

[1] Based on Presentation by the consultant 2008

Table 21: comparing city profiles with\withour LR

Aspect	evaluation factors	Existing plan	Direct implementation plan	LR plan	W
Physical	unique New City Image	1	1 X	3	5
	TOD	1	1	3	5
	linkage to existing areas	1	1	3	3
Economic	Economic activities	1	2	3	5
	Efficient land use	2	2	3	4
	Development phases	1	1	3	2
	Infrastructure network	1	1	3	4
	Necessity for reallocation	3	3	1	3
Social	Social integration	1	2	3	4
	New character and identity	1	1	3	3
	Public and open spaces	1	2	3	2

Multiply by assessment factor to get numerical value

Then the factors are multiplied by their weight to reflect numerical figures:

Aspect	evaluation factors	Existing plan	Direct implementation plan	LR plan
Physical	unique New City Image	5	5	15
	TOD	5	5	15
	linkage to existing areas	3	3	9
Total Physical		**13**	**13**	**39**
Economic	Economic activities	5	10	15
	Efficient land use	8	8	12
	Development phases	2	2	6
	Infrastructure network	4	4	12
	Necessity for reallocation	9	9	3
Total economic		**28**	**32**	**48**
Social	Social integration	4	8	12
	New character and identity	3	3	9
	Public and open spaces	2	4	6
Total social		**9**	**16**	**27**
Total		**50**	**61**	**114**

Table 22: Comparison table of gained benefits to the city

Aspect	Existing plan	Direct implementation plan	LR plan
Physical	13	13	39
Economic	28	32	48
Social	9	16	27
Total	**50**	**61**	**114**

Source: Author

6.3 Conclusion and recommendation

As seen from Table 21 and its illustrations, the strategic plan on its own only elevates the city by 11 points if it lacked the tool to support its implementation. However, applying LR scheme would double the city value physically, economically and socially. The new scheme reflect the required future city transformation aspired by the strategic plan. This basic application of LR proves its relevance to the case and significant impact. Other cases could however require the application of a different development tool. The choice of the applied development tool depends on the objective if the application and the main challenges it is proposed to face. Thus, different urban reassembling tools are recommended to be applied to help guide the future development of transformed extension areas of new cities in Egypt specifically the application of LR on October's city south extension areas.

It is very important also to link this project with other strategic projects locally and regionally. Through phasing, prioritizing and financing. The LR scheme should be part of a bigger strategic program to support finance or manage them as a value capture tool to the city with a broader look on the strategies for GCR and Egypt as a whole. This required coordination and strong role of the local City Agency on one hand and NUCA for regional coordination on the other.

LR application in October city could act as a unique pilot project that introduces LR schemes in Egypt with an extreme case that would emphasize the significant impact of LR systems on Land and housing markets.

6.4 Future research work proposed

The last chapter of the study explained the possible application of LR with a conceptual process suggestion. Since the main objective of this study was to verify the economic, social and physical planning advantages of the application, future studies should involve a more focused consideration to the legislative management framework and legal Egyptian laws that would support the application. Also studies should define the specific cost benefit analysis and financial cycle for the project.

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الملخص

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التغيرات لعمرانية بالمدن المصرية الجديدة (دراسة حالة مدينة السادس من أكتوبر)

بحث مقدم لإتمام الاحتياجات لشهادة الماجستير في الهندسة المعمارية.

جامعة عين شمس – كلية الهندسة – قسم الهندسة المعمارية.

ملخص الموضوع

إن التغير الدائم في شكل المدن هو طبيعة ترجع لكون المدينة مثل الكائن الحي المتغير، و إن سمى ذلك التغير نمو، إنحراف أو تغير فهي كلها مصطلحات ترجع لنفس المعنى أن المدينة في حالة حركة مستمرة .

يتناول البحث التغيرات العمرانية التي تعرضت لها المدن المصرية الجديدة و التي أدت إلى ظهور الامتدادات العمرانية المتلاحقة و التي غالبا ما تفتقد للتخطيط الشامل و تؤدي إلى انحراف المدن عن مخططاتها و أهدافها الرئيسية و خلق بيئة عمرانية تفتقد الهوية و التلاحم. و لتحقيق الرؤى و الأهداف المحدثة للمدن المصرية الجديدة تم عرض أساليب مختلفة لإعادة توزيع الاراضي و التي تساعد في توجيه التمية العمرانية لمناطق الامتداد بالمدن المصرية الجديدة، بالتركيز على مدينة السادس من أكتوبر و تطبيق نظام تعديل الأراضي Land Readjustment لدراسة تنمية مناطق الامتدادات الجنوبية للمدينة .

وسوف يعتمد نجاح مخطط التنظيم في 6 أكتوبر على تحقيق أهداف المخطط الاستراتيجي للمدينة كهدف مشترك للتنمية و سياسة الإدارة بالمدينة.

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