


Faculty of Engineering
Department of Architectural Engineering

Sustainable Urban Development of Regional Planning. Case Study (Alexandria Region 2050)

A thesis submitted in partial fulfillment of the requirements for the degree of Doctorate in Philosophy

Of

Architectural Engineering

Presented by

Maha Ali El-Sayed Ahmed Abdel-Wahab

B.Sc. Architecture, Faculty of Engineering,
University of Alexandria, Egypt, 2008

M.Sc. Architecture, Faculty of Engineering, University of Alexandria, Egypt, Spring 2013

2018

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Approval Sheet

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For the Degree of Doctor of Philosophy in Architectural Engineering

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عنوان الرسالة: التنمية الحضرية المستدامة للتخطيط الإقليمي دراسة حالة (إقليم الإسكندرية 2050)

اسم الدرجة: دكتوراه الفلسفة في الهندسة المعمارية

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دراسة حالة (إقليم الإسكندرية 2050)

رسالة مقدمة من

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تاريخ مناقشة الرسالة: 3 / 5 /2018

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رسالة مقدمة

ضمن متطلبات درجة دكتور الفلسفة في

الهندسة المعمارية

مقدمة من

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بكالوريوس العمارة - كلية الهندسة - جامعة الإسكندرية – مصر - 2008

ماجستير العمارة – كلية الهندسة - جامعة الإسكندرية - مصر - 2013

2018

ALEXANDRIA UNIVERSITY
FACULTY OF ENGINEERING

SUSTAINABLE URBAN DEVELOPMENT OF REGIONAL PLANNING

CASE STUDY (ALEXANDRIA REGION 2050)

Dissertation submitted to the Architectural Engineering Department
Faculty of Engineering, Alexandria University

In Partial Fulfillment of the Requirements for the
Doctorate Degree in Philosophy of Architecture

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Registered on Jan. 2013
Submitted on Dec. 2017

Declaration

I, Maha hereby declare that neither part of this work reference has been submitted before to Alexandria University or any other University or institution.

In the name of ALLAH, the most gracious the most merciful

To My Beloved Family

ABSTRACT

The process of local and regional planning represents an important and influential branch of science that determine the trends of urban growth at the levels of cities, Governorates, and regions.

The increasing interest for the strategic planning but at the local and national level only leaving a gap between them that only regional urban planning could fill. This came in line with the orientations of the state towards a comprehensive development of the Arab Republic of Egypt, as some authors may suggest 'The nature of some planning issues requires intervention at the regional level of planning.(Vasilevska, Ljiljana and Milanka, 2009)

Due to the importance of the global experiences which appeared grounded on the theories of development and the national & regional planning in Europe, Asia as well as America, it was necessary to use those experiences to develop a successful methodology of strategic planning at the regional level in Egypt.

This work studies the different experiences of regional plans and future visions for Egypt by studying & analysing the goals and main points which aim to develop those regions.

As a result of the lack of research and academic studies at the regional level, it became useful to examine this branch of studies -regional spatial planning- to reach clear methodology while suggesting a future vision of the region as to improve the quality of life, to strength the regional identity and to develop new forms of regional collaboration.

Keywords: Regional Planning, Egyptian Regions, development axes, Alexandria Region, Future vision.

ACKNOWLEDGEMENTS

First of all, I thank God, the glorious and compassionate for helping me accomplishing this work. My gratitude goes then to the following people:

My Supervisors for their support and guidance:

Prof. Dr Yousri Abdelkader Azzam

For his insights, guidance, constant effort, support and continuous encouragement throughout the course of this study

Prof. Dr Tarek Abd El-Hamid Farghaly

For his helpful suggestions, valuable advice, sincere supervision and guidance throughout the thesis.

My Husband, for his true love & support he showed through my journey & barring all the mood swings through this long journey.

My Father, thank you for your love, and encouragement to fulfill my dreams that I have not dreamed of just yet.

My Mothers, I cannot thank you enough for your love, patience, assistance, encouragement, for being there always for me, and making me who I am.

My beloved brothers for teasing & encouraging me to finish my dissertation for it have been too long.

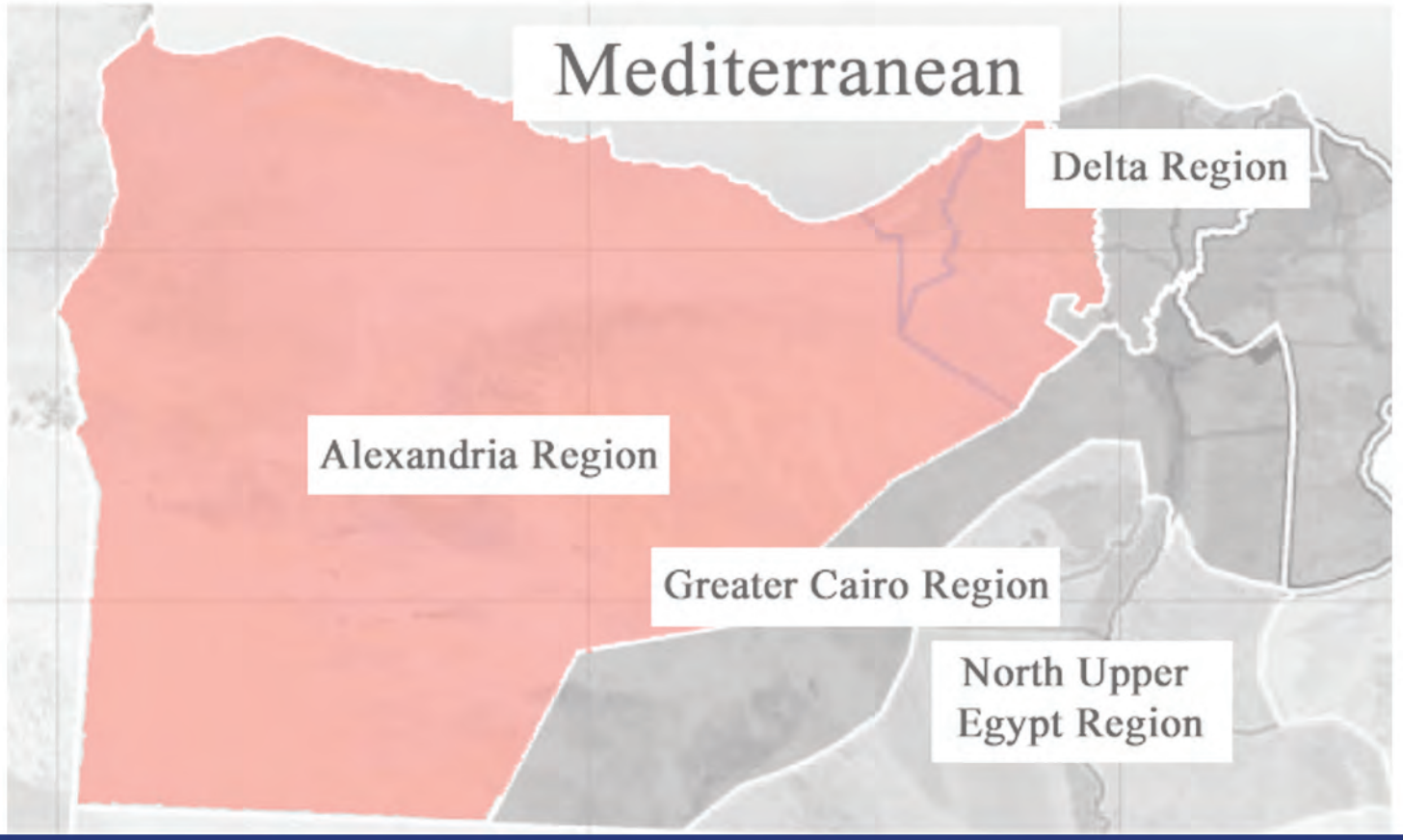
I would like to thank my colleagues in the Architecture department for their encouragement

My beloved Family for aiding, Loving and caring for me.

My Daughter for being the soul joy of my life.

ABBREVIATION

GOPP: "General organization of Physical planning".
SWOT: Strength, Weakness, Opportunities, Threats.
GCC: "Gulf Co-operation Council "that unit the Arab Gulf countries in economic & military agreements.
SDRIF: Le Schéma directeur de la région Île-de-France.
GDP: Gross domestic product
CMP: Calgary Metropolitan Plan
CRP: The Calgary Regional Partnership
FSDS: Federal Sustainable Development Strategy for Canada
SDGs: Sustainable Development Goals
BMR The Bangalore Metropolitan Region
BMR RSP 2031(Bangalore Metropolitan Region Revised Structure Plan 2031)
NGO: a non-profit organization that operates independently of any government, typically one whose purpose is to address a social or political issue.
AAGR: Average Annual Growth Rate
NSP: National spatial planning
BRPDP: Benghazi Regional Physical Development Planning
SRPDP: Sub-region Physical Development Planning
NES: National Economic Strategies
NPP: National Physical Plan
RSP: Regional Spatial Plan
SRDP: Sub-regional Development Plan



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INTRODUCTION

This study which addresses the urban extension at the regional level, aims reaching a proposal of future planning strategy for the urban extension and the new urban communities regionally, with an introductory approach that sheds light on the research problem, its dimensions, the research objective and its field, the importance of the study, definition of the case study area and research methodology.

THE RESEARCH PROBLEM:

Is the planning methodology concerning the regional planning in Egypt is fruitful & successful or it needs to be modified taking into consideration some important factors that rapidly change especially in Alexandria region which is the case study?
These factors are:

1) The current process of planning used in Egypt & updated methods used worldwide which could be useful to survey another planning model.
2) Political circumstances that throws its shadows upon the planning strategies concerning the Egyptian regions.
3) The urban & economical features that each region has and differs from a region to another according to their fortunes & geographical location.

AIMS AND OBJECTIVES

As there are problems which face the regional planning mechanism & its implementation, this research is aiming to solve those problems through

- First identifying the main issues that face the regional planning system.
- Setting a methodology that could be applied on any region in order to obtain a successful regional urban planning mechanism that suits the Egyptian planning system and an implantation road map.
- Applying the suggested methodology on the future vision of Alexandria region.

THE RESEARCH METHODOLOGY

The aims & objectives of the research are met by conducting research through working in different field:

- finding the factors affecting urban development on regional level
- Analyzing different international examples for strategic plans on regional level

This research also helps to understand the regional planning methodology & the effect different regions has on each other.
The second objective can be made by the following analytical work

- Analyzing different regional projects in Egypt

As for the third objective, it is obtained by:

- Studying the urban development of Alexandria region (case study) & applying the suggested standard on the future of Alexandria region.

THE RESEARCH SCOPE:

- The study is subjected to the planning process and strategic plans at the regional level where the experiences of the European countries, the Americas and the Arab countries will be reviewed through their practices in developing strategic plans which contribute to the development of the region and also the governorates, cities and rural villages.
- The thesis deals with the several axes of great importance in defining the strategic plans, where shelter, housing, and slums are the vocabulary of the first axis, while the economic development with its various types such as agricultural, industrial, tourism and commercial development is the second axis of the strategy. The presence of upgraded infrastructure such as roads, traffic, transport, drinking water, domestic and industrial sewage networks, electricity, energy and communication networks is the third axis, while availability of services in all kinds of educational, therapeutic, sports, cultural, entertainment and commercial services. Also, administrative and security, as well as the need to provide future extension is the fourth axis regarding the importance in the urban development process of the region

THE IMPORTANCE OF THE SUBJECT OF THIS STUDY

- The importance of studying the urban growth at the regional level sheds the light on the strategic plans for the governorates, cities and rural villages covered by the region, which must be included in those schemes with the aim of developing the region, cities and villages of the governorates alternately
- The mutual influence of the strategic plan of the region and the development plans of the cities and villages at the governorate level drives urban development towards the right direction through the development of a proposal for a future planning strategy for urban extension and new urban settlements at the regional level.

DEFINITION OF THE AREA OF STUDY

- Part three of this study deals with Alexandria region, which includes three governorates Alexandria Governorate, El-Beheira Governorate and Matrouh Governorate, where Alexandria region occupies the northern part of Egypt and overlooks the Mediterranean Sea.
- The reason for choosing Alexandria region is due to its importance and the competitive value between the three governorates, each of which has a great advantage, the industrial and administrative importance of Alexandria governorate (the second capital of Egypt), the agricultural and industrial importance of El-Beheira governorate and the touristic and Animal wealth importance of Matrouh Governorate (the city of Marsa Matrouh).
- Another reason for choosing Alexandria region is national and international status of this region (Tourism and Bibliotheca Alexandrina) and the positive influence it has on the other regions of the Arab Republic of Egypt (tourism and industry).

THE STRUCTURE OF THE THESIS: (SUMMARY)

The thesis is divided in to three parts:

Part One "literature review" titled "Theoretical Study for Regional Strategic Plans" which consists of four chapters.

Chapter one consists of the introduction, research problem, aims & objectives, the importance of research topic, definition of study area, methodology, scope & summary of the thesis.

Chapter two "analytical survey of the different types of strategic plans" briefly reviews the evolution of planning theories, and different planning levels. Then we reach the conclusion that these different planning theories should be put into consideration while starting a new strategy.

Chapter three "Factors affecting urban development on the regional level" such as geographic location, the effect of economic features & its distribution on the regional level, Availability of surface network & infrastructure on a regional level, Services geographical distribution & its impact on urban development regionally.

Chapter four "International Examples for strategic urban regional plans" where the chapter is allocated to explain 5 different examples around the world to identify the regional plans.

Part Two "Analytical survey of regional development axes in Egypt" where the second part consist of 4 chapters: Chapter one "The evolution of regional administrative division in Egypt" where its states the historical background of Egypt's administrative division, the previous efforts to divide the republic into regions, the current situation & the future vision for it (Fair fortune distribution).

Chapter two "Detailed survey for developing Suez Canal regional axis" where the Suez Canal Influence on urban development of the region is reviewed, then the development strategy of the Canal region governorates, the current situation, Classification of the Suez Canal to areas according to the general characteristics, Natural and security risks affecting the development of the Suez Canal region, Continuous Efforts to Predict the Growth Path of the Egyptian Economy and its Impact on Redrawing the Land Use Map for the Suez Canal Region (Methodology), Four scenarios were analyzed to determine the basic criteria for the Suez Canal Development Strategy

Chapter three " western Development Corridor for sustainable Growth in Egypt (Toshka / Al-Alamein)" in which the development corridor experience is displayed, reviewing the geographical location for development & reconstruction axis on the west of The Nile, Corridors in western Desert, project benefits, method of executing the project, & reply to the critics

Chapter four "Analytical Study for development of The Golden Triangle area in Upper Egypt" is where it shed some light on the golden triangle mining area in Egypt introducing the idea of creating a Mining Triangle, project Objectives, the current situation, proposed spatial development plan for the Golden Triangle Project & last Proposal of mechanisms for the implementation of the Triangle Project.

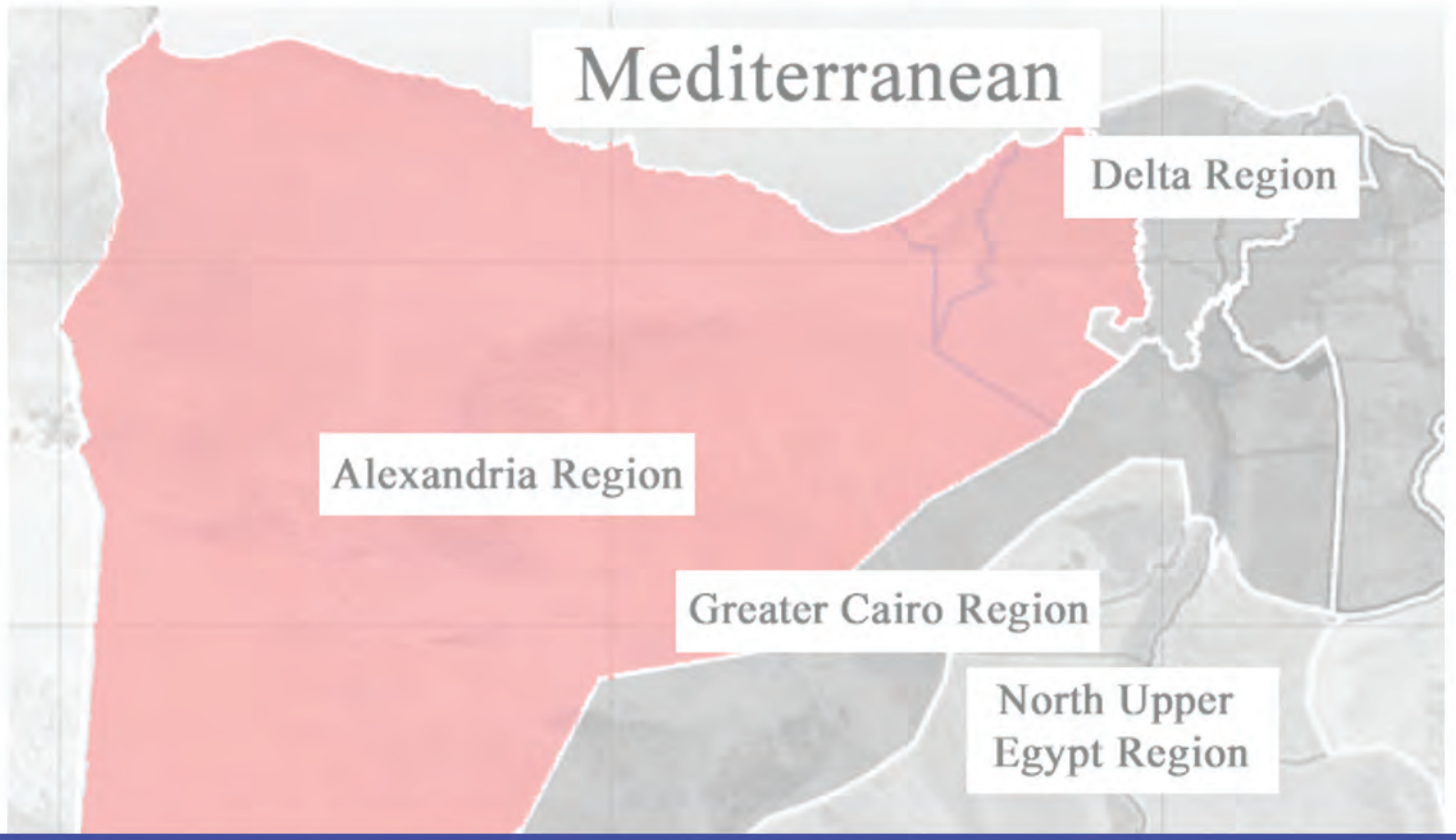
Part Three which consists of 3 chapters & reviews the case study " Urban Development for Alexandria Region 2050" & the planning methodology "strategic planning":

Chapter one " Historical Background for previous Future Visions of Alexandria Region" where we review development strategy for the governorates of the republic (Alexandria Region 2008), Perspective of the Urban Development Strategy at the Republic Level (Alexandria Region 2010), & previous plans concerning the region in the National Strategies

Chapter two "Alexandria region current state" analyzing natural & geographical distribution of Alexandria region governorates', the administrative structure for Alexandria region, the urban & demographic features for Alexandria region, the economic features for Alexandria region, infrastructure, & services

As for chapter three "Future vision of urban development in Alexandria region " illustrating first the directions of urban growth trends at the regional level, ways to stimulate economic development, Infrastructure development at the regional level, Upgrade the role of the different services at the regional level, Mechanisms to implement the outlook for the development of the Alexandria region, all these steps are taken & obstacles are determined to reach the optimum solutions in order to improve the whole society.

Then we finish the dissertation by recommendations & conclusion.



PART ONE

CHAPTER ONE

INTRODUCTION

*Introduction
*The Research Problem
*The Research Methodology
*The Research Scope
*The Importance Of The Subject Of The Study
*Definition Of The Study Area
*The Structure Of The Thesis (Summry)

1 PART ONE: THEORETICAL STUDY FOR REGIONAL STRATEGIC PLANS (INTRODUCTION):

This part is concerned with the theoretical section of the thesis, where analytical survey of different planning definitions & theories are displayed in the first chapter. The second chapter shows the most common factors which affects the strategic development regionally. As for the last chapter in this part, it states some international regional examples of strategic plans are shown to analyze them & define the different variables corresponding through the different examples.

1.1 CHAPTER ONE: THEORITICAL STUDY FOR THE REGIONAL STRATEGIC PLANS:

This chapter displays the theoretical study for the different planning theories as they differ across various aspects, stating some general definitions regarding the scale of planning in which this thesis is concerned, then proceeds to the further explanation of the different levels and scales of planning.

1.1.1 Urban Planning

The definition of *planning* as stated by the GOPP "General organization of Physical planning" is (A continuous operation that follows the ways and scientific methodologies to accommodate the evolution of the natural, urban, social and economic aspects with the purpose of achieving a desirable future and progress by identification of goals and the formulation of policies by scientifically.

It also defines the *Strategic plan* as (The plan that determines the future vision of socio-economic & urban development using participatory approaches, that plan could serve & be implemented on different levels of planning such as national, regional, governorate, Markaz, city or village level. Also, strategic plan illustrates the goals, polices, socio-economic development plans & the urban plan needed to achieve continuous development. It also identifies future requirements for urban expansion, development projects, various land use, priorities, implementation mechanism programs & funding recourses.(GOPP, 2015)

Some Planners Such as Dr Mohsen Al-Mozafar believe that the modern view of the planning process is "an ongoing process which is not related to a period of time on the basis that each planning patterns constitutes a distinct type of human activity that regulates or develops its production sector or its own region in accordance with accurate regulations and rules on a continuous and comprehensive basis"

While others see it as "the way that regulates the process of transferring the society from one state to another & in this sense it is considered an action method to achieve a purpose in shortest time, with less effort and cost. Planning is based on two basic elements: predicting the future and preparing to confront it through a plan designed to achieve society's goals through a specific functional field for a geographical area within a specified period, this plan is then converted into different programs or projects within that specified period "

According to the previous definitions, it is concluded that planning is linked to all sciences related to natural and human resources, with a view to determine the extent to which they can be exploited to achieve maximum development.(El-Deen, 2012).

Urban planning methods has improved & changed through the years, the physical understanding of the city has been supplemented with social science & geography, as it has been developed during the latter part of the twentieth century. Every sophisticated society has an institutionalized planning system determining the roles, rights & obligations of different stakeholders such as the public sector private businesspersons, organizations, and individual citizens. No general planning theory has been developed due to the local & national variations in planning practice & legislation, only different schools have emphasised various aspects of the planning practice.

Urban planning theories are often divided into substantive & procedural theories. Substantive theories address the planning object (e.g., the city or the community), whereas procedural theories address the planning process.

Urban planning theories can also be divided into four categories according to whether they are descriptive or normative and substantive or procedural (Table 1). Because planning itself is a normative discipline, it is meant to create a better environment for citizens, so both the object of planning and the planning process is exposed to description, and to further development, which means that there are often implicit normative assumptions. In recent decades, normative and procedural theories have overpowered other types of planning theories, nevertheless there has been a renewed interest in substantive issues as well (such as the sustainable city) semi related to cultural role in planning. (Abdel-wahab, 2012)

Table 1: Dimensions of Planning Theory

Dimension of planning theory	**Substantive**	**Procedural**
Descriptive	Describing the planning object (city, community, etc.)	Describing the planning process in various local and national contexts
Normative	Developing norms and ideals for planning objects (ideal cities, functional regions, etc.)	Developing the planning process (managing the process, including stakeholders, making convincing argumentation, etc.)

Source:(Hutchison, 2010)

1.1.1.1 Rational-Comprehensive Planning

This theory was once a leading school. It provoked numerous challenges, such as incrementalism and advocacy planning and transactive planning theories. Developed in the 1950s, it was considered a decision-making process in which the planner functions as an expert, the planner studies different action alternatives and their consequences,
With all their aspects. The action with the maximum expected value is chosen to the other alternatives. In addition to that, planners are usually politically neutral, just fulfilling the objectives determined by the political institutions. Their task is to find the “best” means to predetermined ends. The expert should gather as much information as possible to increase rationality on the relevant options and their probable consequences. During the 1970s, this general view related to a systems-theoretical view of society, with Andreas Faludi as one of

the major advocates. Although rational-comprehensive planning theory has since been much criticized, it is still considered as a viable alternative by many contemporary planning scholars, and it is also applied in actual planning practice.

1.1.1.2 Incrementalism

Incrementalism first appeared in Charles Lindblom's influential 1959 paper, "The Science of Muddling Through." was one of the earliest critiques of rational-comprehensive planning. Lindblom considered the idea of scanning all the available options and their consequences is not rational & practically impossible in day-to-day practice. For many of the action alternatives are relevant only for a short time, and some problems may arise suddenly. It is also politically unlikely to change everything from the roots at the same time. Instead, planners and politicians should react to problems and challenges instantly, putting into consideration their lack of knowledge, and restrain their analysis to successive and limited comparisons. So many urban experts practice incrementalism, without necessarily naming it so.

1.1.1.3 Advocacy planning

In 1965, Paul Davidoff published his influential article, "Advocacy and Pluralism in Planning," that was another criticism of rational-comprehensive planning. In which he wasn't convinced by the planner's role as representative of the crowds' due to the conflicting interest between different groups when it comes to land use & urban development. So, he suggested that each of the different interest should be represented by a professional planner and a court determines which course of action is more adequate depending on social justice & equity.

1.1.1.4 Tran-active planning:

In rational planning theory, knowledge is usually assumed to be unproblematic; but according to John Friedmann's theory of transactive planning published in 1973, there is a gap between the processed knowledge of the planning expert and the knowledge based on experience that practitioners have. Experts rely on science and calculation, while practitioners rely on earlier examples of what is possible and what is not. Friedmann suggests that planners should struggle for human interaction, with tolerant to the radical otherness of other agents. Therefore, transactive planning can be considered as the base of what was lately called the communicative turn in planning.

1.1.1.5 Strategic planning:

It began during world war I & II through private business planning & it has been applied in public administration. However, during the 1980s and the 1990s, when entrepreneurialism, regional and global competition increased in urban politics, planners and planning theorists started to take strategic thinking more seriously. In Public planning, it is important to know whether the alternatives of the action we have are good or bad, and that their success depends on the results of the game that is played locally, regionally and globally.
Theories of public planning have not contributed much to the development of strategic theorizing in other fields, but to the existing concepts and theories which have simply been adopted: visioning, mission statements, and SWOT analysis which pinpoints the points of strengths, weaknesses, opportunities, and threats of the organization, city, or region in question. Strategic thinking in planning was also criticized for its failure to accommodate traditional ideals of public planning such as accountability, participation, and the transparency of public administration. (Hutchison, 2010)

Since then strategic planning practice has changed a lot to keep up with the global changes. The last type of strategic planning was the beginning of civil society being included in the planning sphere. Understanding and using of the term "strategic planning ”deals more with individual experience of each practitioner rather than with a generally codified attitude. So accordingly, strategic planning varies consistently, planners identified three main approaches to strategic spatial planning at the beginning of the new century:

- An institutional approach, which favours two main directions; one oriented at legitimizing planning activity, the other seeing institutionalization processes mainly as an opportunity for the implementation of plans & projects.
- A communicative & broad approach that favours framing & sense-giving activity; an interactive approach, suspended in a technocratic tension, oriented to building up connections between public & private organizations to improve performance in planning.
- A socio-cratic tendency, focused on the inclusion of society & emergent citizenship. (Sartorio, 2005)

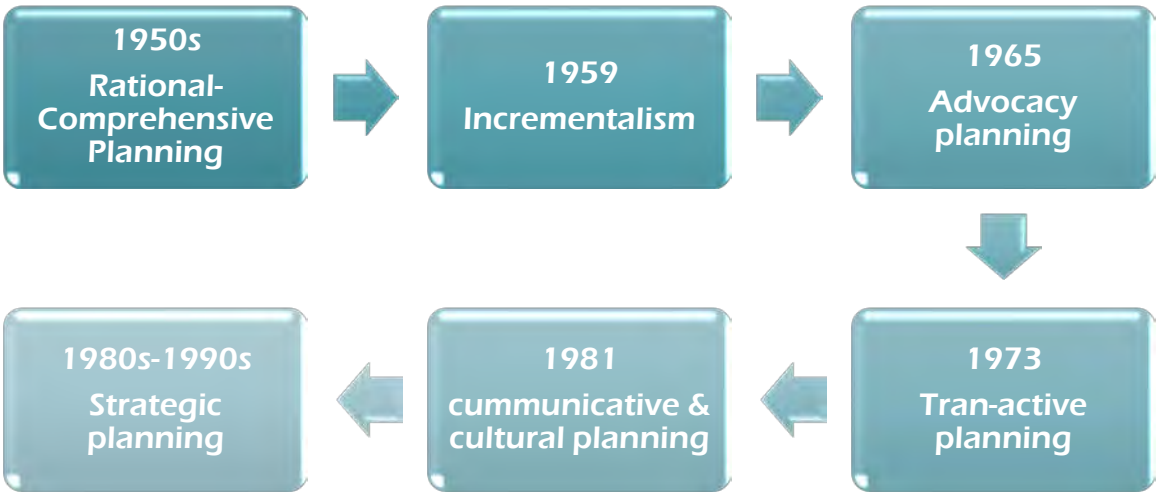


Figure 1: Planning theories & Critiques time line
Source: *Made by the researcher*

Practically, planning is not necessarily using its theories in a regular day by day practice. Some of the traditional theories, such as rational planning and incrementalism, may be contained in the activities of many practitioners. Other theories, such as advocacy planning, have been used to criticize the dominant practice. More recent developments, such as cultural theories or strategic planning are meant to contribute to develop a more creative and innovative cities and regions. planning theory which remains dependent on a working relationship with practice although it is established as an independent academic discipline, to make a real contribution to urban and regional development.

1.1.2 Levels of planning

Planning in general can be presented by 4 main levels shown in the following diagram which states the relationship between them:

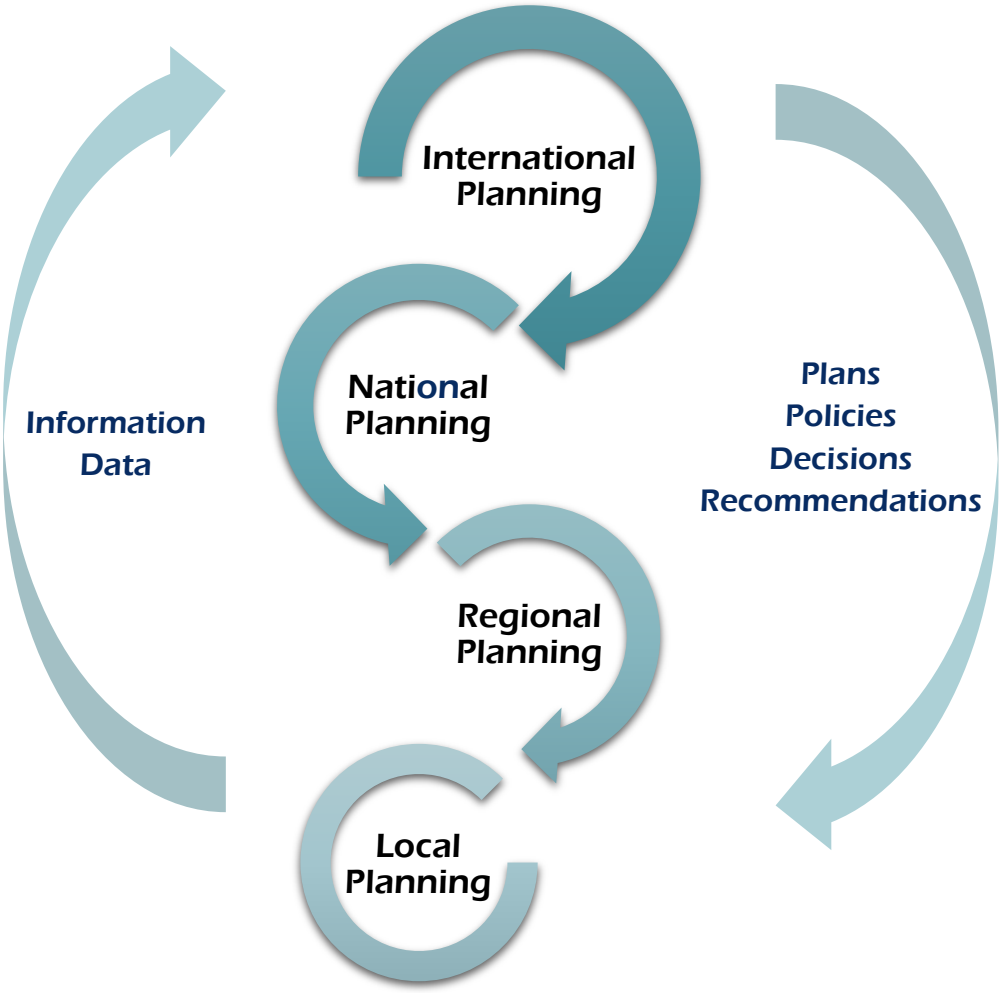


Diagram 1 : Planning Levels

Source: *Made by the researcher based on* (Maraghy, 2014)

Two relations together link planning levels:

1) Bottom up relationship represented in information & data of the different levels that in turn forms the basic ground in which planning can achieve its goals.
2) Top bottom relation represented in plans, policies, decisions & recommendations that help implement the plan.

The pyramid starts from the top to the bottom by international planning, followed by national planning, then regional planning & local planning at the base of the pyramid.

1.1.2.1 First the highest level:

It is known as the international planning which occurs between countries with common interests & usually they are neighbours, international planning is dominated by economic & political character where mutual interests are linked by agreements in different fields.

Examples on international planning:

- European union became an influential economic power globally.

- Nile basin countries where vital common interests exist between Egypt, Sudan & Ethiopia.
- GCC " Gulf Co-operation Council" that unifies the Arab Gulf countries in economic & military agreements.

The countries develop its national policies in various fields within the framework of the international planning.

1.1.2.2 Second level: National Urban Planning:

This level is the first step of planning on the country level, it works through the framework of international planning which includes the country as one planning unit. National plan forms the general comprehensible frame that combines all regional plans to establish consistency & integration without any negative impacts.

Planning on this scale deals with population requirements & goals on the national level, based on a complete comprehensive study of different social needs, to set the plans that ensure the most efficient use of all available resources & possibilities to meet their requirements.

National planning objectives are:

1. Achieving overall socio-economic development of the population, in other words developing wealth & resources on one side & human development on the other side, which in turn leads to increases national revenue & raise per capita income, thus community welfare.
2. Setting the general perception for urban & rural gathering distribution with their sizes, functions & their relationship with each other in a comprehensive state framework.

1.1.2.3 Third level: Regional Urban Planning:

Regional urban planning concept began to manifest during the second half of the 19th century simultaneously with the industrial revolution& the consequent change in social, economic, technological structures & naturally urbanization as it's the vessel that all human activities merge into.

Regional planning is considered the link between national planning & local comprehensive planning where it distributes national plan projects & investments spatially within the limits & parameters that the local urban plan force in a manner consistent with the proper planning rules.

Regional urban planning objectives are:

1. Obtainment of Economic decentralization of the national level.
2. Provide a realistic picture of the exploit & untapped natural, human resources & possibilities of each region & how to use & employ them effectively & positively.
3. Achieving the national plan objectives, as regional planning has come through the demand for decentralization in planning, & the necessity to create planning bodies & institutions at the regional and local levels so that these institutions are close to the real problems on the ground.
4. To achieve regional balance between the regions of the State, with a view to the equitable distribution of resources, wealth, and projects between the different regions.

5. To reduce the aggravation of population problems such as the problems of poverty, unemployment, and population migration.
6. provide public services and facilities in the region, and the locations of public buildings such as municipalities, schools, police stations and fire brigade, and the provision of appropriate roads and sewage networks.
7. Develop the general plan for the current and proposed future distribution for land use between different purposes, including the locations and extension of residential, commercial, transforming industries, public buildings, other special and public purposes.
8. Regional planning serves as a means of coordination between different planning institutions, as a link between local and regional planning institutions and central planning institutions, to achieve coordination among the planning institutions, activities, programs and development projects at the local and regional levels on the other hand and at the national level on the other. To create flexibility in the planning and implementation of development projects in the Region.
9. Take care of environmental affairs and optimize the use of available natural and human resources.

This level of planning is more detailed than the national planning it's more exposed to the distribution of urban communities as well as the uses of existing and proposed land use. Also, the road, transport and traffic networks which means how to link between urban communities and each other, both within the region and between different regions of the country.
In this chapter, the researcher will focus on one of the planning levels, which is the regional planning because of its prominent role in activating the regional development axes (subject of study).

1.1.2.4 Fourth level: Local Urban Planning:

Which is concerned with planning the urban assembly itself, whether it is a village or a city. In this plan, the various components of the city for instance housing, services, green areas, road networks and facilities are placed in an integrated functional relationship without conflict or contradiction, which achieves prosperity and well-being of the population. Local planning reaches detailed stages at the sectors, district & neighborhoods' levels.

1.1.3 Conclusion:

This chapter presented a summary of the most significant planning theories & critiques with their evolution over about 70 years period stating some general definitions first regarding planning, then explaining its various levels taking into consideration the scale of planning that is practiced achieving a balanced planning process that combines both the philosophical theories with the rational practice, especially in the regional planning scale to start a new topic in the next chapter about the different factors that affect that levels of planning.

1.2 CHAPTER TWO: FACTORS AFFECTING URBAN DEVELOPMENT ON THE REGIONAL LEVEL:

This chapter deals with the numerous factors which positively or negatively affect the urban development in the regions to determine the relationship between the region's components through its various activities, where each of these factors is individually addressed in detail also this chapter will identify the strength of those factors to determine the extent of their impact on the regional level.

1.2.1 Geographical location

- The geographical location is considered as one of the most influencing factors such as the seas, lakes and rivers. They determine region's effect & they strengthen the relationship between the components of the region.
- This study will also discuss the positive and negative aspects, which attract the population to develop the site of an urban development or turns people away from those negative geographical locations to escape from the devastating effects of those sites.

1.2.1.1 Waterbodies (Sea, Canals, rivers & Lakes,)

- Despite the separation made by the water body between the areas of the region, it also plays an important role connecting these areas sharing the same activity (tourism, recreation, fishing and so on), they take the following forms:

1.2.1.1.1 Water Edges

Waterbodies represents a natural edge for the region areas represented in a variety of activities such as tourist beaches and water sports entertainment or commercial activity like fishing villages and commercial ports.

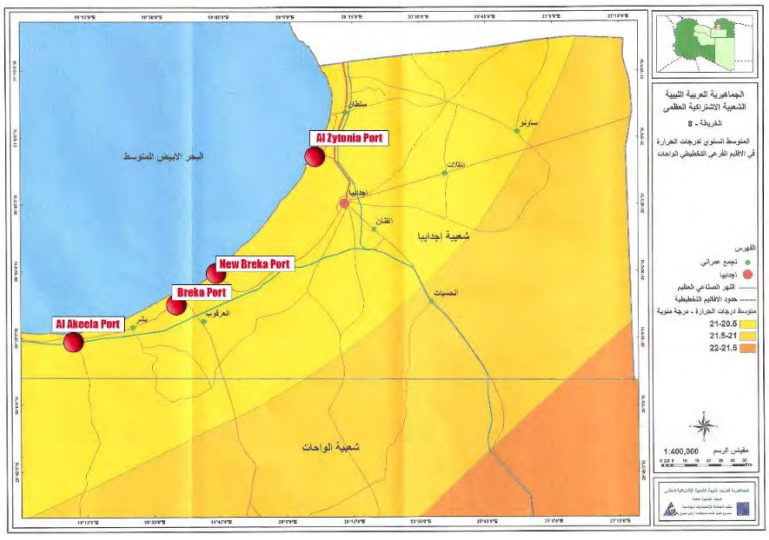


Figure 2: Benghazi Region (Al Akeela - Azwaitiniah – New Breka – Breka Ports)
Source:(University office for Engneering Consultant, 2009)

1.2.1.1.2 Canals & Rivers

They are considered an important element in linking many areas in the same region, which lies in a row on the water element or on either bank of the river Example: Il De France (Seine River)

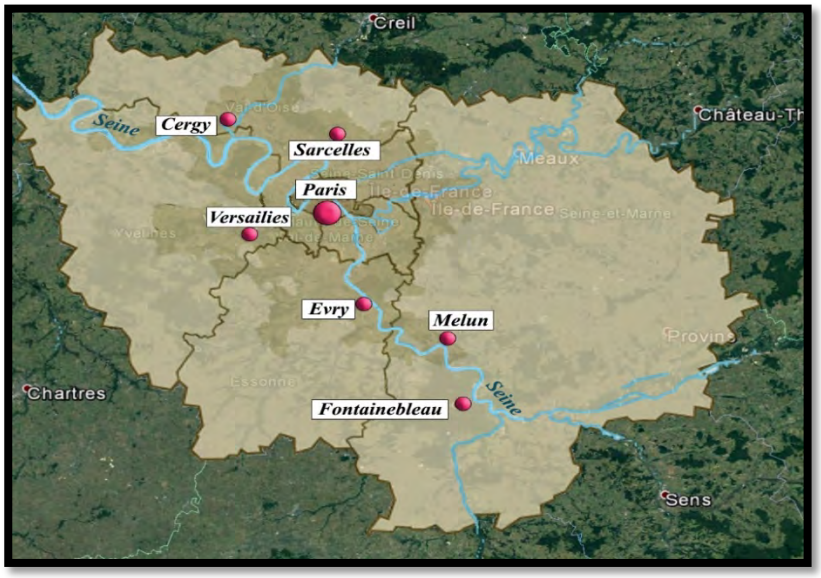


Figure 3:Seine River Penetrating Il De France Region
Source: *Made by Researcher based on* Google earth pro.

1.2.1.1.3 Lakes

It's considered as the common factor linking between more than one area in the region depending on the shape of those lakes where there are linear lakes, circular shape or diverse shaped lakes. Usually lakes attract agglomeration of various activities commercial or recreational and tourism.

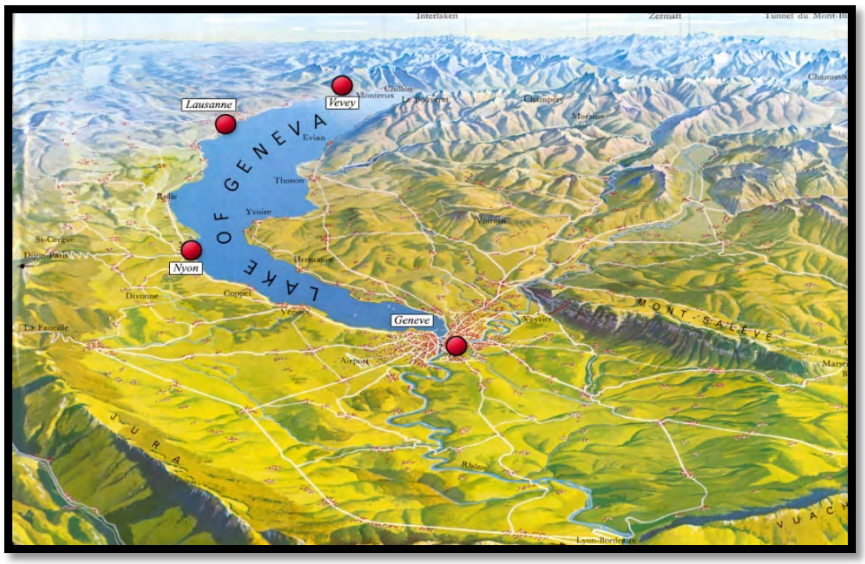


Figure 4:Geneva Lake in Switzerland
Source: http://www.rando-saleve.net/salhist.html

1.2.1.2 Topographic:

Topography can insure the unification of the region's components or their separation It varies from one place to another. The regions forms varies according to the location topography such as:

1.2.1.2.1 Flat lands

Where the land flattens through areas in the same region without any change in the topography of the site.

1.2.1.2.2 Mountainous areas:

where mountains spread in the scope of the same region taken by the population as a distinguished location for Urban agglomerations (Lebanon - Jordan - Libya), this mountain areas ranging from dry, planted mountainous areas or contain waterfalls.

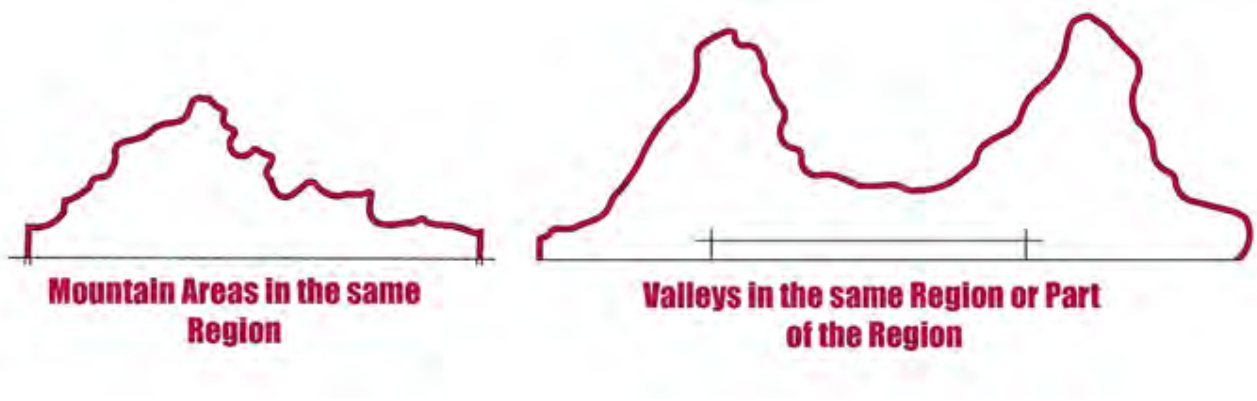


Diagram 2:Showing Different Mountainous Areas & Valleys

Source: *Made by the researcher*

1.2.1.2.3 Valleys:

They confined areas between two Hills or mountains, where mountains in this case are considered as an edge of the territory or part of the determinants of this region.

1.2.1.3 Natural Hazards:

There are some geographical locations with the negative impact that threaten communities with natural hazards, some of those natural phenomena are:

1.2.1.3.1 Floods:

flash floods are spread in some locations like South Yemen and Muscat in the Sultanate of Oman, which must be taken into consideration upon preparing the regional development schemes, floods as well can be used for example in the generation of electricity.

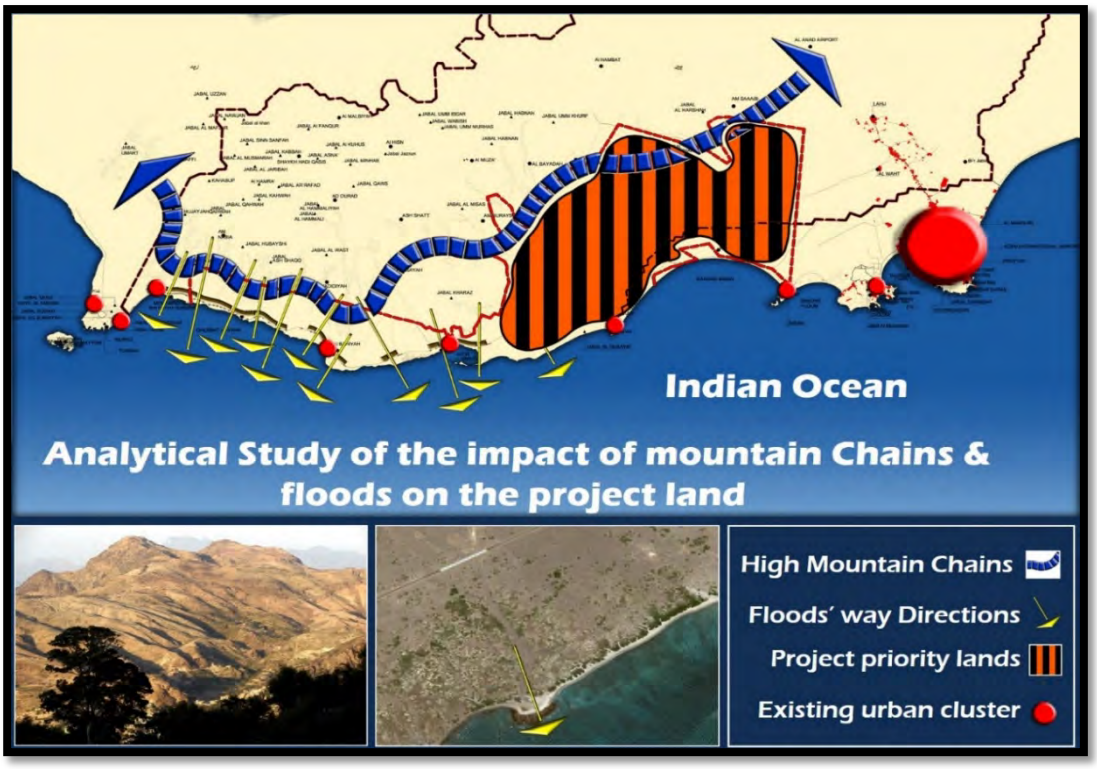


Diagram 3: El Saleh Economical City in South of Yamen
Source:(Azzam, 2008)

1.2.1.3.2 Volcanos & Tornadoes:

Volcanic belt located within the same region affect the establishment of residential areas such as in Japan, those areas are avoided of any activity and is taken into consideration while preparing the regional strategic plans, as some areas are also exposed to hurricane winds and water waves like tsunami

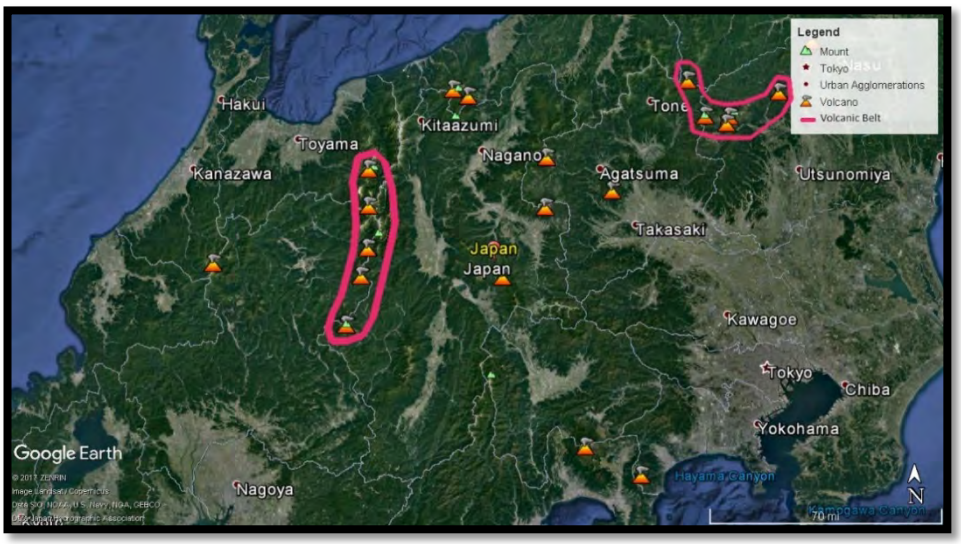


Figure 5: Volcanic Belt in Japan
Source: *Made by Researcher Based on* Google Earth pro

1.2.1.3.3 Earthquakes:

Earthquakes are considered as passive natural phenomenon; their intensity vary in the range of a single region between multiple earthquakes zone or one area zone thereby affecting the strategic plans for the region that contains those areas.

1.2.2 The effect of economic features & their distribution on the regional level

This study intents to identify the locations of economic activities in order to take advantage of their positions and to link the elements of the region to take advantage of them, where the economic study is considered as one of the most important studies which examines the development of the region based on the constituents & the available properties represented in the touristic sites, industrial zones, mineral recourses as well as human resources & agricultural areas.

1.2.2.1 Tourist sites:

The study of tourist sites in the same region aims to identify them. In some cases, tourist sites are localized in one place or spread in several locations in the same region, which determines the future vision of the economic development in the region (e.g. one site and another several sites show on balance).

Tourism development gain its power from its sites variation & activities such as religious, recreational & beach tourism in addition to historical, & conference tourism.

The lack of tourist sites in the same region leads to the concentration of this activity in few places, while the variety & spread in the region work on increasing the serving activities nourishing the tourist activity such as hotels, restaurants, cafeterias, public & private transportation.

1.2.2.2 Industrial areas:

Industrial sites are great influential economic essentials, so the study of industrial zones locations is regarded as the most important survey specifically for the future development of a region.

The diversity of industrial activities earns the region a great economic power where those activities vary between light, medium, heavy industries & in some cases transforming industries.

The spread of industrial zones in the region helps in balancing the distribution of urban communities within the region, while the lack of or concentration of industrial areas in a specific location encourage the workers' attraction to the region in search of renewed opportunities.

1.2.2.3 Distribution of mineral resources:

The mineral resources form the economic indicator & developmental source that can affect the constituency of the region. The availability of mineral resources & raw materials in several locations within the same region works on determining the future vision for the possibility of exploiting those resources and the establishment of industrial zones & thus the emergence of new urban communities to help regional development.

1.2.2.4 Human resources:

This study aims to distribute the population in their communities represented in the towns and villages is another important study that integrate with the economic resources in the region this study aims to confirm this population distribution or re- distribute it in future vision.

When developing a future vision, the regional strategic plans depend on keeping track of urban growth & the rate of population growth, which affects the necessity of studying the establishment of new urban communities to accommodate the expected population increase.

1.2.2.5 Agricultural areas and surfaces:

The agricultural activity is essential through developing the region economically, it has a significant effect in terms of agricultural products and quantities between domestic consumption, exportation and their contribution to the manufacturing industries.

Planning studies on the regional level depends on the possibility of increasing the cultivated areas & introducing new modern agricultural methods, this doesn't replace the necessity of protecting the current agricultural areas from the danger of urban sprawl as well as the loss of productive lands which affects the economic balance across the region.

1.2.3 Availability of surface network & infrastructure on a regional level

This study is based on the identification of strength, weaknesses, opportunities & threats at the regional level (SWOT) to strengthen the infrastructure & the surface networks of this region which helps promoting regional development process significantly.

1.2.3.1 Road, transit & transportation network:

This study aims to realize the effect of road & transit system on the correlation of the different areas of the region, because in some cases, and despite the availability of roads, the region could lack the means of transport and public transit which negatively affects the development of this region or the interconnection in various areas, the road network leads to the power of the development of this region. For Example, in Benghazi region, Libya the road Network is in the north that led to the concentration of the urban development in the north leaving the rest of the region empty.

Also, this this study examines each of the road network & transportation network:

1. The survey relays the current state of the roads to identify strength or weaknesses of the network & thus a plan to visit & develop the major roads at the regional level in order to help improve the linkage between different urban communities within the same region.

2. Transportation network must be available between different urban areas within the same region to support the future vision of the region, where attention should be given to the availability of bus lines for public transportation between provinces & cities, railways & airports supporting the development regional plan.

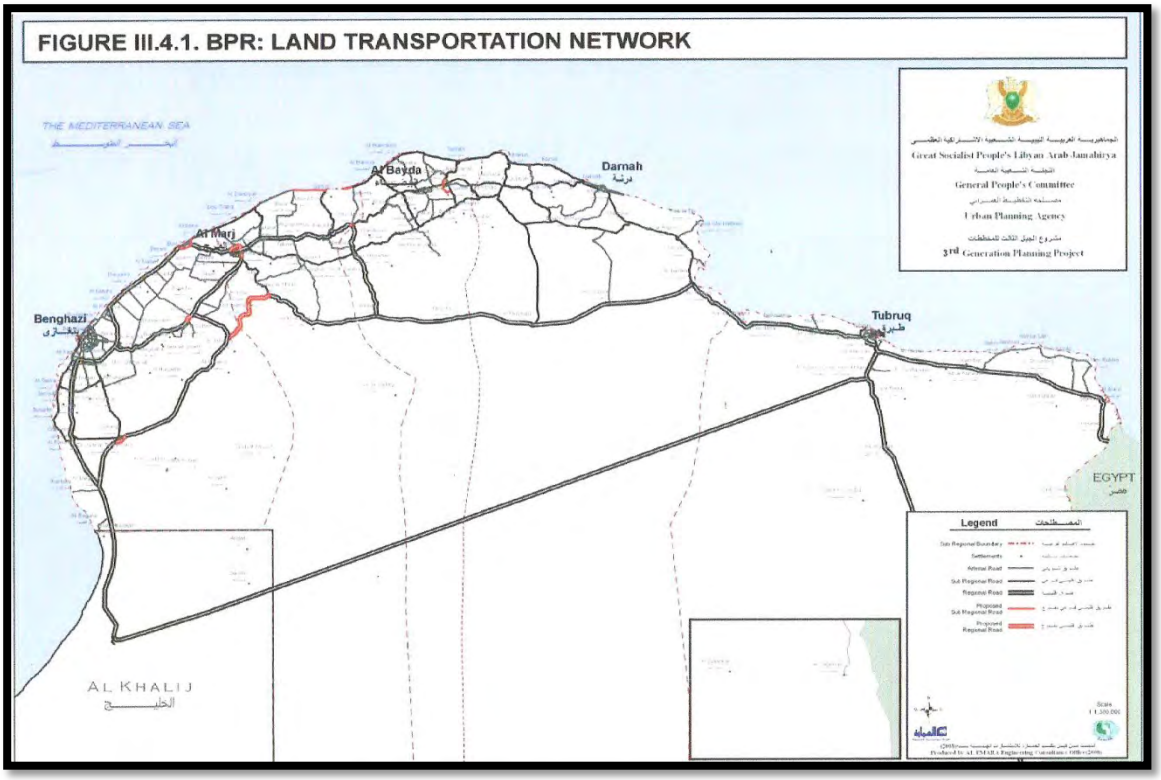


Figure 6: Benghazi Road Network, Libya
Source:(Architecture Office for Engineering Consultant, 2009)

1.2.3.2 Feeding fresh water and sewage network:

This part shows the impact of the availability or lack of water or sewage network, or both in the region development and noticing the strategic plans that considered the availability of those networks in residential areas in the region, where urban development plans for new communities depends on the need for both sanitation and fresh drinking water network to encourage moving to those areas.

1.2.3.3 The electricity grid and energy network:

This part of study reviews the availability of electricity networks in the region or obtaining of energy from renewable sources and the future vision of the disposal of that service, where a survey of renewable energy resources such as wind / solar power & water falls to stabilize the quality of the new sources that helps to maintain the urban development within the same region.

1.2.4 Services geographical distribution & its impact on urban development regionally:

It is concerned with the impact magnitude or the availability of all the educational, health, sports, recreational and cultural services on the region components, as this part is based on the recognition of these services' location, their reflection on the current situation & the future of the regional strategic plan framework.

1.2.4.1 Educational services:

Identify the accessibility of educational services especially universities and institutes also if its spread all over the region or centralized in a specific area affecting the movement of Residential communities.

Educational services are generally divided into schools with different educational stages in addition to the institutes and university colleges which are located in the same region. Study of the educational services is based on the achievement of the regional development plan where the interest is mainly in schools and colleges that fit with the dominant activities for the region, such as the petroleum activity (Mining College - Faculty of petrochemicals) or dominated by agricultural activity (College of Agriculture with its different departments) or the prevalence of industrial zones so goes with it (the faculty of Engineering for those industries).

1.2.4.2 Therapeutic and health services:

Another part that demonstrates the result of the presence of distinctive and specialized health services in a specific location of the region or the balance in distribution of the service in the region.

The future vision for the region is concerned to address the health problems related to the population of the region, so hospitals that provide care for these diseases are established, such as heart / conjunctivitis / cancer / liver hospitals.

1.2.4.3 Sports Services:

This study targets the influence of the sports presence facilities such as the Olympic stadiums and villages and its impact on the regional level. Where those facilities depend on the availability of clubs and sports buildings to attract the young people and on the other hand the Olympic players who can play a role at the regional and national level.

Clubs, sports centers and youth centers are also considered attractions for the young which raise awareness and protect them from social ills such as theft and drugs.

1.2.4.4 Leisure and Cultural Services:

A Study of the distribution of the museums, galleries and national libraries at the regional level, and its impact in setting the features of the strategic plans at the regional level. The establishment of museums and cultural centers relies on the historical, cultural and human resources of the population of the region, where those buildings work to raise public taste among citizens who participate in the development process of the region.

1.3 CHAPTER THREE: INTERNATIONAL EXAMPLES FOR STRATEGIC PLANS ON REGIONAL LEVEL:

The allocation of the fourth section of the first is part to address the various experiences in the domain of strategic plans at the regional level and the magnitude of the success for those schemes to push urban development process of those regions. Reading the experiences of the world's countries enables us to identify the systems they follow in the planning of the regions and thus we can deduce whether the current situation in the Egyptian regions and the problems faced by are general, similar, and countries face too or that these problems result from unsuccessful planning methods.

The Criteria for choosing these 5 Examples are:

1. Diversity in choosing those examples between relatively small in area regions like (Calgary – Canada) and large ones such as (Wheatbelt – Australia) and (Bangalore – India) to compare between treatments for different region's sizes.
2. Those examples were chosen due to the difference in population's size in comparison to the region's area in which there is large population size in a small area such as (Bangalore – India) and small population size in a large area such as (Wheatbelt – Australia)
3. Knowing the problems that happen to those societies, the means to solve them within the regional plans (social, urban and economical).

Figure 7: Map indicating the 5 Examples of regional plans

Source: *Made by researcher based on* www.mapsofworld.com

1.3.1 First Example: Ile De France Region- France

Ile De France is one of the 26 regions of France. Its total area is 12.012km^2 area with a population of 12 million inhabitant & over 30% of France's GDP. Now, it is considered as one of the world's largest metropolitan areas. The determination to keep the growth of the Paris agglomeration under control led to the enactment of a "development plan for the Paris Region" by a law dated 14th May 1932. Since then, the development of the Paris Region has always been governed by a regional plan. Sustaining this dynamic and organizing the associated flows while protecting people's day-to-day quality of life and preserving the environment means setting out a vision and mobilizing the resources to reconcile, priorities and to coordinate the relevant public policies. Most of the world's largest metropolitan areas either already have or are re-establishing a planning system, of which the SDRIF (Le Schéma directeur de la région Île-de-France) is a famous example.

Figure 8:Map of the 26 French Regions & Il De France In the Centre
Source: *Made by researcher based on* (Bertrand and Larrue, 2005)

The SDRIF is the first decentralized plan for the Paris region, it was commissioned by the Paris region, the French state was involved in the development of the plan to ensure its and legitimacy and take account of national issues as was the regional economic, Social environmental council.

1.3.1.1 Present problems & Challenges

In order to improve the Paris Region to functions as a metropolitan area, the SDRIF sets out plans to face the following challenges:

- Solve the housing crisis
- Rebuild the economic dynamism of the Ile de France
- Rebalance the Île-de-France FUNDAMENTAL PRINCIPLES
- Encourage densification and intensification
- Preserve open spaces and landscapes
- Ensure a transport system that is appealing
- Sustainable management of the natural resources
- Optimize the metropolitan logistical functioning
- Ensure sustainable management of the natural ecosystem and increase the robustness of the Paris Region.
- Reduce emissions of greenhouse gas. (Massonneau, 2015)

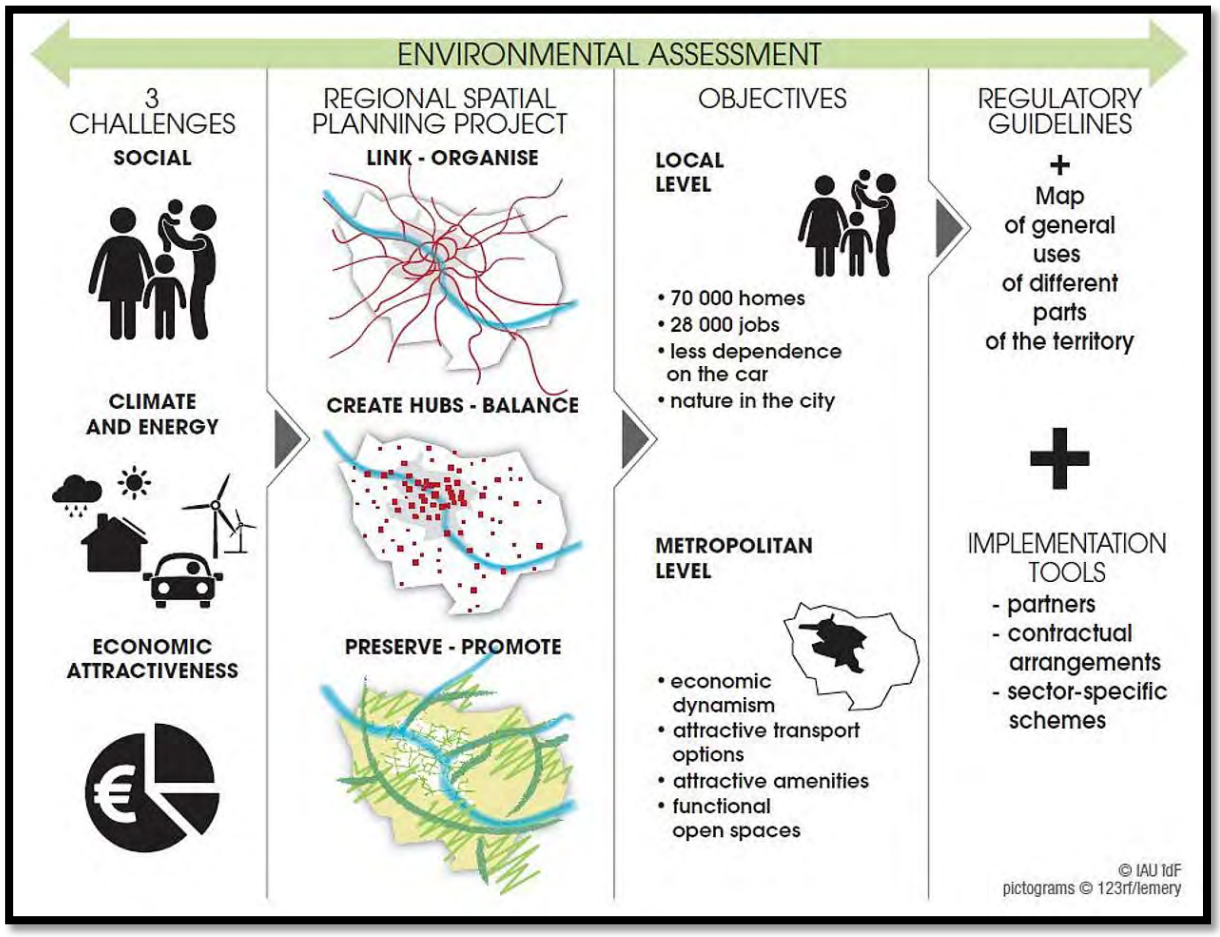


Figure 9: Il De France 2030 – Development & Composition Methodology

Source: (Sandrine Barreiro, 2016)

1.3.1.2 The Project Objectives

In order to improve the day-to-day of people's life in the Paris Region, the SDRIF plans to:

- Build 70,000 homes every year and renovate the existing stock to resolve the housing crisis.
- Create 28,000 job opportunities every year and place more emphasis on mixed housing/employment areas.
- Guarantee the access to ahigh-quality amenities and public services.
- Design transport systems to reduce dependence on the car.
- Improve the urban space and its natural environment.

1.3.1.3 Current situation

Paris Region is so popular for its main assets:

- The highest GDP in the European Union: 30.3% of the French nation's GDP.
- It's wide range of business sectors.
- A consumer marketplace of considerable importance: 12 million inhabitants, 8.3 million visitors (conferences & exhibition centers) & 47 million tourists.

- A highly qualified workforce: 18.2% of France's population, 26.5 % of Students in France & 23.1% of the jobs in France.
- Internationally renowned for excellence in education, science, and technology
- World-class infrastructure, to ensure the seamless flow of people, goods, capital, and data.
- Europe's second-largest airport, Most efficient public transport, Europe's number one road network. Number two regional river network in continental Europe & An excellent broadband communication network.
- The largest stock of commercial property in Europe
- A rich heritage and a dynamic centre for cultural and business events, the world's leading tourist region, Paris Region leads Europe in available surface for trade exhibitions and Paris is ranked N°2 in the world for welcoming visitors and world-class business meetings.

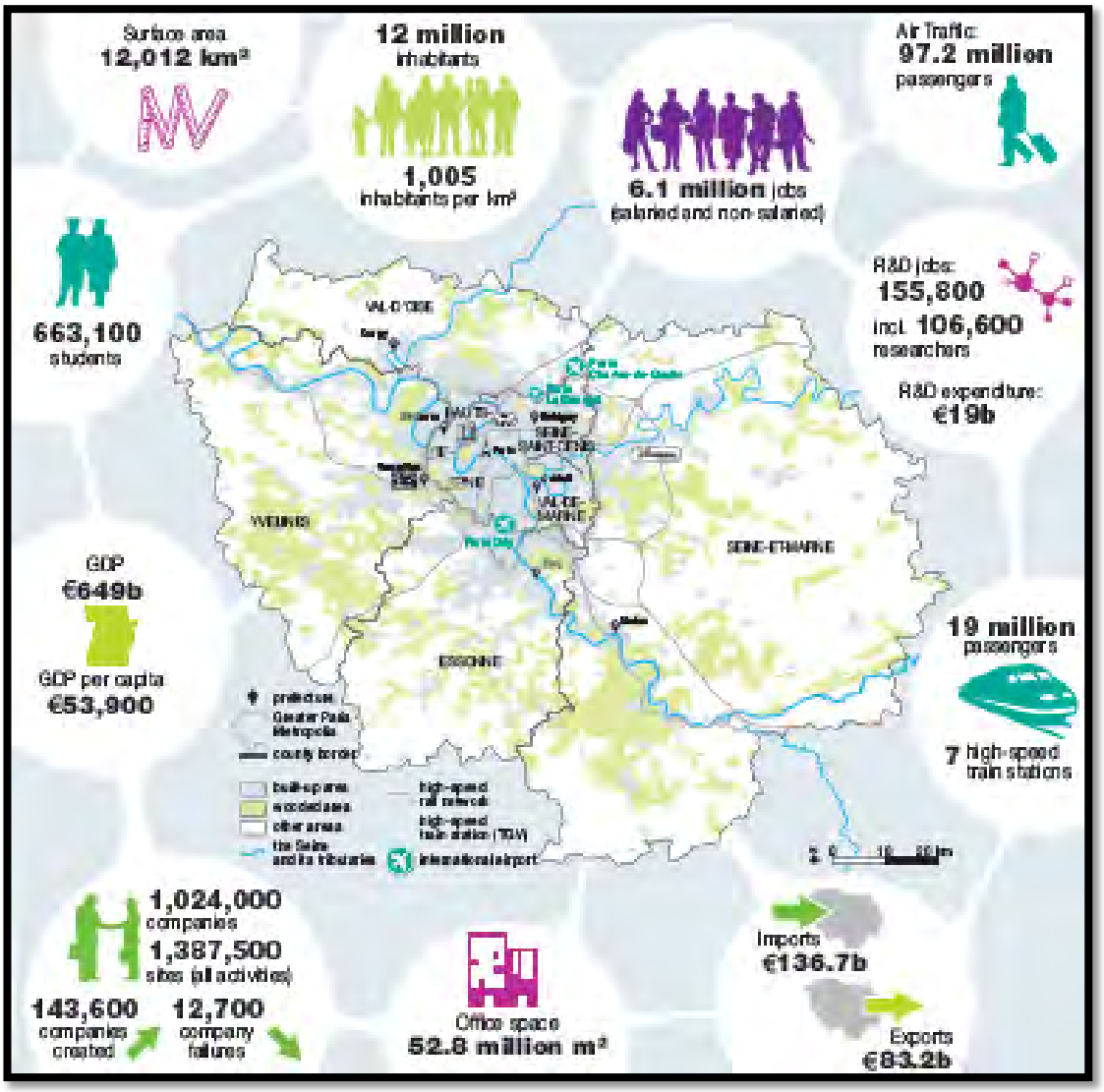


Figure 10:Paris Region Current Situation

Source: (The Regional Council of Ile-de-France, 2017)

1.3.1.4 Future Vision & Projects Implementation

Where will Ile -de- France be in 2030? Population, housing construction, job creation, economic development, new public transport, road sharing, protection and enhancement of natural areas, reducing spatial inequalities, social, economic and environmental ... are all concerns that affect all players in the region at all levels of life.
A logical tree was developed to break down the objectives of the plan, to priorities and to retrace the coherence of an action. The logical tree is organized according to three reading axes:

- The issues that shows an acuity in the Paris Region: housing crisis, economic dynamism, rebalancing at multiple levels (regional re-balancing east / west to the functional diversity by neighborhood).
- The fundamental principles of the territory planning that the SDRIF 2030 will assume: increase the density, ensure an attractive transport system, preserve open spaces, sustainably manage the natural resources.
- The emerging approaches concerning the new themes in the Paris Region (urban heat islands) or known issues, which were not dealt with till recently regarding the planning of the territory documents and the planning (optimize the metropolitan logistics operations, mitigate the risks and pollution, reduce greenhouse gas emissions).

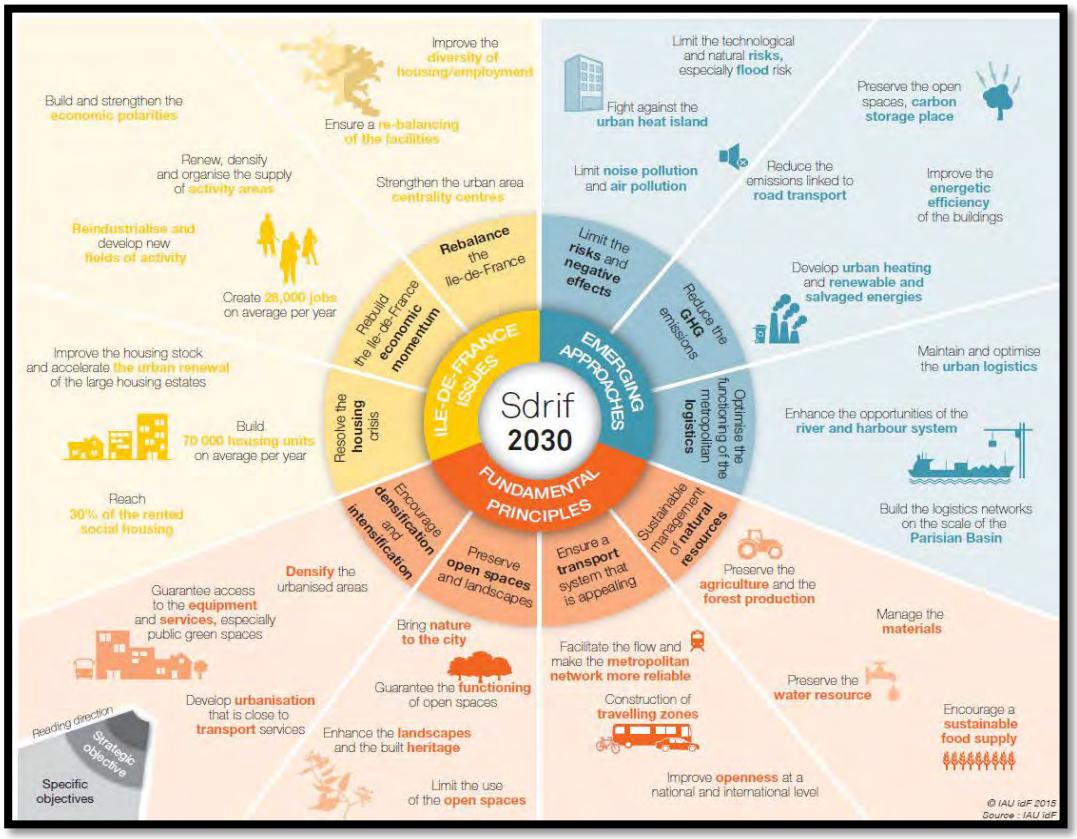


Figure 11: The Logical Tree of The Objectives of The Great Paris Region Master Plan (Sdrif 2030)

Source:(Massonneau, 2016)

1.3.2 Second Example: Calgary Metropolitan Plan – Canada

Calgary Metropolitan area is a region of 2 census metropolitan regions of Alberta which is a region of 13 Canadian regions. The Calgary region is a home for 1.4 million inhabitants (based on Statistics Canada, 2016 population census) & a forecasted GDP value of $67 billion in 2012 and the highest concentration of head offices in Canada, with an area of 5,107.55 km^2 consisting of 3 cities, 12 towns, 5 villages, 2 summer villages, 2 municipal districts, and 2 counties within the Calgary region. (The Calgary Regional Partnership, 2016).

Most of the world's largest metropolitan areas have a planning system or are reestablishing a system, such as Calgary Metropolitan Plan (CMP). This Plan is the Calgary Regional Partnership's guide to achieve the aspired region for the coming 60 years. To achieve this vision, the CRP develops a Strategic Plan every four year to provide direction and ensure movement towards CMP implementation.

Figure 12: Political Canada - Location of Calgary Metropolitan in Alberta Region

Source: *Made by researcher based on* (https://en.wikipedia.org/wiki/List_of_regions_of_Canada)

1.3.2.1 Present problems & Challenges

The most persist challenges to the Calgary metropolitan area are water, growth & expansion as **more than 1.8 million people expected to arrive during the coming 60 years** which is more than twice the population now So, working together on a regional level to live in balance with a healthy environment in enriched communities, with sustainable infrastructure and a prosperous economy.

- It's about ensuring those people will have the same access to a sustainable source of water as we do today.
- It's about providing options for these people to move freely around the Region.
- It's about building a sound economic foundation, so people will have jobs and a prosperous future.

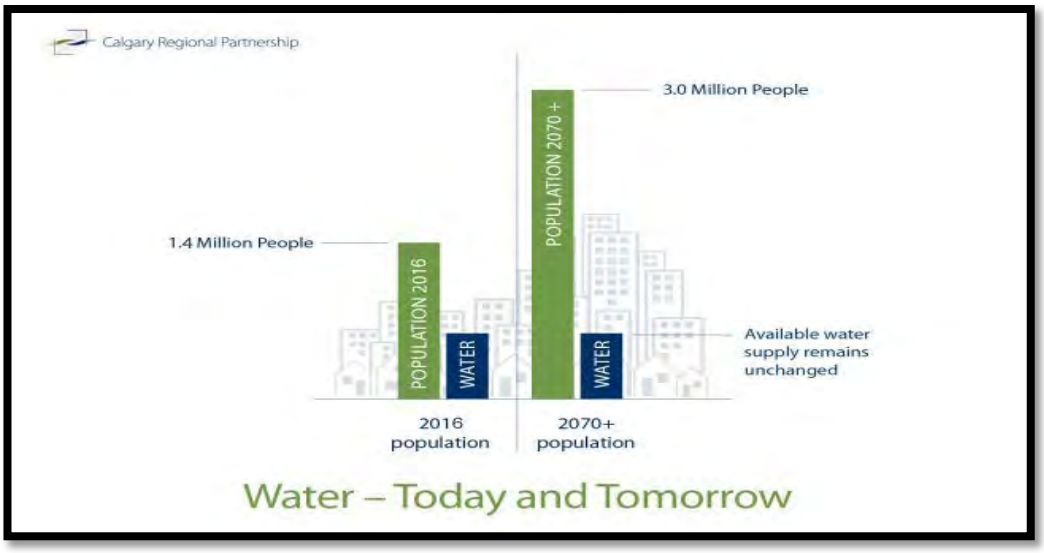


Diagram 4: Comparison Between Water & Population

Source: *Made by the researcher based on* (Calgary Regional Partnership, 2014)

1.3.2.2 The CMP Principles:

1 Protecting the natural environment and watershed. To ensure that natural landscapes, ecologies and water sources are identified, respected and to ensure their functions and integrity over the time as the region grows.
2 Fostering the region's economic vitality. working together to develop and to enhance business opportunities for the private sector, to promote the overall environment for business investment and to enhance national and global recognition.
3 Accommodating growth in more compact settlement patterns. The Plan emphasizes the uniqueness of existing municipalities and the development of more complete, healthy, transit-supportive communities, with employment and services located where people live.
4 Integrating efficient regional infrastructure systems. towards a regional infrastructure system that incorporates complete transportation and mobility systems for the movement of people and goods, and regional water and wastewater servicing approaches to support of member communities. To ensure the most effective use of financial resources while working with industry in alignment with the Calgary Metropolitan Plan and the Province of Alberta.

5 Supporting a regional governance approach. To enable collaborative implementation and maintenance of the Calgary Metropolitan Plan and Calgary Regional Partnership activities, emphasizing a commitment to consensus-based decision making.(Calgary Regional Partnership, 2014)

In February 2016, Canada released the draft 2016–2019 FSDS (Federal Sustainable Development Strategy for Canada) for public review and comment. It marked the beginning of a new approach, clearly linking their sustainability priorities with the 2030 Agenda for Sustainable Development and its global sustainable development goals (SDGs). (the Calgary Regional and Partnership, 2015)

Figure 13: Sustainable Development Goals for Agenda 2030

Source: *Available on line:* https://obamawhitehouse.archives.gov

1.3.2.3 Current situation

As the energy capital of Canada and home to a considerable number of corporate head offices and manufacturing facilities, the Calgary Region is known for its natural beauty, its friendliness, its high standard of living, its entrepreneurial spirit and its endless opportunities. The region is home to about 1.4 million residents, with approximately 238,000 People living in twenty-five communities beyond the City of Calgary (2011). Two significant events that will occur during this four year Strategic Plan cycle are: the Calgary Metropolitan update in 2018/2019 and municipal elections in October 2017.(the Calgary Regional and Partnership, 2015).

1.3.2.4 Future Vision & Projects Implementation

The following diagram shows the time line of the three phases (Emerging, planning & implementation phase), also shows that the vision depends on a 4 years strategic plan to evaluate & implement the Calgary Metropolitan plan.
The Calgary metropolitan Plan contains policies designed to accommodate long-term growth in the region to 3 million people in a sustainable & fiscally efficient settlement pattern. It will help guide how to manage that growth to protect & to preserve that most valuable – the natural environment, the communities, fresh air, clean & plentiful water and economic prosperity.

6

7

WHERE WE'VE **BEEN** AND WHERE WE ARE **NOW**

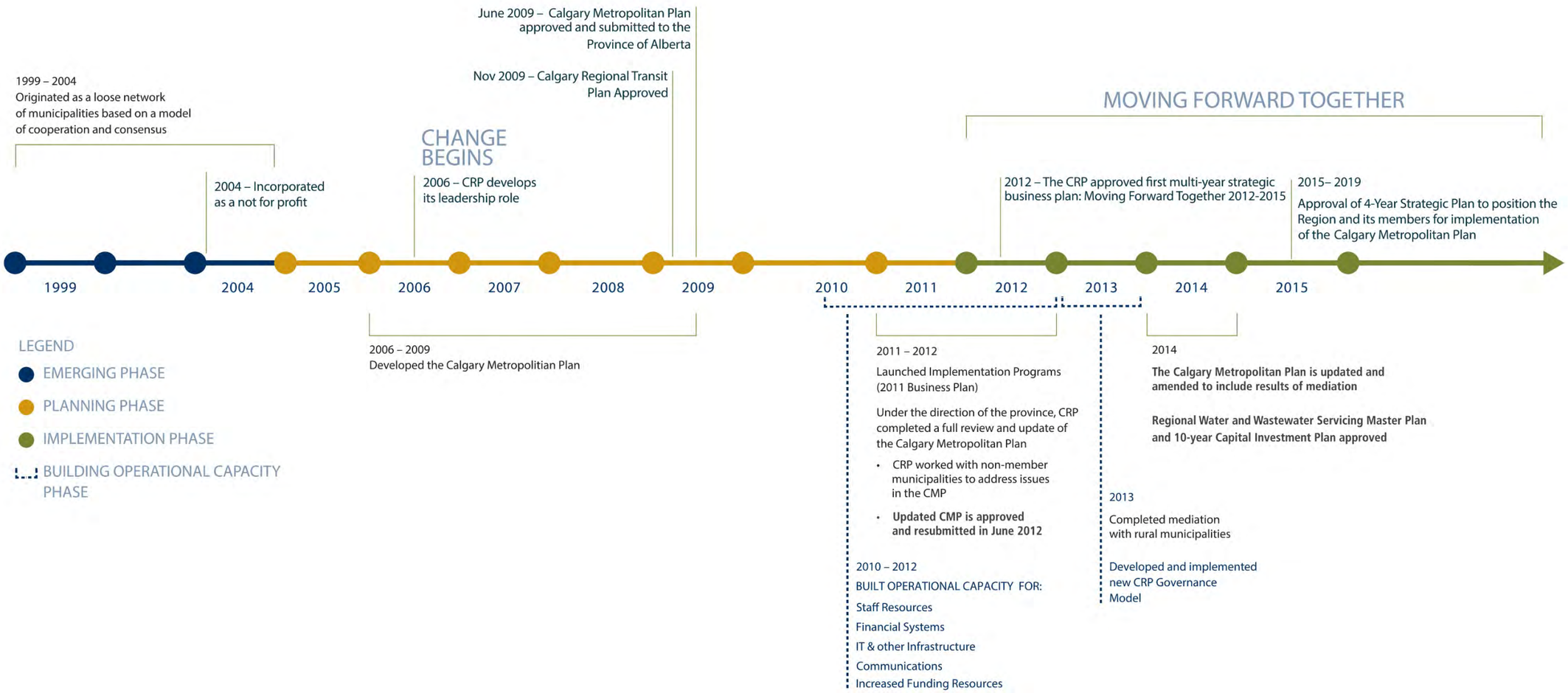


Figure 14: Calgary Metropolitan Plan Implemntation (Time Line)

Source : (the Calgary Regional and Partnership, 2015)

1.3.3 Third Example: Bangalore Metropolitan Region – India

Bangalore Metropolitan region is sometimes referred to as the "Silicon Valley of India" (or "IT capital of India") because of its role as the nation's leading information technology (IT) exporter. The Bangalore is a home for 11.66 million inhabitants (based on India Statistics, 2011 population census). With an area of 8005 km2 located in the Karnataka Region, consisting of 3 districts their names are: Bangalore Urban, Bangalore Rural & Ramangaram. Topographically, it is an ecologically sensitive region with respect to water resources. It is one of a handful of urban agglomerations in the world to be situated above the 1000-meter mark.
(Bangalore Metropolitan Region Development Authority, 2011)

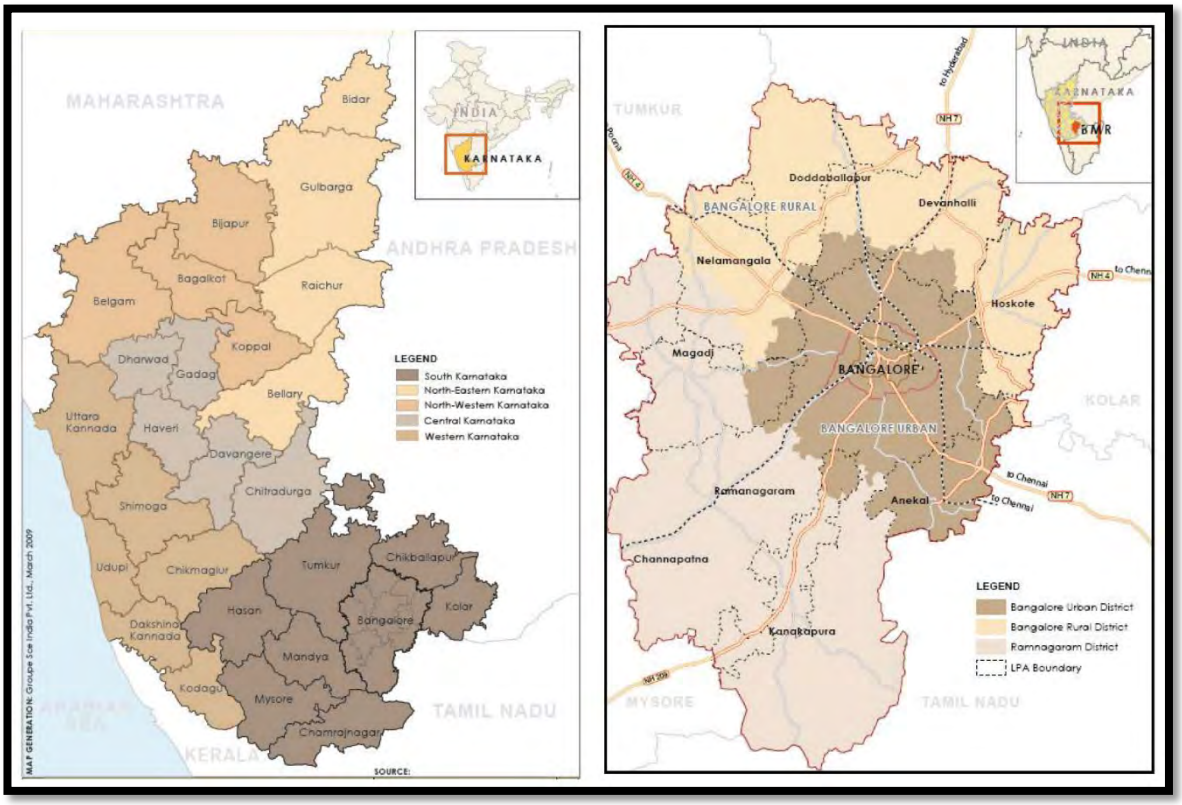


Figure 15: South Karnataka Region Indicating the Bmr (Left) – The Bangalore Metropolitan Region Indicating Its Three Districts (Right)
Source: (Bangalore Metropolitan Region Development Authority, 2011)

1.3.3.1 Present problems & Challenges

• Bangalore region is one of the most sensitive regions with respect to water resources. It is one of the urban agglomerations in the world situated above 1000-meter altitude mark, which is sited on a plateau. The city's development has been totally dependent on the nearest perennial source, River Cauvery, situated at 108 KM at the lower elevation of 450 meter. There are numerous water and environmental related sensitive issues which are vital to be addressed for the sustainable development of Bangalore region.
• **Economic Growth:** It had not been translated to an overall growth of the region as Bangalore core remained the focus of investments. While Bangalore has emerged on the global map as an IT & ITES hub, it scores a comparatively lower rank (6^{th} rank among 36 selected cities) in India due to its poor infrastructure & communication facilities.
• **Transport Sector:** Inadequate transport facilities to sustain this growth.

• **Water supply:** Areas of north & north - east of the BMR have low ground water tables & relay heavily on uncontrolled ground water extraction.
• **Sanitation:** Sewerage system are either absent or not functioning effectively in most parts outside the BMA (core).
• **Solid waste management:** is often not done in an environmental friendly way.
• **Housing:** BMR will face a shortage of 2.56 million housing units by 2031, affordable housing has become an issue in the region causing squatting & further increase of slums
• **Power & Telecommunication:** Increasing demands for power are being met without considering the sustainability of the source. Revenue losses are suffered in the power sector due to low-paying categories, theft in electricity, high transmission & distribution losses.
• **Heritage and tourism:** Several heritage sites and monuments within BMR are under threat as they are sometimes not identified or protected by any heritage authority.
• **Education:** Quality of school facilities and learning levels in urban government schools is declining due to neglecting it.
• **Health:** The region faces shortage of both medical officers and other staff whereas the urban areas have the lowest levels of vacancies.
• **Ecological Mapping of the region:** the increasing built up area & reducing green cover poses an issue.

1.3.3.2 The BMR Principles:

1 Ecology. Protect, conserve and enhance the natural environment and areas of ecological value through judicious management of natural resources, especially water.

2 Governance promoting an integrated spatial urban strategy that will unite between environmentally sensitive and development-oriented initiatives of the planning and governance wings. This calls for jurisdictional, functional and sectoral coordination in implementation of plans and management of the region.

3 Economic Growth & Equity. Ensure economic growth in the region outside the core, emphasizing the importance of the 'livable' human settlements improving the quality of life in numerous human settlements in the region. This calls for economic enhancement and integration and social upgradation of the various settlements.

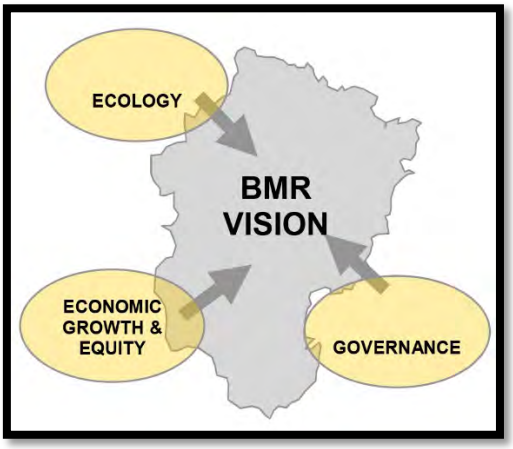


Figure 16: Three Guiding Principles of The BMR 2031
Source: (Bangalore Metropolitan Region Development Authority, 2011)

1.3.3.3 Current situation

The general overview and analysis of the existing situation was considered for the following sectors:

1. Land use and Environment
2. Demography
3. Transport
4. Economy
5. Physical infrastructure
    - Water and sanitation
    - Power and telecom
    - Solid waste management
6. Housing
7. Social infrastructure
8. Heritage and tourism

1.3.3.4 Future Vision & Projects Implementation

By 2031 it is expected that the BMR will accommodate 18million inhabitants, 75% of them will be concentrated within the core and 25% will be outside (within the region). This suggests that balanced population and employment distribution need to be supported by a strong public transport network, concentrating on social convergence and adequate physical infrastructure.

The BMR RSP 2031(Bangalore Metropolitan Region Revised Structure Plan 2031) intends to achieve a balanced growth in the region through concerted action to bring out a strong economic interdependence across the region while avoiding an over centralization which seems to accompany economic development.

In this context, BMR RSP 2031 defines the following as its vision.

'To promote the region's ecological and cultural values, while seeking optimum land utilization suited to its capability for sustained balanced economic production and inclusive growth by inducing agglomeration economies and clustered development through a decentralized planning and governance system.(Bangalore Metropolitan Region Development Authority, 2011)

The regional development strategy and policies of the BMR RSP 2031 will aim to:

- Constitute a decentralized regional planning structure to promote functional coordination, encourage public participation, increase transparency and accountability, and build a strong sense of public ownership;
- Make an environmentally sustainable plan that will exploit land capability for productive uses, including promoting open public spaces (green networks);
- Strengthen the regional economy by linking development opportunities with regional infrastructure investments and coordinating investments of the public and private and NGO sectors at a regional level;
- Ensure social equity and inclusiveness in delivery of infrastructure services and public amenities; and
- Promote economically, environmentally and socially sustainable growth patterns by maintaining compact urban settlements and protecting rural communities and integrating land use and transportation within the identified positive constraints of the environment.

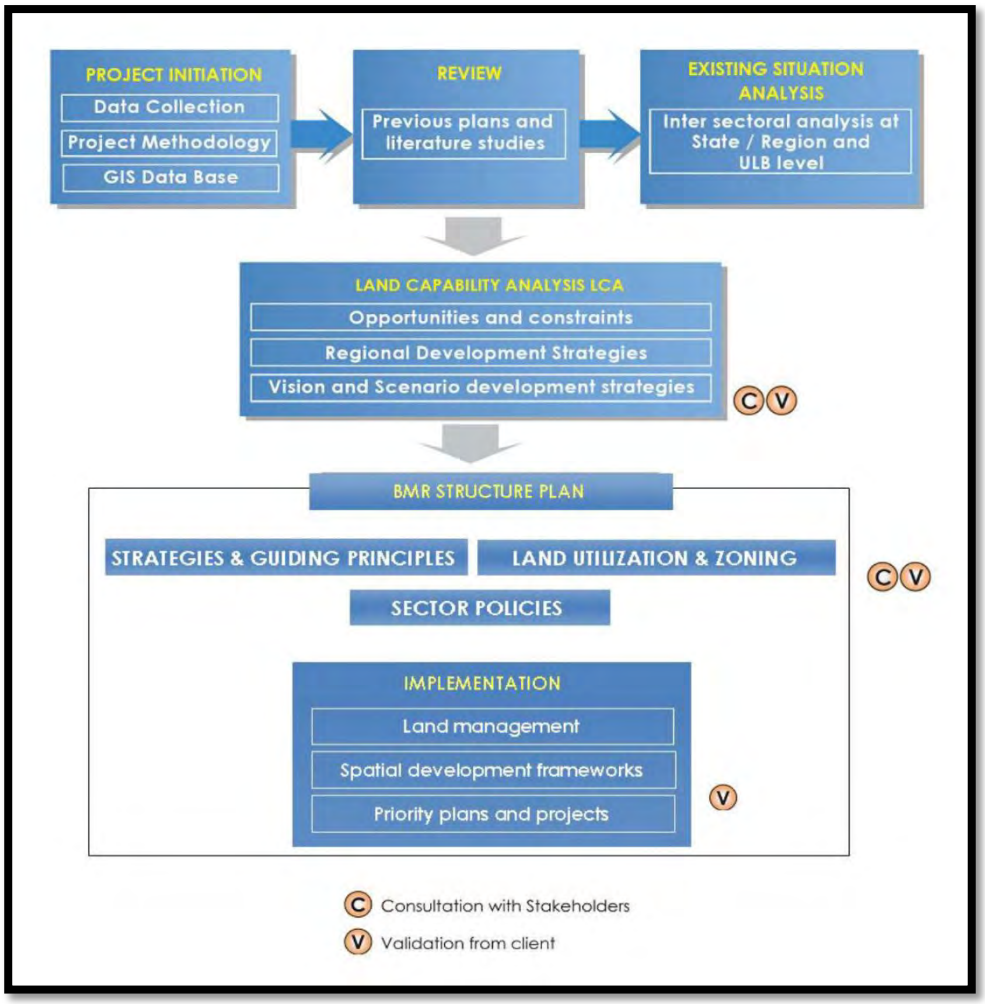


Diagram 5: The BMR Structure Plan Revision Process

Source:(Bangalore Metropolitan Region Development Authority, 2011)

1.3.4 Forth Example: Wheatbelt Region – Australia

One of the Nine regions of Western Australia state. Wheatbelt is a home for 75,000 inhabitants (2013 population census). This population is highly dispersed with over 200 towns and settlements spread over an area of 155,256 km^2.
The region has five distinct sub-regions, it is governed by 43 local governments, with no single dominant regional center. With (10-year AAGR) average annual compound economic growth rate of 8.2% (GDP $ 6.4b) and diverse economic base, the Wheatbelt is well positioned to make significant contribution to the State & Nation's growth.

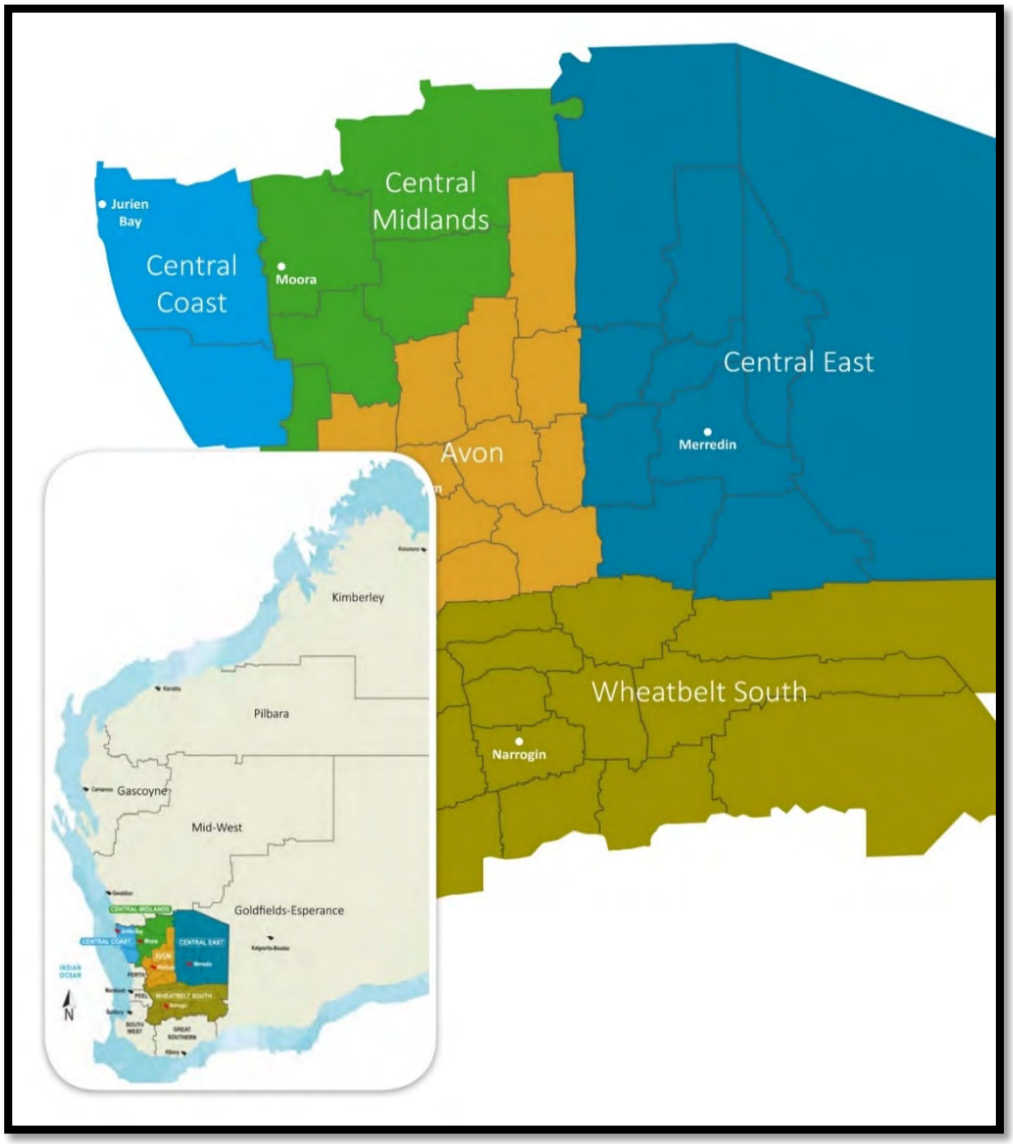


Figure 17: Wheatbelt - Western Australia

Source: (Wheatbelt Development Commission, 2015)

1.3.4.1 Present problems & Future Challenges

- 40,000 additional homes needed by 2050 to accommodate 180,000 people.
- Vibrant Economy: 2050 Target (7%
- Clever People: 2050 Target (Workforce of 109,800)
- Valued Natural Amenity: 2050 Target (off grid power and water solution in 30 wheatbelt communities)

1.3.4.2 The Wheatbelt 2050 Vision and Aspiration:

The wheatbelt is a key contributor to Western Australia's prosperity. The Region's prime location, diverse economy, clever people, vibrant communities and unique natural environment offer a high quality of life and will attract global innovators and investors. The aspirations underpinning this vision are:

Vibrant Economy: A diversified and adaptive economic base building on the Region's assets and aligned to state, national and international opportunity.

Clever people: Lifelong learning, highly skilled labor, innovation and leadership drive economic growth and community vibrancy.

Livable Communities: Diverse, safe, healthy and resilient communities where services and infrastructure reflect the needs and aspirations of residents.

Valued Natural Amenity: The Wheatbelt's unique natural amenity is valued as an asset for social, cultural and economic development for current and future generations.

The Wheatbelt value proposition is clear to investors in government and private enterprise and families wishing to live and visit.

Effective Partnerships: Cost effective investment occurs as a result of good information, quality project management and leveraged investment.

Figure 18:Wheatbelt 2050 Vision, Aspirations & Targets

Source:(Wheatbelt Development Commission, 2015)

1.3.4.3 Current situation

The general overview and analysis of the existing situation was considered for the following sectors:

Vibrant Economy:

- 8.2% average annual compound GRP growth rate over the last ten years.
- Diversified economic value across agriculture (18%), mining (27%), construction (11%), transport and logistics (10%), other (34%).
- Largest agricultural producing region in the State - $3.5b or 46% of the States production in 2011/12.
- Mining growth of 221% in the last 5 years.
- Wheatbelt produces 60% of the State's renewable energy.
- Second most visited region after South West (average of 605,700 visitors every year resulting in a turnover of estimated $246 million).
- Low unemployment (2.5%) and high participation rates (62%).
- Over 10,000 small businesses.
- 40,000 additional homes needed by 2050 to accommodate 180,000 people.

Clever People:

- Third most populous region after Peel and South West.
- Significant out-migration of 15-29-year-old cohort.
- Some locations have high levels of early developmental vulnerability.
- 73 primary schools, 29 secondary school options (DHS's, SHS's, Agricultural Colleges, K-12 campuses).
- High volunteering rates.

Livable Communities:

- 200 communities offering diverse lifestyles.
- 70% of communities within two hours of Perth.
- Underutilized social infrastructure.
- Mismatch between family and housing profiles.
- Low crime rates.
- 2013 Living in the Regions Report: Wheatbelt respondents rated highly: safety and lifestyle, general well-being and happiness.

Valued Natural Amenity:

- Landscape icons include the Pinnacles, Wave Rock, Great Western Woodlands.
- 13.2% remnant vegetation.
- Climate variability impacting agricultural productivity.
- 60% of the State's renewable energy produced in the Wheatbelt.

Marketing Wheatbelt Opportunities:

- Wheatbelt residents highly value safety and a strong sense of community.

Effective partnership:

- 43 local governments
- Five distinct sub-regions and five sub-regional centers (no one regional center)

1.3.4.4 Future Vision & Projects Implementation

Effective Blueprint implementation will work at many levels. The first is at the 'macro level' which requires imbedding the Blueprint into decision processes to ensure alignment of effort and resources achieve maximum results. The second is in terms of implementing the priority actions outlined within the Road Map for Growth.

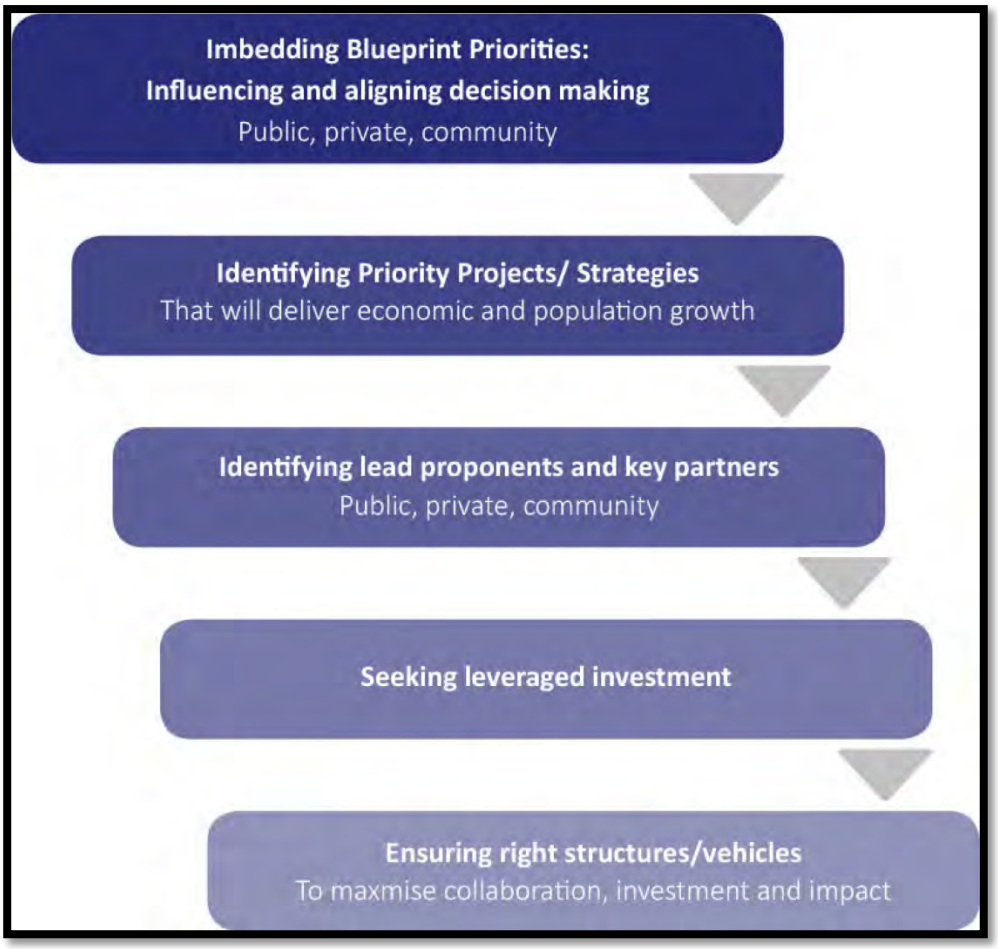


Diagram 6: Elements of Implementation

Source: *(Wheatbelt Development Commission, 2015)*

The Wheatbelt Development Commission's primary role in implementing this Blueprint will be to:

• advocate for the Blueprint and the Region to the public, private and community sectors;
• co-ordinate and facilitate collaboration on priorities for action across relevant stakeholder groups;
• develop and drive solutions and appropriate governance structures to get results;
• assist proponents to shape projects that align with the priorities and objectives outlined in this Blueprint;
• raise awareness of programs, initiatives and legislation that will impact on regional priorities; and
• engage in a continuous process of monitoring and improvement of the Blueprint and its priority areas for action.

The Blueprint outlines an ambitious agenda for growth. With over 40 priority actions within the six pillars for growth, rigorous process is required to determine which priority actions (or projects) would deliver growth in population, economic diversification and private investment.

The Blueprint will have high level and ongoing oversight from the Board of the Wheatbelt Development Commission supported by RDA Wheatbelt. Joint board meetings held twice a year will:

• monitor implementation of the Blueprint and agreed priority elements within it; and
• review and update the Blueprint to reflect progress made, changing needs and resourcing.

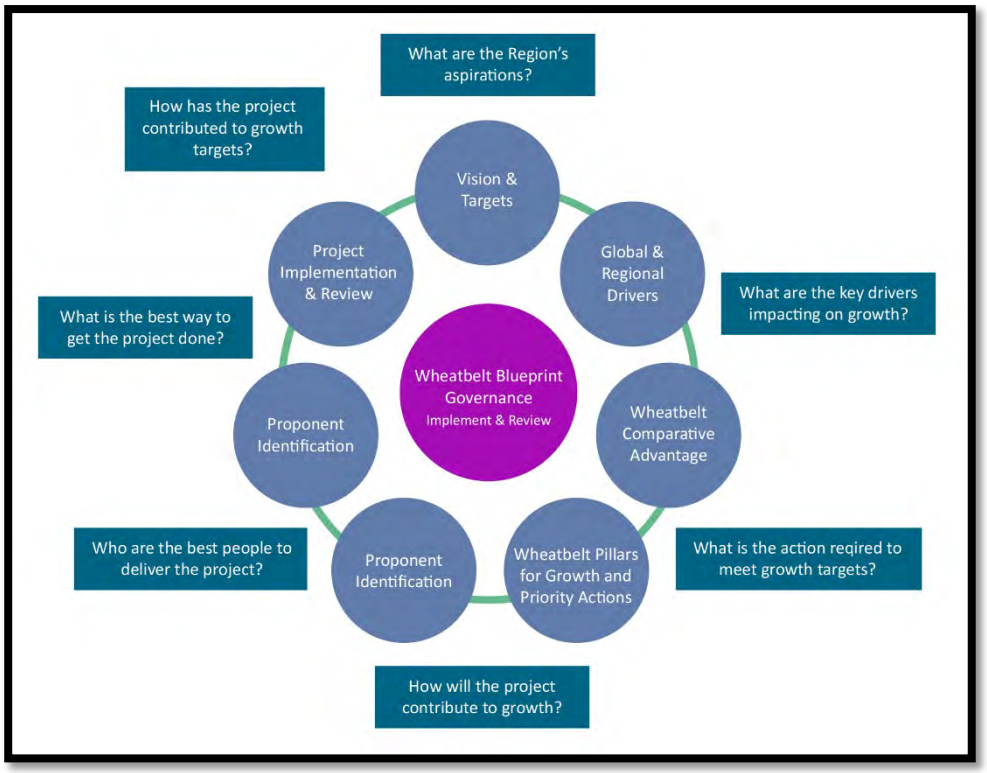


Diagram 7: The Wheatbelt Blueprint Review Process

Source: *(Wheatbelt Development Commission, 2015)*

1.3.5 Fifth Example: Benghazi Region – Libya

1.3.5.1 First: the organizational structure of the planning stages and development projects in Libya

• Libya has been listed in several development projects for the regions and cities of Libya. The following table shows the comprehensive plans that have been prepared since the Italian occupation, in 1911

• The Libyan State has prepared the first-generation project, which include comprehensive and urban plans on the level of cities and urban communities 1966-1988.

• The second-generation project was followed in 1980-1985 for the year 2000, which was planned at the urban and regional levels.

• Libya's latest project is the third-generation project that began in 2000 and until the year 2025 and 2030. This project is at the regional and urban levels.

• The example of the study is the strategic plan for the Benghazi region, where Libya is composed of four regions: Benghazi - Gulf - Tripoli – Fazan, and Benghazi is the eastern region of Libya and borders with the Egyptian border to the east, as shown in the following map of the Libyan region:

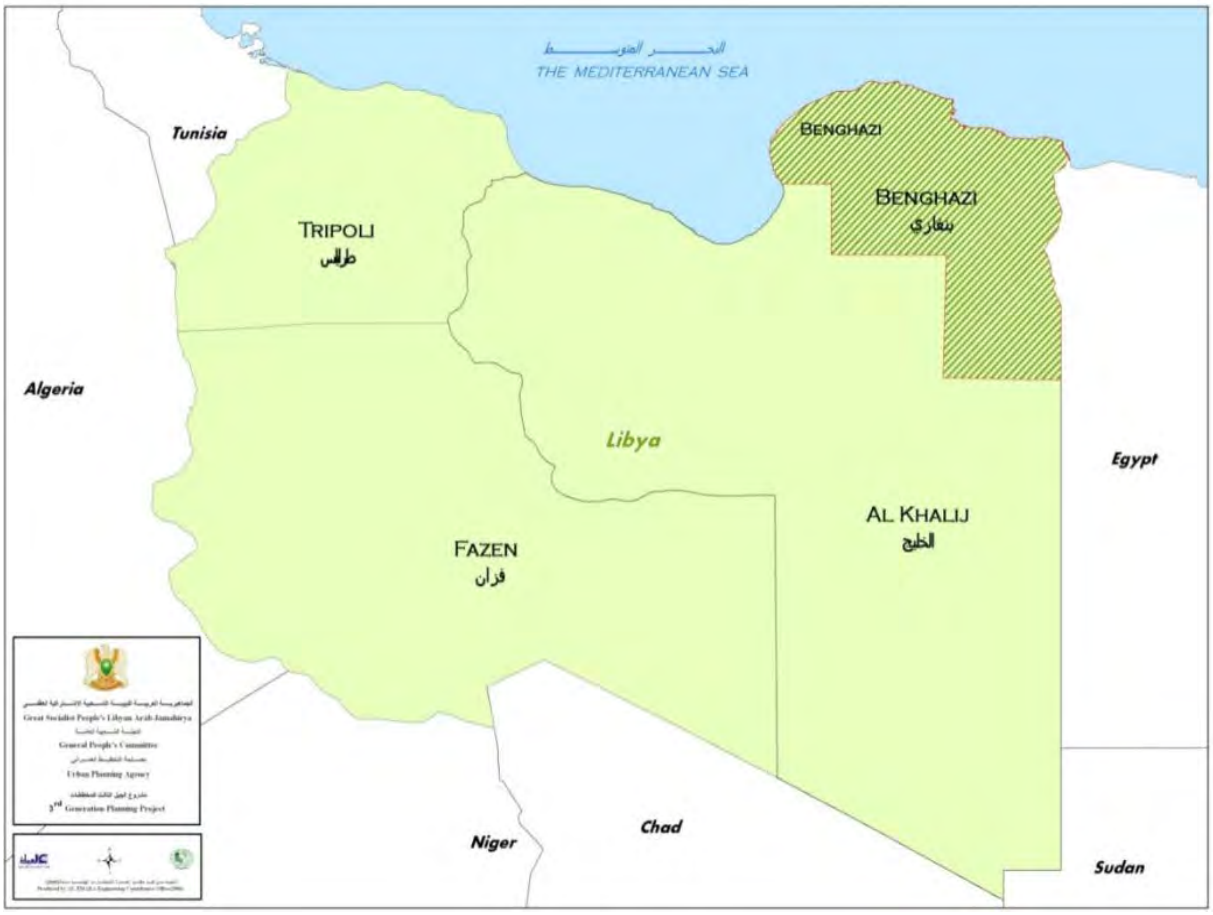


Figure 19: Benghazi Region in Libya

Source: (Architecture Office for Engineering Consultant, 2009)

1.3.5.2 The Strategic Plan for the Benghazi Region of Libya (Third Generation Project)

1.3.5.2.1 Organizational Structure of the Planning and Development Projects in Libya

Urban development projects	Schemes	Statement	Planning periods	Hierarchy
Four Italian comprehensive schemes	**Comprehensive Schemes**	• The origins of urban planning in Libya date back to the Italian colonial era • Four comprehensive plans were prepared for Tripoli, Benghazi, Derna and Misrata • Urban plans for towns and villages were also prepared	1911	**Urban level**
First generation Schemes Project	**Comprehensive schemes, Urban plans**	• The first-generation schemes contained, comprehensive schemes and urban plans for cities and basic urban centers only • The overall plan of the marj in 1963 was the first plan prepared by the Libyan planners to show (the reconstruction institution of Barqa) after the independence of the country. The second plan was the comprehensive plan and urban plan of Al-Bayda city	1966 - 1988	**Urban level**
Second generation Schemes Project	**National spatial policy (NSP) National spatial planning (NPPP)**	• Outlines the planning and management of communities, infrastructure, services and land use throughout the Great Libyan Jamahiriya	1980 - 2000	**National level**

	Benghazi Regional Physical Development Planning (BRPDP)	• Refers to the National Spatial Guideline plan • The development plan of the Benghazi planning region covers the sub-region of Batnan, sub-region Derna, sub-region Jebel el Akhdar, sub-region Marj, sub-region Benghazi	1985 - 2000	**Regional Level**
	Sub-region Physical Development Planning (SRPDP)	• Refers to the sub-regional development planning. • Comprehensive & urban plans for cities & basic urban communities	1985 - 2000	**Urban level**
	Comprehensive Plan and Urban Plan	• Refers to the spatial planning of the sub-region • Comprehensive urban planning of cities and urban centers	1985 - 2000	**Urban level**
Third Generation Schemes Project	**(NES) National Economic Strategies**	• A number of strategies to develop the international competitiveness of the Libyan economy	2006 - 2019	**National level**
	National Spatial Policy (NSP) National Physical Plan (NPP)	• Benefited from national economic strategies, second generation plans and the previous national spatial policy document • Guidelines for the planning and management of urban centers, infrastructure, services and land use in the Great Libyan Jamahiriya • Contributed to guiding regional and sub-regional plans	2006 - 2030	**National level**
	Development Plan of Benghazi Planning Region - Regional Spatial Plan (RSP)	• Refers to national spatial policy, national economic strategies and second-generation project plans • Covers the sub-regions of Al-Batnan, Derna, Jabal Al-Akhdar, Al-Marg, Benghazi	2000 - 2025	**Regional Level**

	Sub-regional Development Plan (SRDP)	• refers to the planning scheme of Benghazi planning region • Prepare for the sub-regions of Al-Batnan, Derna, Jabal Al-Akhdar, Al-Marg, Benghazi	2000 - 2025	**Sub-regional Level**
	Comprehensive & Urban Plan	• refers to the development scheme of the sub-region • Comprehensive and urban plans for cities and basic urban communities	2000 - 2025	**Urban Level**

Source: Dr. Saad Khalil Al-Qaziri "Urban Planning in Libya" Libyan Studies 14 (1983) and others

1.3.5.2.2 Second: The third generation of Benghazi regional plan

Architectural Office for Engineering Consulting (Libyan Office) prepared a plan for the development of the Benghazi planning area with a large-scale field study to document the current situation of the region. A team of experts managed and supervised surveys and studies. They prepared reports on geology, climate, natural resources, water resources, agricultural and pastoral development, marine wealth, environment, energy, population, labor force, housing, tourism, spatial characteristics, trade, services, industry and transportation.

The following are the important stages in the preparation of the development plan of the Benghazi planning region:

• Survey of the current situation and data collection carried out by the Architectural Office Engineering Consulting.
• Appointing local experts for detailed sector reporting (sector reports prepared by the Office of Architecture 2005)
• Documenting policies from previous studies and plans, including national economic strategy, national spatial policy as well as theevaluation of the second generation project of plans and other sectoral studies at the national and regional levels (eg, tourism, industry, agriculture, utilities)
• Presenting a draft report on the "Status of Spatial Development of Benghazi Planning Region" in March 2006.
• A series of reports on the methodological framework, describing a dynamic model that uses the computer on population expectations, spatial distribution of urban functions, functional and sustainability principles, priority setting policies, impact area standards, and recommendations for institutional strengthening of planning in Libya.

The development plan of the Benghazi planning region was based on the results of the studies and researches mentioned above, as well as ongoing field studies and surveys in order to collect the latest data and the latest decisions on land use by the relevant governmental institutions at the time. It also includes data on the community, the industry sector, the public administration sector and other interested parties, which took two years to develop a reliable framework for regional strengths and to guide growth and development in the future.

1.3.5.2.3 Third: The objective and scope of the strategic plan draft for the Benghazi region

The aim of the planning process was to develop a framework that would provide an integrated approach to planning, growth management and future development in the Benghazi planning region. The main objectives of the study were:

• An integrated approach to the planning and management of the entire region.
• Develop strategies to improve the environmental and social development of the region from diversity in the region's economic base.
• Putting the region in a position to maximize its competitive advantage and sustainability.
The report documents the main elements of the development plan of the Benghazi planning region, in addition to the following:

• Vision for the Region
• An overview of global pressures, as well as regional socio-economic and environmental drivers affecting the region, and a clear pattern of growth.
• A set of integrated guidance principles, results, strategies and actions to address growth and environmentally sustainable development in the region.
• Regional spatial scheme to guide the spatial development of the Territory.
• A calendar for the implementation process, monitoring and following-up of the documented framework.(Architecture Office for Engineering Consultant, 2009)

1.3.5.2.4 Fourth: Development Plan of Benghazi Region under the Third Generation Project:

The first part of the regional report of the Benghazi planning region contains detailed introductions to all relevant sectors to be included and referred to in the framework of the regional studies. This section covers a wide range of data and information, addressed by a selection of local and foreign experts.

The second part of the regional report comments on the importance of analysis and synthesis of the spatial distribution of population, population and jobs, taking particular account of the principle of sustainability. Cross-sectoral analyzes were integrated with spatial analysis. These analyzes have been subjected to recombination, and this work has been considered important and necessary to determine the spatial distribution of existing functions and is the determining factor for the spatial distribution of potential functions in the planning area of Benghazi. This method was achieved by representing the characteristics of the spatial groupings by their structure, the roles they play in the present, and future activities and functions.

The next section is the paragraph on regional development goals and objectives. In this section, models of development alternatives were developed at the regional level, and an evaluation was carried out within development scenarios based on relevant criteria. This important issue has been deliberately addressed in view of the harmonious shift for regional development perspectives to decisions at lower levels and planned proposals. A solid socio-economic, spatial and environmental basis has been formulated.

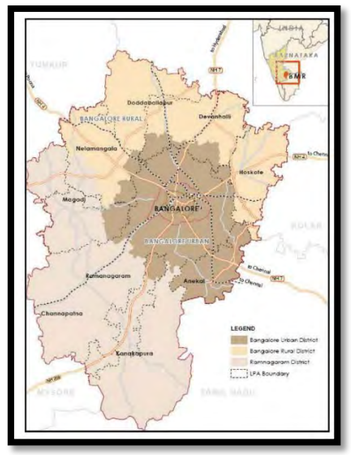
The summary section of the development plan for the Benghazi planning region includes large projects to be implemented and of importance at the global, national and regional levels. The Action Plan serves as a guide for decision-makers at the central level, a reference for administrative bodies, and institutions involved in development planning decisions and implementation processes. There is no doubt that an effective monitoring mechanism, which

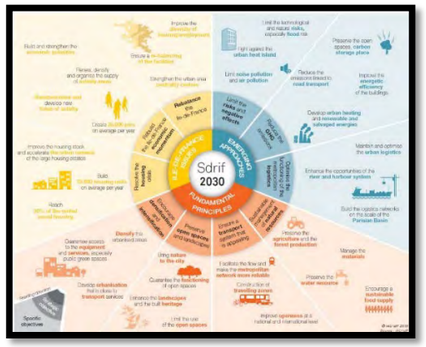
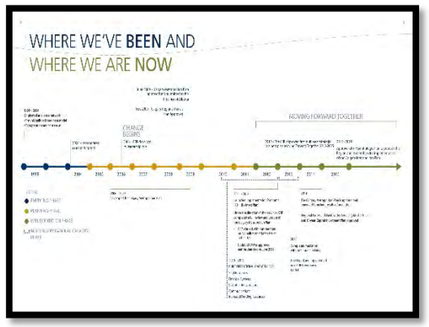
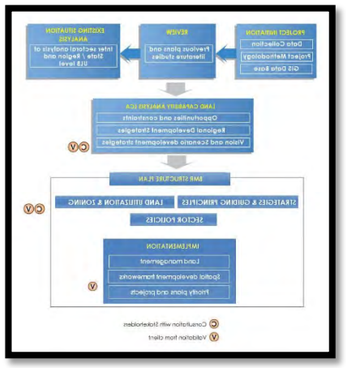
serves as a tool for the governance structure (the Benghazi Planning Scheme), is also necessary to undertake the needed assessments, take steps to develop the system and improve the level of objectives.

Objectives and goals of the Strategic Plan for the Benghazi Region - Libya:
The Libyan experience is a successful experiment where the clear methodology is available in the studies of the current situation. The plan of the Benghazi region was clear in terms of the methodology of the future vision, which was based on four main axes:

1. Benefit from the previous plans and the main policies of the studies:
These policies focused on national economic strategies (NES) as well as on spatial and national policy until 2030. The third generation's vision for spatial development is also concerned with the second generation of plans within the framework of the National Spatial Development of the Urban Planning Department.
2. The main motives for the development of the Region (Benghazi Region)
The main motives for the development of the Benghazi region are the considerations related to the environmental management of the Region, as well as the areas of future growth from industrial expansion areas, tourism development and regional, environmental and social motives.
3. Objectives and goals of the spatial plan:
Namely the absorption of population change in the region from the increase in population and internal migration in Libya to and from the Benghazi region, as well as the diversification of the economic base, the creation of employment opportunities, the maintenance of the region's advantages and the success of the management of social infrastructure.
4- Future Spatial Development:
The future spatial development is through the development of the basic urban centers in the region, in addition to the implementation of large development projects and their diversity between housing, industry, infrastructure and services, with a focus on follow-up plan of the Benghazi region.

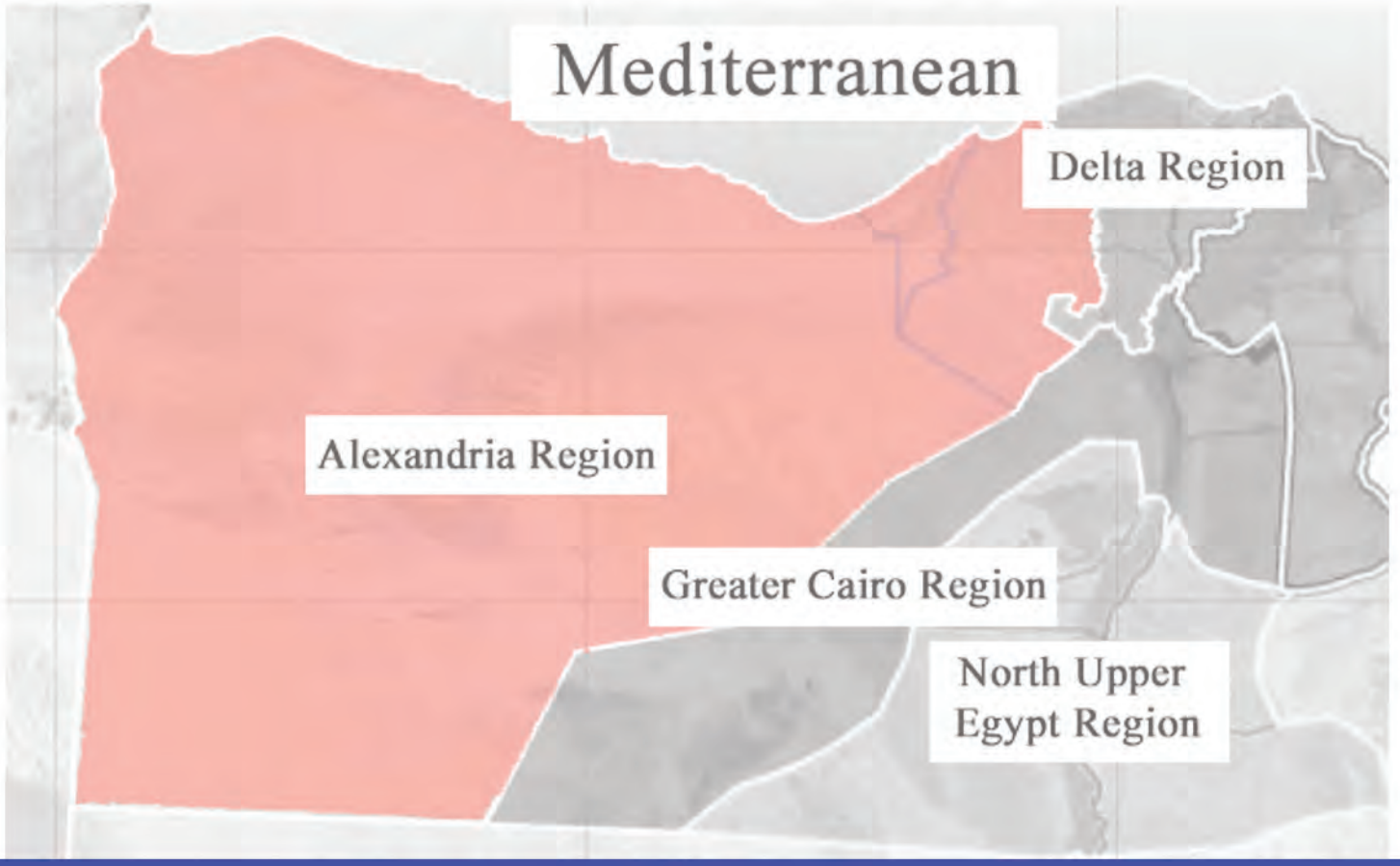
1.3.6 Conclusion

	Il De France Region – France 2030	Calgary Metropolitan Plan – Canada 2076	Bangalore Metropolitan Region – India 2031	Wheatbelt Region – Australia 2050	Benghazi Region – Libya (Third generation Schemes project
Introduction	One of 26 Regions of France	2 census metropolitan areas in Alberta which is one of 13 regions of Canada	A metropolitan region in Karnataka Region which is one of 29 Regions in India	One of the Nine regions of Western Australia state	One of four regions in Libya
Map					
Area in Km²	12.012km²	5,107.55 km²	8005 km²	155,256 km²	135,270 km²
Population	12 million inhabitants (2017)	1.4 million inhabitants (2016)	11.66 million inhabitants (2011)	75,000 people (2013)	1,384,677 people (2006)
GDP	over 30% of France's GDP (2017)	$67 billion (2012)	4% (2006-2007)	8.2 % $ 6.4 billion (2013)	It was not possible to obtain current data due to the deterioration of the political situation in Libya and the absence of clear data of the national and regional output in Libya and the Benghazi region
Present Problems & Challenges	There are 3 main challenges • Social • Climate & Energy • Economic Attractiveness	The most persist challenges to the Calgary metropolitan area is water, growth & expansion as **more than 1.8 million people expected to arrive over the next 60 years.**	Bangalore region is one of the most sensitive regions with respect to water resources. It is one of the urban agglomerations in the world situated above 1000-meter altitude mark,	40,000 additional homes needed by 2050 to house 180,000 people.	
The Project Objectives	Improving the day-to-day lives of people in the Paris Region	***1 Protecting the natural environment and watershed.*** ***2 Fostering the region's economic vitality.*** ***3 Accommodating growth in more compact settlement patterns.*** ***4 Integrating efficient regional infrastructure systems*** ***5 Supported through a regional governance approach.***	1- Ecology 2-Governance 3-Economic Growth & Equity	**Vibrant Economy** **Clever people** **Livable Communities** **Valued Natural Amenity** **Marketing Wheatbelt** **Opportunities:** **Effective Partnerships**	The aim of the planning process was to develop a framework that would provide an integrated approach to planning, growth management and future development in the Benghazi planning region.

The Current Situation	The general overview and analysis of the existing situation was considered for the following sectors: 1. Land use and Environment 2. Demography 3. Transport 4. Economy 5. Physical infrastructure o Water and sanitation o Power and telecom o Solid waste management 6. Housing 7. Social infrastructure 8. Heritage and tourism				
The Future Vision & Project Implementation					The regional plan for the Benghazi region aims at the main policies of the economic strategies and spatial development of the Benghazi region. However, the current situation of political instability has resulted in the cessation of the targeted development process and thus the inability to evaluate the stage of the third-generation planning projects
Review & Evaluation	2019 First assessment 2024 Second assessment 2030 Completion date of the objectives of the great Paris Region master plan (SDRIF2030)	2015-2019 4-year Strategic Plan to position the Region & its members for implementation of the Calgary Metropolitan Plan	A 5-year Development Programme Plan based on annual budgets (and which enables the perspective plan to be upgraded every 5 years as a rolling plan)	With over 40 priority actions within the six pillars for growth, rigorous process is required to determine which priority actions (or projects) would deliver growth in population, economic diversification, and private investment.	

Conclusion:

- 4 out of the 5 Examples follow the decentralization system, while preparing the regional plans, the administrative policy, funding the plans, monitoring and evaluating the phases of those plans.
- Those plans depend on public as well as private sectors funding to insure the success of their regional strategies.
- These examples use assessment, monitoring and evaluation to revise their steps along the planning phases, to make sure that they are thoroughly fulfilling the need of the people and achieve their goals and objectives.



PART TWO
ANALYTICAL SURVEY OF REGIONAL DEVELOPMENT AXES IN EGYPT

*Chapter One : The Evolution Of Regional Administrative Division in Egypt

*Chapter Two : Detailed Survey For Developing Suez Regional Axes

*Chapter Three : Western Development Corridor For Sustainable Growth in Egypt (Toshka / Al-Alamein)

*Chapter Four: Analytical Study for Development Of The Golden Triangle Area in Upper Egypt

2 PART TWO: ANALYTICAL SURVEY OF REGIONAL DEVELOPMENT AXES IN EGYPT

Analytical survey of different types of strategic regional plans. Going through the history of evolution of regional administrative division in Egypt till the present days, identifying the different regional development plans in Egypt.

2.1 CHAPTER ONE: THE EVOLUTION OF REGIONAL ADMINISTRATIVE DIVISION IN EGYPT

2.1.1 Administrative divisions of Egypt regions till the present days

Historical Background of regional administrative division in Egypt since the early days of the political governance of the ancient Egyptian to the present days shows that it's divided into seven regions now & future vision of the division

This chapter presents the Egyptian planning of the regions and the problems of regional planning in Egypt, as it is referred to the historical background of the Egyptian regions, where Egypt has passed through in several stages of the administrative division through history ended in recent years with a division called economic division or urban planning division. Generally, these stages of the division process of Egyptian geography space through the different centuries can be divided into three stages as follows:

1. The period from Pharaonic era to the pre-French campaign period (1798-1801): Throughout its Pharaonic era, Egypt maintained its Upper Egypt (El Saeed) and Lower Egypt (El Delta), while in the Greek era until the Ottoman era, Egypt changed its divisions not only for security considerations but also for administrative and financial considerations to ease the administration state.
2. The period from the French campaign (1798-1801) to the revolution (23rd July 1952): By the entry of the French campaign to Egypt, the names of the divisions were changed as Egypt was divided into 16 provinces according to the division that was in forced during the Turkish era, Mohammed Ali introduced an amendment to this division by dividing Egypt seven districts, The remaining label till today. It is noted that the essence of the division and its hierarchy was based on considerations of security and tax collection.
3. From the revolution (23rd July 1952) until now: Although the fifties era in the Egyptian life is considered as a period of transition due to the comprehensive changes that took place in the political - economic - social system in Egypt as a direct result of the revolution of 23rd of July 1952 ... But the real radical changes in the local administration system was enacted by the Law No. 124 of 1960, which was amended by the Law No. 57 of 1971 to increase the democracy of the formation of popular councils at the level of local units. As a result of the major changes in the local administration system and its role in the local development process, the amended laws of the local administration system were subsequently followed.

Nevertheless, the project's attention has not been given to the importance of the role of the place in the development process seriously. During the 1960s and the early 1970s, the planning system in Egypt was decentralized and it focused mainly on sectoral planning. However, some ideas have been emerged regarding the division of Egyptian spatial space into planning regions. The partition attempt by the Greater Cairo Institute in 1963, as well as some ideas which have been raised in 1966. These attempts alerted the planners to the importance of the role that regional planning can play a significant tool in the development process. The Law No. 70 of 1973 was issued concerning the preparation of the general plan of the State and its implementation. The importance of the place in the development process has been ascertained in this law, where many of its articles emphasized that planning should begin in the spatial base in the form of a hierarchical arrangement until it reaches the top in its sectoral form, taking into account spatial space.(Ramdan, 2000).

2.1.2 Previous efforts of the division of the Republic into regions and governorates

Going through the previous efforts of the division of Egypt into Regions & governorates since 1967 till 2003.

Demarcation into development regions

• Activate decentralization in the management and implementation of major development projects.

• Transition from sectoral development to integrated spatial development.

• Integrate and incorporate the proposed development projects according to their priorities between regions and governorates.

• Optimizing investment guidance to support medium- and long-term development plans.

All coming maps are made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2013)

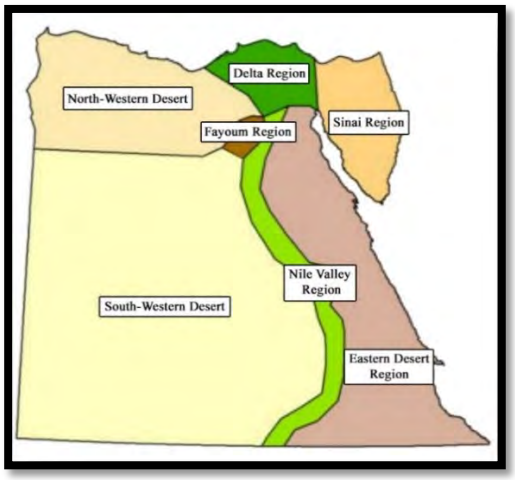


Figure 20: Dr Aida Bishara Professor of Geography – 1967 (7 Regions – 17 Governorates)

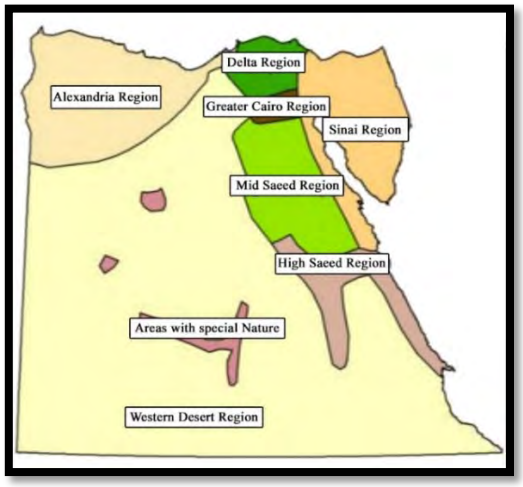


Figure 21: Dr Taher El Sadek Greater Cairo Planning Committee – 1968 (8 Regions – 24 Governorates)

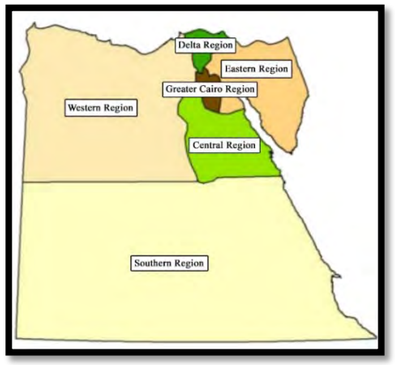


FIGURE 22: DR. IBRAHIM HAMOUDA THE MINISTRY OF PLANNING – 1968 (6 REGIONS – 25 GOVERNORATES)

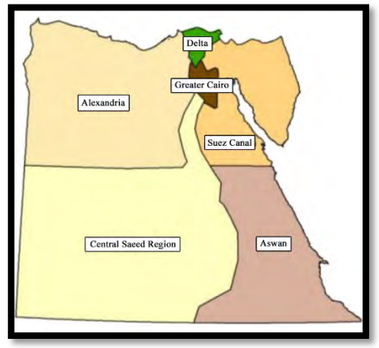


FIGURE 23: DR. ABDUL RAZZAQ ABDUL MAJEED PLANNING OF ASWAN REGION PROJECT – 1968 (6 REGIONS – 24 GOVERNORATES)

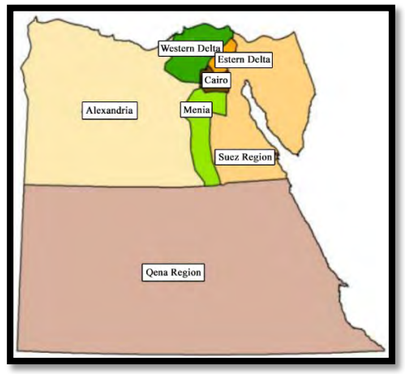


FIGURE 24: GOVERNORS OF THE GOVERNORATES – 1968 (7 REGIONS – 24 GOVERNORATES)

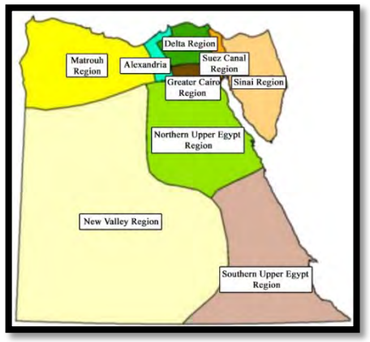


FIGURE 25: PROF. AHMED KHALED ALLAM GENERAL SECRETARIAT OF LOCAL GOVERNMENT – 1970 (9 REGIONS – 26 GOVERNORATES)

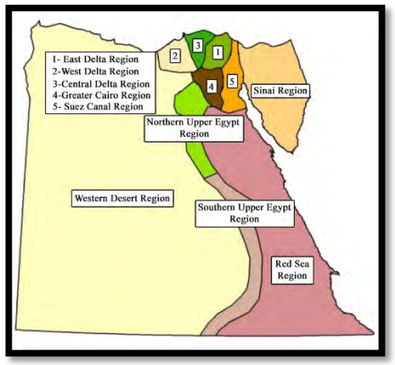


FIGURE 26: PROF. AHMED AMIN MOKHTAR – 1971 (10 REGIONS – 25 GOVERNORATES)

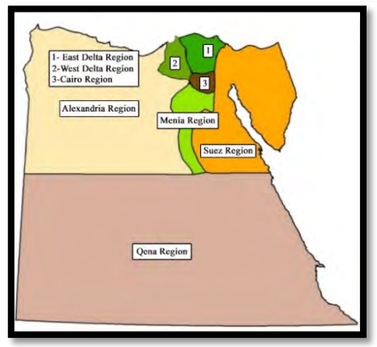


FIGURE 27: DR. AHMED YAHYA AL-ZAYAT TRANSPORTATION PROJECTS PLANNING AUTHORITY – 1974 (7 REGIONS -26 GOVERNORATES)

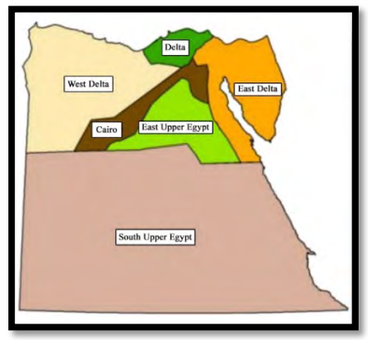


FIGURE 28: PROPOSAL OF THE PARTITION COMMITTEE MINISTRY OF LOCAL GOVERNMENT – 1974 (6 REGIONS – 26 GOVERNORATES)

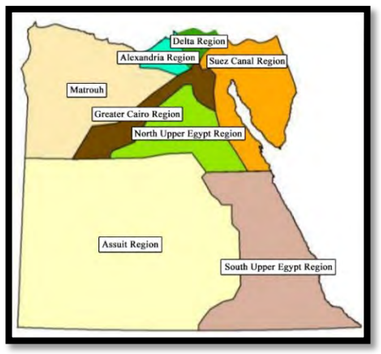


FIGURE 29: REPUBLICAN DECISION 495 FOR A YEAR 1977 – 1977 (8 REGIONS – 25 GOVERNORATES)

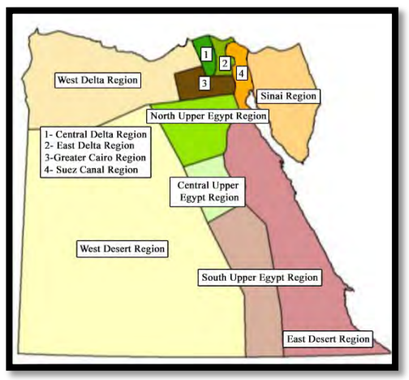


FIGURE 30: PROPOSAL OF THE PLANNING INSTITUTE NATIONAL (ALTERNATIVE I) DR.ELSAYED KILANI

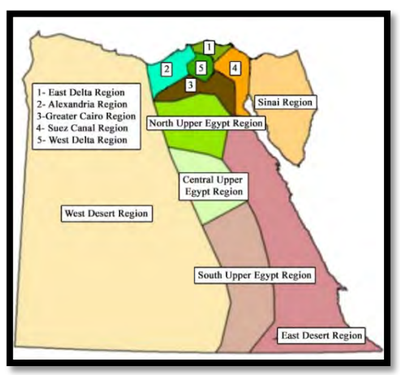


FIGURE 31: PROPOSAL OF THE PLANNING INSTITUTE (ALTERNATIVE 2) – 1986 (11 REGIONS – 25 GOVERNORATES)

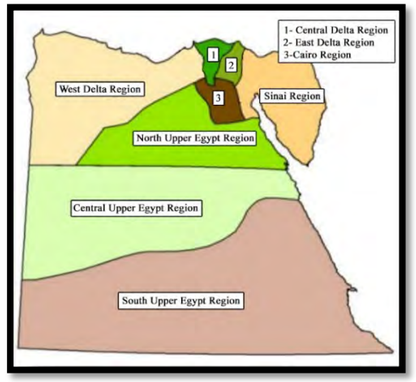


FIGURE 32: PROPOSAL OF NATIONAL COUNCILS SPECIALIZED – 1999 (8 REGIONS – 27 GOVERNORATES)

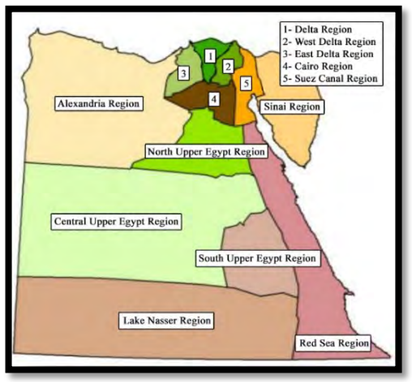


FIGURE 33: PROPOSAL OF THE PLANNING INSTITUTE NATIONAL – 2003 (12 REGIONS – 41 GOVERNORATES)

2.1.3 The current regional distribution (advantages & disadvantage)

According to the presidential Decree No. 181 of 1986 (Amended), Egypt is divided into seven economic regions as follows:

1-Cairo region, which includes the governorates of Cairo, Giza, and Qalubiya.

2-Alexandria region, which includes the governorates of Alexandria, Beheira, Matruh and the Noubariya District.

3-The Delta region, which includes the governorates of Monufiya, Gharbiya, Kafr El-Sheikh, Damietta and Dakahliya

4-The Suez Canal region, which includes the governorates of Sinai, Port Said, Ismailia, Sharkiya and part of the Northern Red Sea governorate

5-Northern Upper Egypt region, which includes the governorates of Beni Suef, Menia, Fayyoum and part of the Northern Red Sea governorate

6-Asyut region, which includes the governorates of Asyut and the New Valley

7-The Southern Upper Egypt region, which includes the governorates of Sohag, Qena, Aswan and the southern part of the Red Sea governorate.

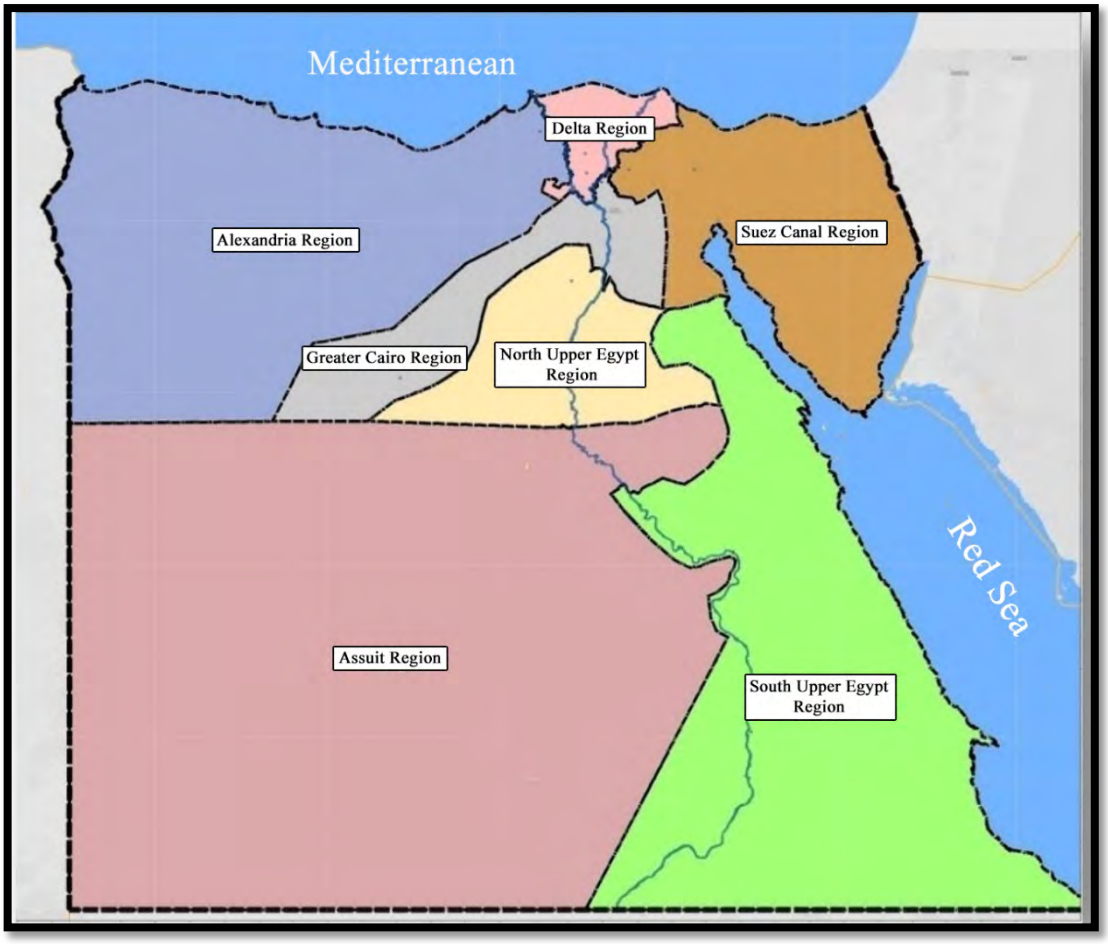


Figure 34: Current Regional Division

Source*: Made by researcher based on* (GOPP - Ministry of Housing Utilities and Urban Communities, 2013)

2.1.3.1 Results of the review of the previous experiences of dividing Egypt into economic and urban planning regions (Advantage)

- Sinai: a separate territory that has to be annexed to the Suez Canal region.
- Delta: a single region that can be divided into eastern, western and central regions.
- Suez Canal: includes the three governorates of the region and can extend east to include part of the Sinai and west to include part of the Delta
- Upper Egypt: The possibility of dividing Upper Egypt into two regions (North and South) or three regions (North, Central and South)
- Matrouh: a separate territory that can be annexed to the territory of Alexandria or Western Sahara.
- New Valley and Western Desert: Western Desert in a separate territory can be combined with central or South Desert.
- Red Sea: a single geographical area or it can be divided into more than one region.

2.1.3.2 Justifications for reconsidering the current division of the Republic (Disadvantage):

A- weak institutional and regulatory framework
• Dealing with the regions as a coordination level between governorates without real powers to manage development (in accordance with Republican Decree No. 495 of 1977 and the Local Administration Law No. 43 of 1979).
• Centralizing decision-making on development at the national level.
• Focus on sectoral development in new areas outside the existing world.
• Lack of coordination among regional development authorities.
• Poor organizational structures responsible for activating the regions.

B- The weakness of the efficiency of geographical division
• Maintain the administrative boundaries of the governorates and continue to misallocate resources and natural resources.
• Unavailability of Desert developmentable for the northern and central governorates of Upper Egypt.
• The Red Sea Governorate insulation with most of the Red Sea frontal and most of the Gulf of Suez, has slowed the growth of this promising region.
• The imbalance in areas and population distribution (New Valley Governorates - Red Sea - Matrouh)
• Lack of sea ports for Greater Cairo, Upper Egypt and Asyut.
• There are no centers or poles of growth in a number of regions (Asyut - Matrouh).

2.1.4 Future vision for the regional division of Egypt (fair fortune distribution)

Principles and criteria for demarcation to regions

- Identify clear development activities for the region that have a competitive advantage.
- Diversity of economic resources in each region.
- The existence of major national and main projects in each region.
- Availability of communication elements at the national and international levels (airports - ports).
- Allow transversal extension in desert areas.
- To find a direct access to the Territory on a maritime front as much as possible.

New proposed distribution of main regions of Egypt based on the fair fortune distribution, in which each region may have a fair chance in all Egypt's fortunes, this way has All Egypt would be divided into 10 main regions.

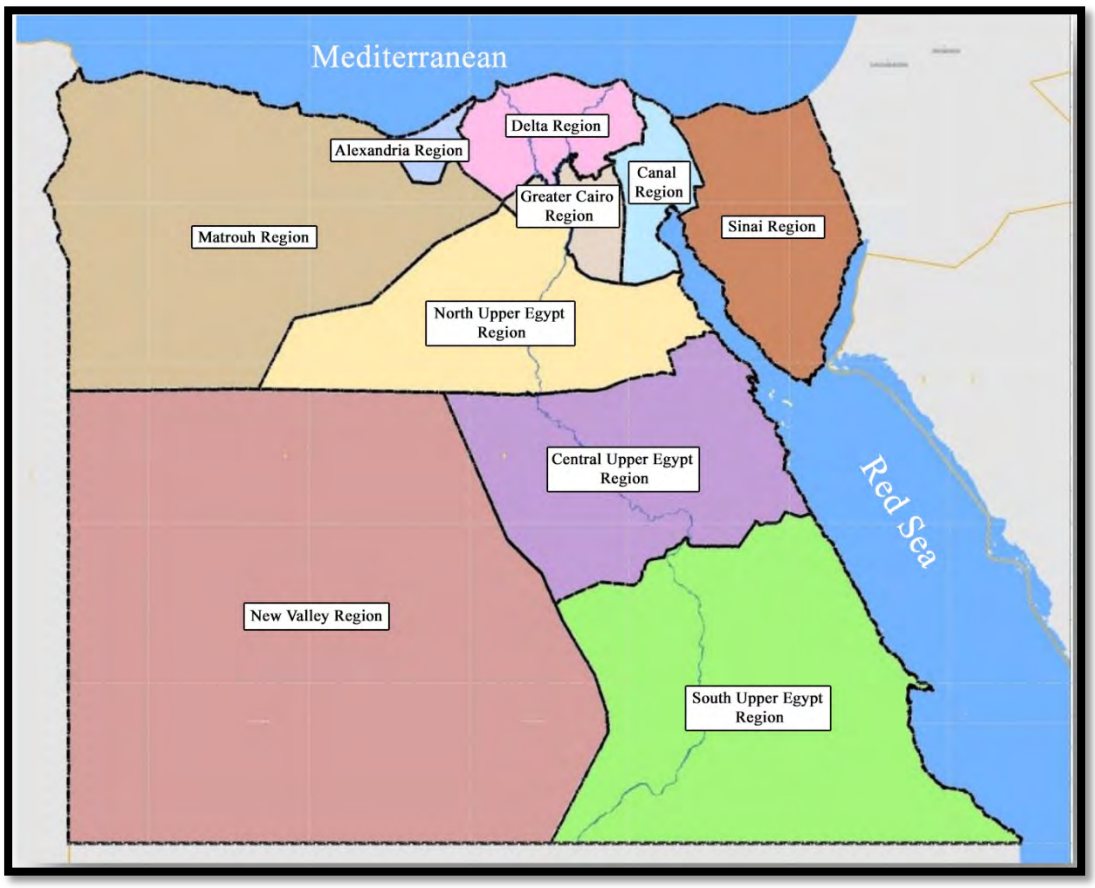


Figure 35: Proposed Regional Demarcation 2017

Source: *Made By Researcher Based On* (GOPP - Ministry of Housing Utilities and Urban Communities, 2013)

2.2 CHAPTER TWO: DETAILED SURVEY FOR DEVELOPING SUEZ REGIONAL AXIS

2.2.1 The Suez Canal influence on urban development of the region

This part of the study deals with an important regional axis one of the strategic axes with a historical depth, names the Suez Canal region, first it states historical background of the Suez Canal digging, which had a great effect not only the regional or national level but also on the global level, where it had also an excessive influence on the economic boom between all parties of the world by passing through that channel, it will also shed light on the concentration of economic and residential activities, the existence and extent of that channel. The Suez Canal Region represents the third of the seven regions of Egypt where it occupies the North-east part of the Republic, representing the entrance of East Egypt.

The area of the region is about 80.6 km 2, that's 8% of the total area of the Republic and Its area is distributed among 6 governorates in the following proportions:

• Port Said by 1.7% - Ismailia by 6.3%

• Suez by 11.2% - North Sinai by 36%.

• South Sinai by 38.8% - ElSharqia by 6% (GOPP - Ministry of Housing Utilities and Urban Communities, 2012a)

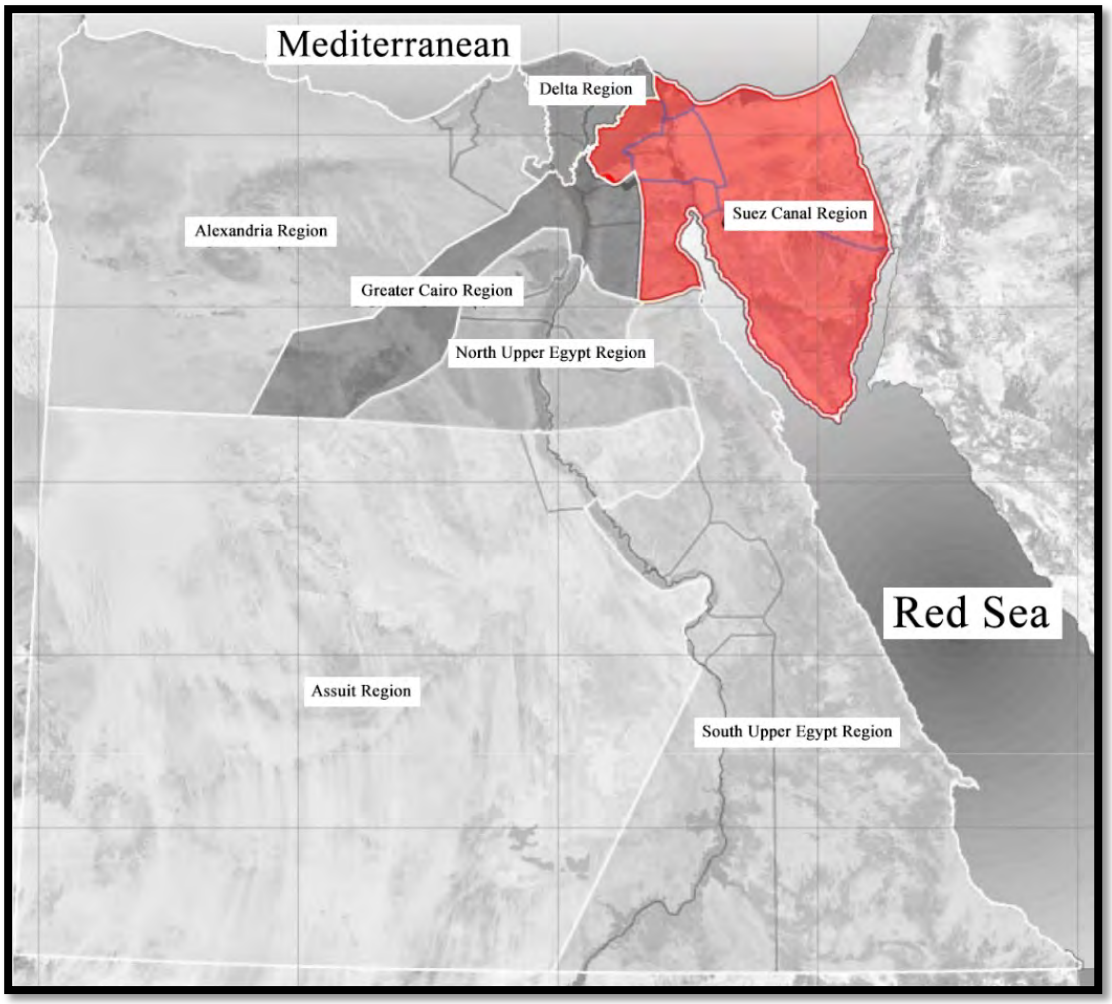


Figure 36: Suez Canal Region in Egypt

Source: Made By Researcher Based On (GOPP - Ministry of Housing Utilities and Urban Communities, 2012a)

2.2.2 Development strategy of the Canal Region governorates: The main objectives to be achieved in the Region National Framework

• Preserve the existing agricultural land from urban creeping and encourage growth on desert lands
• Raise the efficiency and productivity of industrial services and infrastructure
• Enhance production capacity through the development of existing facilities, industries and services that complement major production / economic activities
• Raise the efficiency and level of basic services provided to the people of the region
• Provide incentives to the private sector to participate in the development process
• Successful integration of different activities
• Ensure efficient use of resources available in the Region
• Development of projects for the purpose of reclamation and cultivation of desert lands
• Take the necessary preventive measures with regard to sanitary, industrial and agricultural sanitation because of their significant impact on lakes and waterways.

2.2.3 Current Situation of Suez region:

2.2.3.1 Environmental & Natural Resources:

Topography: The Sinai Peninsula is divided into three areas where the northern is plain, the central area is plateau and the south area is mountains, while Port Said Governorate is a plain land, Ismailia governorate the surface land is descending, also in Suez the land is descending towards the canal and ElSharqia governorate the land is relatively flat.
Mining and land resources in the region: Sinai is characterized by the existence of marble with its distinctive types - white sand - coal and cement industry - petroleum
While Port Said and Sharqia are rich with land suitable for agriculture and the governorate of Suez has oil - natural gas

2.2.3.1.1 Natural Constraints:

Sinai: Creeping of sand dunes, Sandstorms, Torrents, the erosion in the northern beaches, Earthquakes, Degradation of coral reefs, & desertification.
Port Said: Coastal erosion.
Ismailia: Sand dunes.
Suez: faults, earthquakes and earthquakes.
ElSharqia: Desertification.

2.2.3.1.2 Environmental problems

Sinai: air pollution with suspended particles, Air pollution with radiation, water pollution, solid waste problem.
Port Said: Exploitation of resources, poor management of health, industrial and agricultural wastes.
Ismailia: pollution of the marine environment, pollution of fresh water, pollution of the agricultural environment.
Suez: Solid Waste Problems.
ElSharqia: Solid household and medical wastes and remnants of slaughterhouses, agricultural waste and deficiencies in their management systems, as well as environmental problems resulting from sewage and agricultural drainage.

2.2.3.2 Current demographic and social Aspect:

The population of the region is about 8.4 million 2010 distributed over the Governorates with the following ratios:
Port Said by 7%, Ismailia by 12%, Suez by 6.5%, North Sinai by 4.5%, South Sinai by 2% ElSharqia by 68%
The Region is considered as rural although there are two urban governorates (Suez and Port Said) due to the high proportion of rural in Sharqia governorate (77 %)
The Suez Canal region is one of the regions which attract population in Egypt (after Cairo)
• The region accounts for 21.4% of the total number of migrants in the republic.
• The illiteracy rate in the region is about 28% and most of the educated population in the region are intermediate education 27%.

2.2.3.3 Available economic activities and investment opportunities

80% of the agricultural activity of the region is concentrated in the El Sharqia and Ismailia Governorates
66% of the industrial sector, is based in Sharqia because of the10th of Ramadan city
The Suez Canal region comprises about 25 industrial zones
The delay in the region's development in attracting investment and business may explain the extremism of South Sinai

The activities of the regions are Miscellaneous such as agricultural, industrial & touristic. According to the strategy of the Ministry of Tourism, the percentage of tourist nights in the Suez Canal region on 2020 is 28% (about 70 million tourist nights) of the total tourist nights spent in Egypt on the same year (247 million tourist nights)

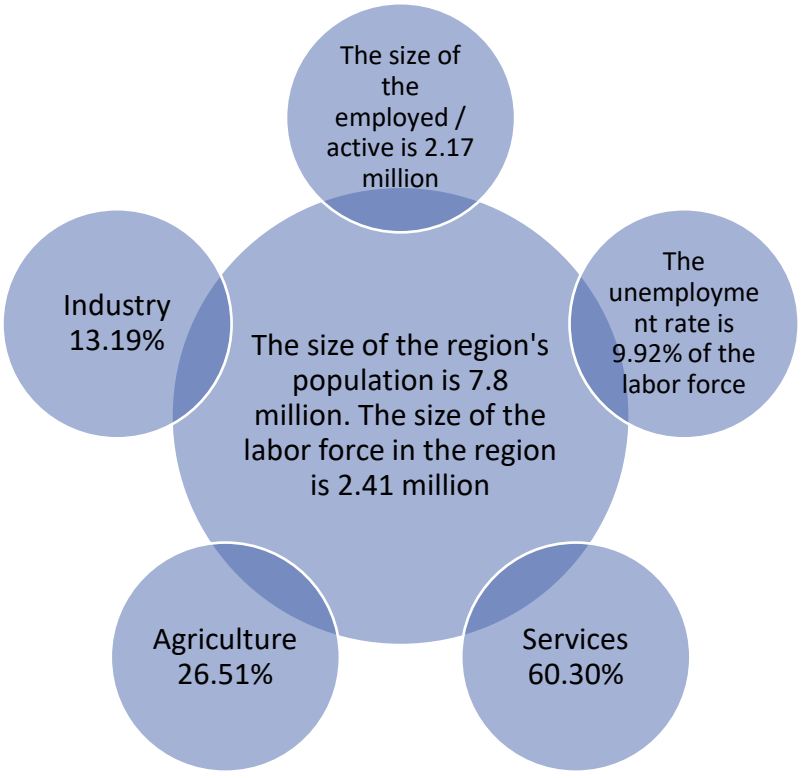


Diagram 8:The percentage of Economic activities in the region
Source: *Made by researcher*

2.2.3.4 Current Urban Situation

The inhabited area of the region is about 39.2 km2, representing 48.6% of the total area of the region. The desert lands occupy about 41 thousand km2, 51.4% of the total area of the region. The rural character prevailed through the region, although it includes two urban governorates, Port Said and Suez, while Sharqia alone accounts about 85% of the countryside.

Urban and rural urban Structure of the region

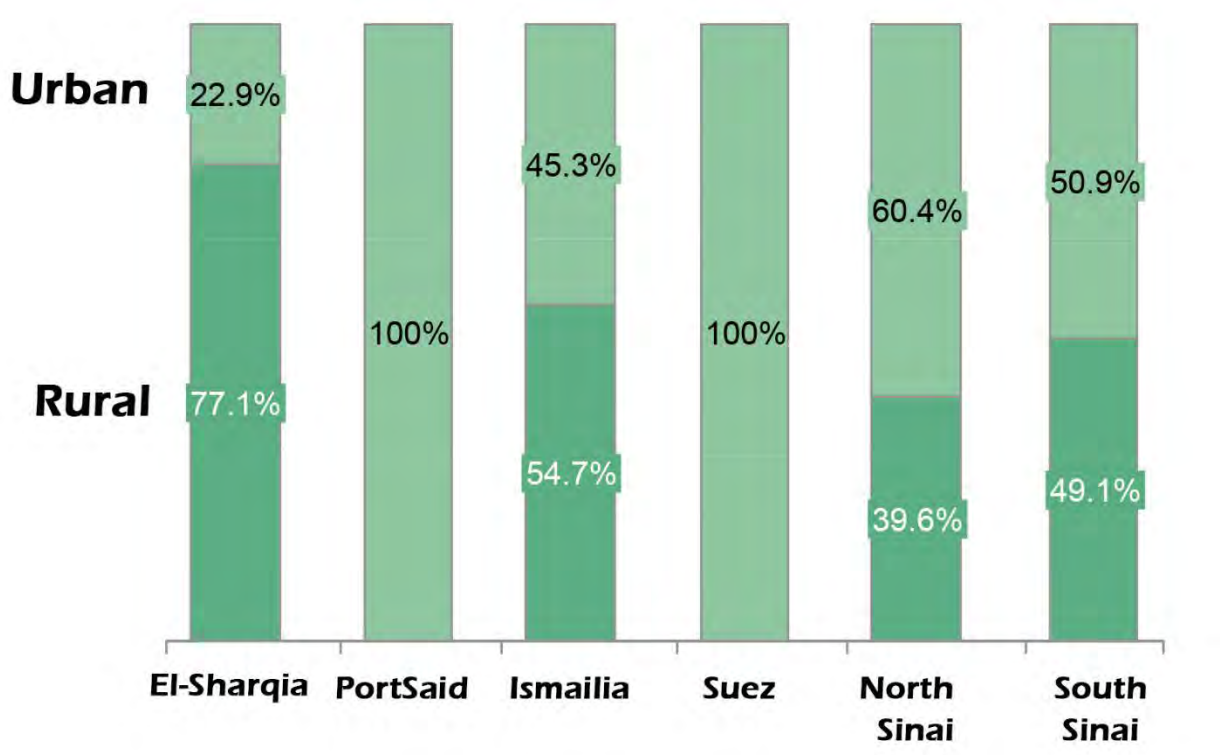


Diagram 9: Urban Structure of the Region

Source: *Made by researcher*

2.2.3.5 Easy of internal and external mobility

The diversity of transport and communication, the existence of various means of land, sea and air where There are 5 railway lines, Six airports in the region.and about 8 maritime ports and 2 specialized ports such as mining port (Abu Zanima) Petrol port (Ras Sidr).

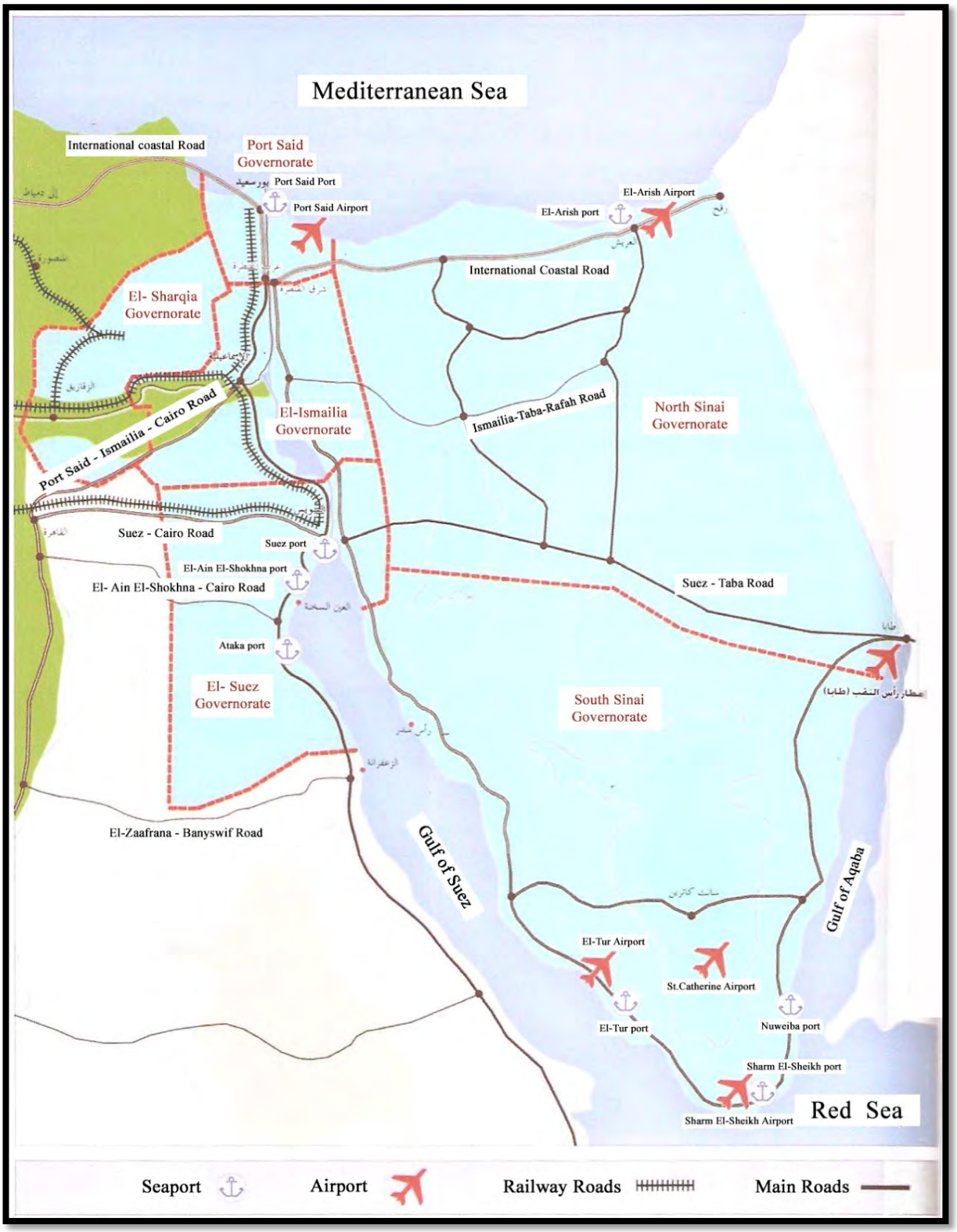


Figure 37: Road Network - Airports - Sea Ports

Source: *Made by Researcher based on* (El-Zayat, 2010)

• The Territory has a strong regional road network linking it with other regions. Intra-regional mobility also raises another problem
• The low rate of owning private cars in Sharqia governorate while rising in Port Said.
• Public transport services vary in governorates

2.2.3.6 Infrastructure

The infrastructure is based on certain services by which life is considered to be impossible without them those services are feeding fresh water which is depends on Water resources that vary in the region (Nile River - Sea Water - Groundwater), this lead to High coverage of drinking water networks in most governorates of the Region.

The sanitation Services which Plans, and programs are being implemented to absorb the actions made by the governorates of the Region and the governorates of Ismailia, Sharqia and North Sinai particularly which suffer from a shortage of sanitation services, including Sewage treatment stations.

Then the capacity of generating electricity represents 19.5% of the total capacity of generating electricity of the country.
The northern and southern governorates of Sinai and Suez are unique renewable sources of energy.(GOPP - Ministry of Housing Utilities and Urban Communities, 2012a)

In addition to the common source of energy spread all over Egypt such as electricity, the Suez region is characterized by several unique sources of renewable & non-renewable energy Such as

2.2.3.6.1 New Sources of renewable energy sources in the Suez Canal Region

1- Thermal Solar Energy
2- Solar photovoltaic (solar cells)
3- Wind Energy
4- Biomass Energy

2.2.3.6.2 The northern and southern governorates of Sinai and Suez are unique sources of energy

1- Natural bitumen (bitumen sands)
2- underground heat Energy
3- Petroleum Clay (oily)
4- Coal

2.2.4 Classification of the Suez Canal to areas according to the general characteristics

Characteristics of Zone (A)
North Sinai and Central Sinai: full of untapped mineral resources and competitive crops.
Characteristics of Zone (B)
The area of the Suez Canal (Port Said - Ismailia - Suez) is composed of ports, free zones and the Suez Canal shipping corridor. This area has a different activity than the other zones in the region. An area with global expansion and a global role in the international trade movement
Characteristics of Zone (C)
The province of Sharqia is a rural governorate which is different than other governorates in the region and depends primarily on the agriculture sector
Characteristics of Zone (D)
South Sinai: It is a touristic area with reserves, international tourist areas, coral reefs and tourist towns such as Sharm el-Sheikh and the reserves (Nabq and Umm Gallum)
Characteristics of Zone (E)
It is the Gulf of Suez area where mining activity and oil are concentrated.

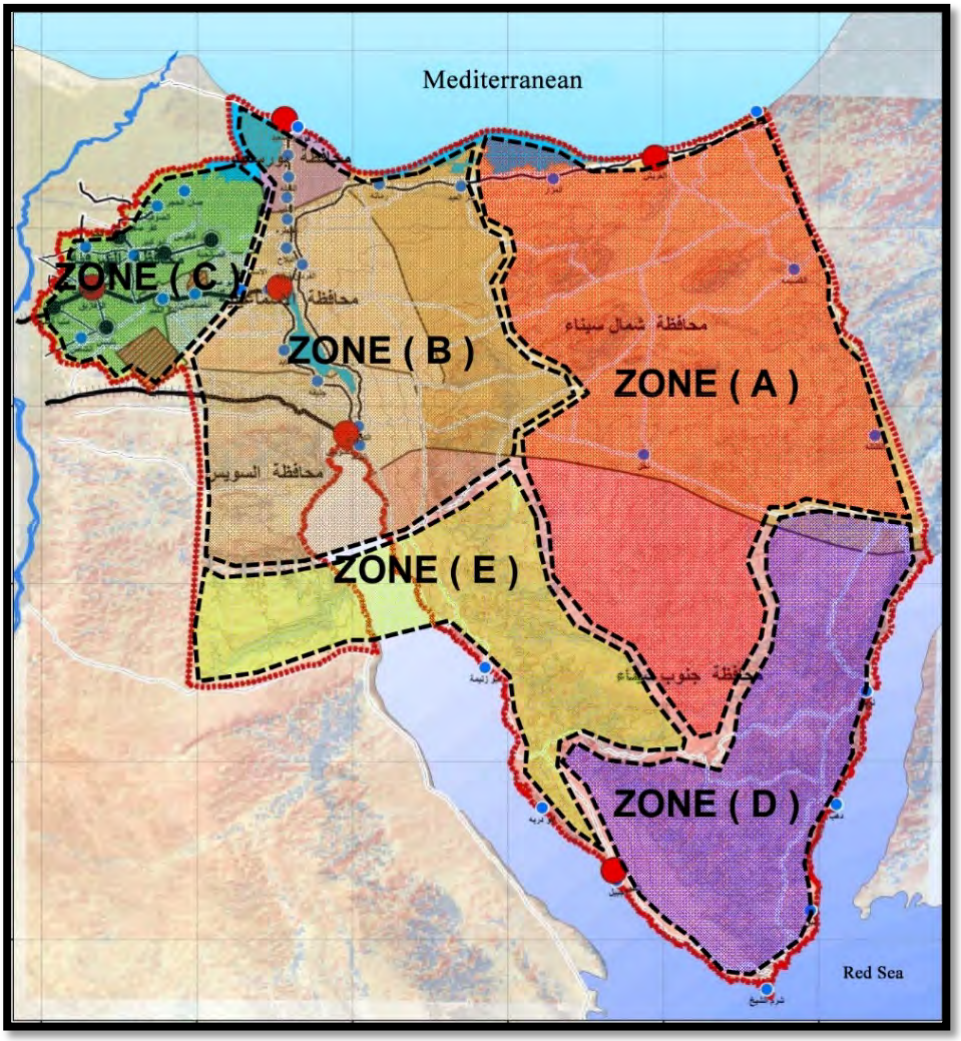


Figure 38: General Characteristics of Suez Canal Region

Source:(GOPP - Ministry of Housing Utilities and Urban Communities, 2012a)

2.2.5 Natural and security risks affecting the development of the Suez Canal region

1. The gate and the eastern border (Rafah - Taba)
2. Spatial space and population weakness (topographic difficult conditions impeding development)
3. Suez Canal Competitiveness (Alternatives to compete with the Suez Canal)

International Treaties and Contracts (Peace Treaty (Egypt - Israel))

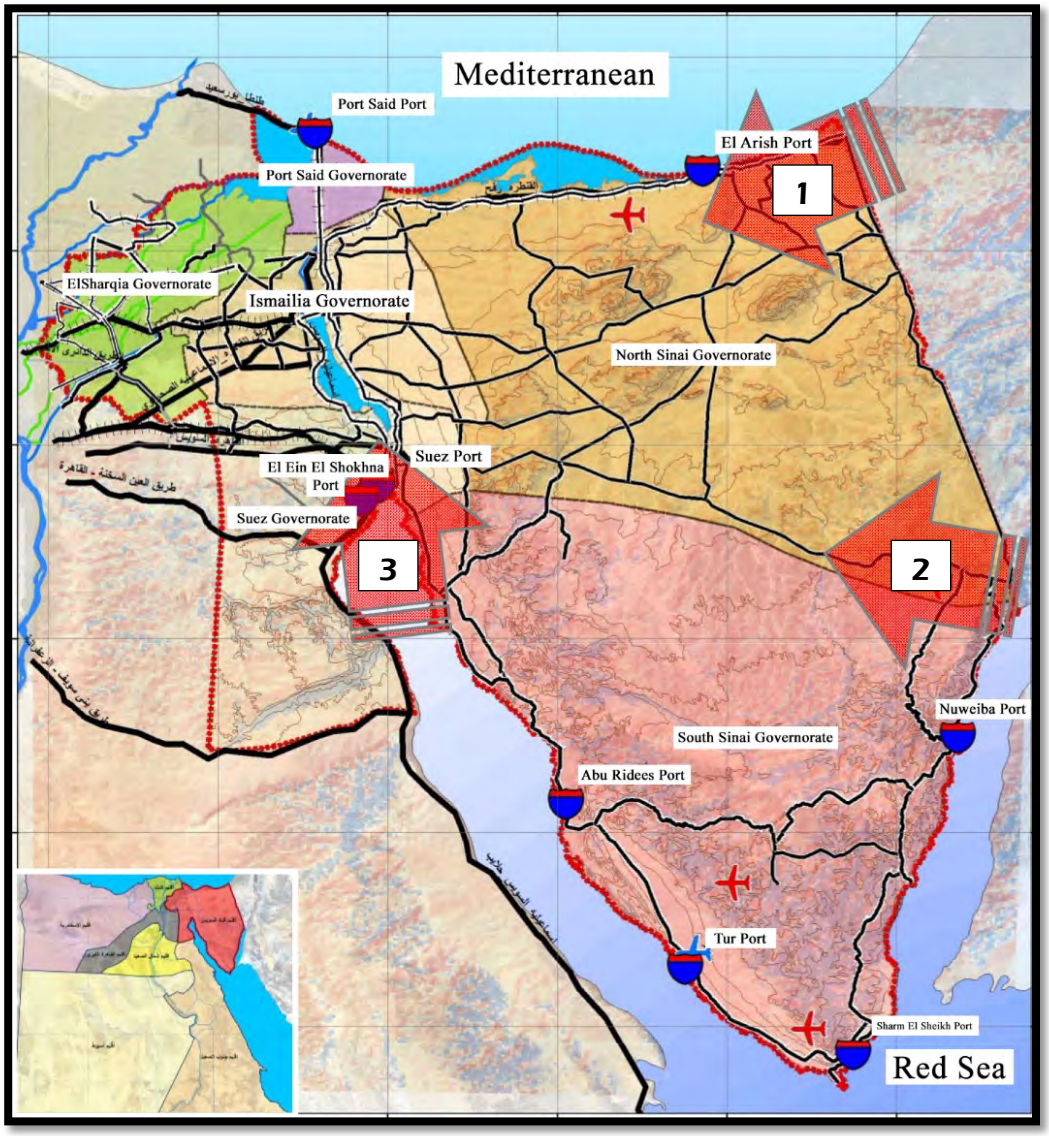


Figure 39: Ports of Suez Canal Region

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2012 b)

Also, the continued population growth rate of 2.04% will result in a population of 24.4 million requiring more than 6.5 million jobs. The average rate of population growth decreased by 1.7% as one of the most important national programs to reach 19.7 million people while providing job opportunities estimated by 5.5 million jobs

The Suez Canal Region represents 8% of the spatial area of Egypt. Accommodates 10.8% of the total population of the Republic.

2.2.6 Continuous Efforts to Predict the Growth Path of the Egyptian Economy and its Impact on Redrawing the Land Use Map for the Suez Canal Region: Methodology:

Collect data on multiple metrics
Data 2012
Population and labor force
Employment / Sector, Gross Domestic Product (GDP) / Sector
Land Use / Sector
Baseline scenario expected for 2052

Agriculture:
Stability of the share of GDP 14%
1.5% annual productivity increase for workers
Agriculture Plan Growth in cultivated land by 1% by 2020 and 1.1 to 2030
0.65 workers / feddan

Industry
The growth of the industry's share of GDP is estimated according to the Industrial Development Authority and historical growth
Employment was calculated based on Egypt's GDP growth and labor productivity of 4.19 workers / feddan

Trade and Services:
Growth Forecast 2010/15 Services Growth in Egypt, 2015/30 GDP Growth Based on 2011/15 Based on CAGR (4%)
Number of workers based on 1% annual productivity increase
5.4 workers / feddan

The government:
The share of governmental services and social security is expected to remain between13% & 1.5% annual productivity increase
3.4 workers / feddan

Identify alternative growth scenarios around the baseline scenario, in order to determine the range of probabilities

Review growth scenarios with constraints (water, electricity, security, geological suitability of land, skill and accessibility to export markets)

Land use scheme
(GOPP - Ministry of Housing Utilities and Urban Communities, 2012 b)

2.2.7 Four scenarios were analyzed to determine the basic criteria for the Suez Canal Development Strategy

2.2.7.1 For the Basic Scenario Sector growth based on governmental plans and independent forecasts - Sectoral projections based on historical growth, as well as ongoing planning trends. - Including maintaining the share of agriculture and government services in GDP. Strong trade and services growth is expected in line with past efforts and investments.	
2.2.7.2 Optimization and development of Agriculture scenario Give priority to the attempt to achieve self-sufficiency and maximize land use - The main objective is to develop a competitive agricultural sector - Water availability is the main obstacle to be considered - Concentration of investment in agriculture negatively affects other sectors (industry - services and others)	
2.2.7.3 Maximizing and developing the Industry scenario The growth of the industry is highly competitive with a focus on export markets - Major initiatives regarding exports, development of integrated complexes ..etc. - Producing competitive goods globally, while developing Egyptian assets. - Trade and services sectors were positively affected by growth in manufacturing and exports.	
2.2.7.4 Optimization and development of Trade and Services scenario Export and local market for trade and services along the lines of global trends - Strengthening Egyptian assets: skilled labor, tourism and telecommunications infrastructure and a huge local market - Sub-sectors include: tourism, internal trade and wireless communications - depends mainly on the export of services - Exploiting the Suez Canal axis as the largest logistic and commercial areas of the world	

2.2.7.5 The future development plans effect on the region

- Agriculture: Increase the agricultural area in the appropriate places in the map of the region.
- Industry: The establishment of new industrial zones depending on the mineral resources and wealth in the region, which can change the urban growth at the level of the region.
- Trade and services: Increase the possibilities of commercial mobility according to the characteristics of the region (such as logistics areas).

2.3 CHAPTER THREE: WESTERN DEVELOPMENT CORRIDOR FOR SUSTAINABLE GROWTH IN EGYPT (TOSHKA / AL-ALAMEIN)

2.3.1 Introduction to the geographical location for development & reconstruction axis on the west of The Nile

An important project first proposed on 1985 by professor Farouk El-Baz director of the remote sensing center in Boston university to address some very important Egyptian pressing issues like overpopulation, unemployment, water supply & food security.
About 95% of Egyptians live around the fertile Nile River making less than 5% of Egypt's land. The 2000 persons per square kilometer population density is among the highest in the world.
A Vast country whose population remained confined along the Nile River & Delta. Its cities & villages are severely overcrowded, and its education & health systems cannot cope with the dense population. In addition, over the past 20 years, fertile land has been lost to urban growth at the rate of 30,000 feddans per year. At that rate, all Egypt's fertile land of 5.5 million feddans would disappear in 183 years. Thus, there is a dire need for major changes, including the opening of new lands for living, not only for the present 80 million people, but also for the expected addition of 60 million by the year 2050, Which Professor El-Baz predicted, so we need to expand the area we inhabit & add more agriculture, industry & create new potential jobs.
A team lead by professor El-Baz used remote sensing & satellite imagery to study landscape & geography of Sahara Desert in detail.

They discovered large underground aquifers in Libya, Sudan & South Egypt.
Their radar images permitted the cultivation of hundreds of thousands of acres in Sharq Al Owaynat through drilling over 500 wells in the desert.
The project was based on a new network of road & rail links, a proposed superhighway that would limit urban encroachment over the agricultural land, opening new communities close to over populated towns.
So, the proposed project includes the establishment of:

1) A superhighway built using the highest international standards, 1,200 Km in length, from west of Alexandria at a new port near El-Alemein along the Mediterranean coastline. This superhighway would run parallel to the Nile Delta until the latitude of Cairo then southward parallel to the Nile Valley to the border of Sudan southern of Egypt, its width varies from 10 to 80 Kilometers based on the nature of the crossed land. It would include an eight-lane highway.
2) 12 east west branches, with approximately total length 800 Km to connect high density population centers along the way.
3) A rail road parallel to the superhighway for fast transport.
4) A water pipeline to supply fresh water from Toshka Canal (Lake Nasser) for human consumption & services, & an electricity line to supply energy during the early phases of the project to be connected to the main grid for future production of solar energy.
5) An electricity line to be available for large scale generation of solar (and wind) power in the future.

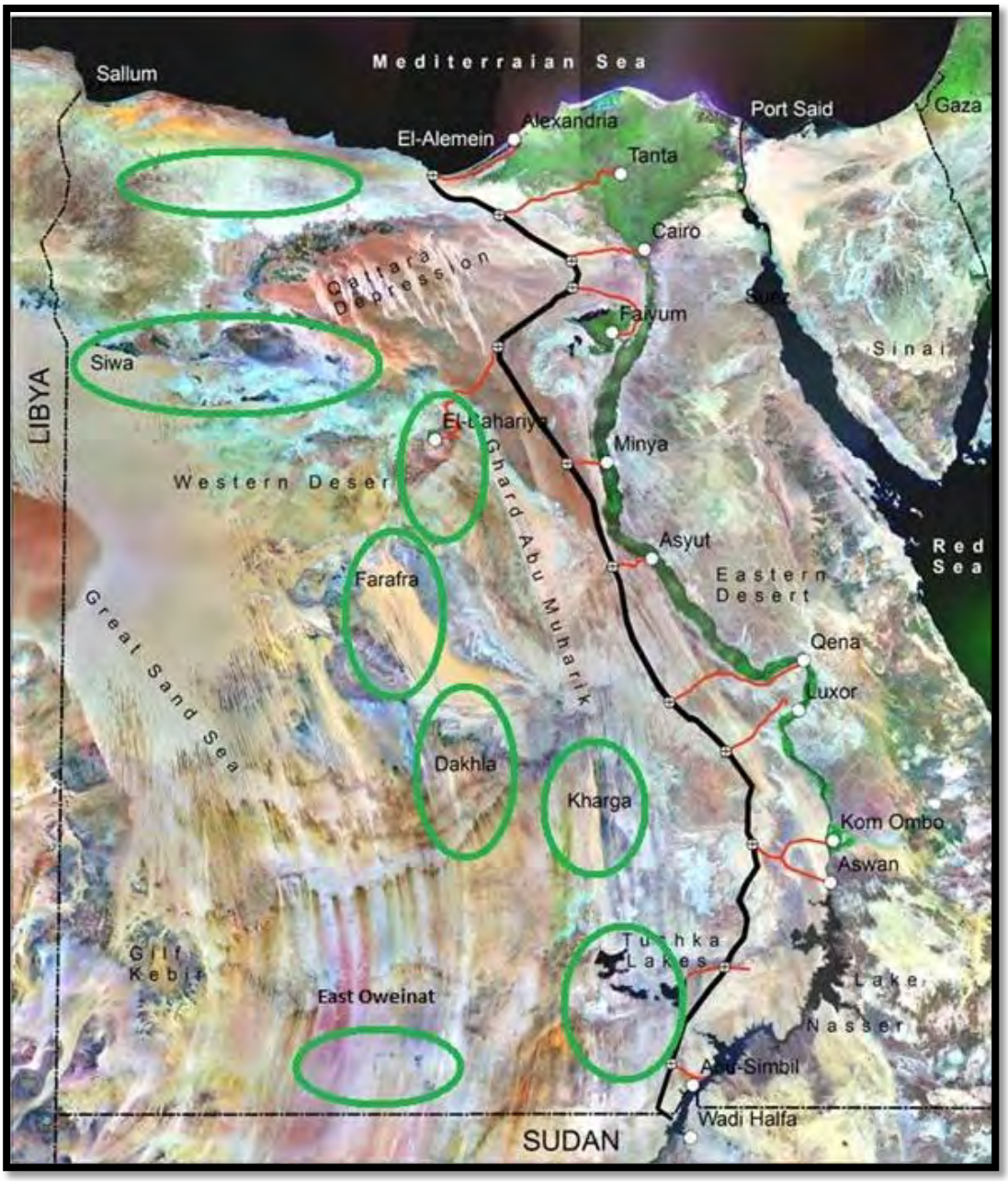


Figure 40: Trace of the proposed Development Corridor on a satellite image map of Egypt

Source: (EL-BAZ, no date)

The flat topography of the desert located at the west riverbed of the Nile makes it the best area to develop, contends El-Baz "We should continue developing areas like Sinai, but we need a place to move a minimum of 20 million people during the near future and this can happen only at the west of the Nile".

The proposed development corridor (Figure 45) would allow modern transport over strips that add up to 2,000 kilometres. This particular zone was chosen because of its unique natural characteristics. It is basically flat with a gentle northward slope from west of Aswan to the coast of the Mediterranean Sea (Figure 44, left); the lack of topographic prominences makes it easy to develop, particularly for urban and industrial growth (EL-BAZ, 2006, 2007a, 2007b).

In addition to facilitating transport throughout Egypt, the proposed superhighway will limit urban encroachment over the agricultural land and opens numerous opportunities for new settlements close to overpopulated towns. It also gives the potential for new schools, training centres, industrial zones, trade centres, & tourism; providing virgin territory for development initiatives in every field. That particularly provides hope for a better future for future generations. It represents the use of one of Egypt's natural resources the strip of the Western desert that parallels the Nile & is close to its high-density population centres.
This particular strip of land was chosen because of its unique natural characteristics. It is basically flat with a gentle northward slope from west of Aswan to the coast of the Mediterranean Sea; the lack of topographic prominences makes it easy to pave. This strip of land is also devoid of east-west crossing valleys which are disposed to flash floods, as the case of the Eastern Desert. It passes through (in the north) or close to (in the south) vast tracts of fertile soils that are amenable to reclamation; most of such regions have potential for groundwater resources. The strip is also comparatively free of sandy areas; lines of shifting dunes do not cross it as the case of regions farther to the west (figure 23, right)

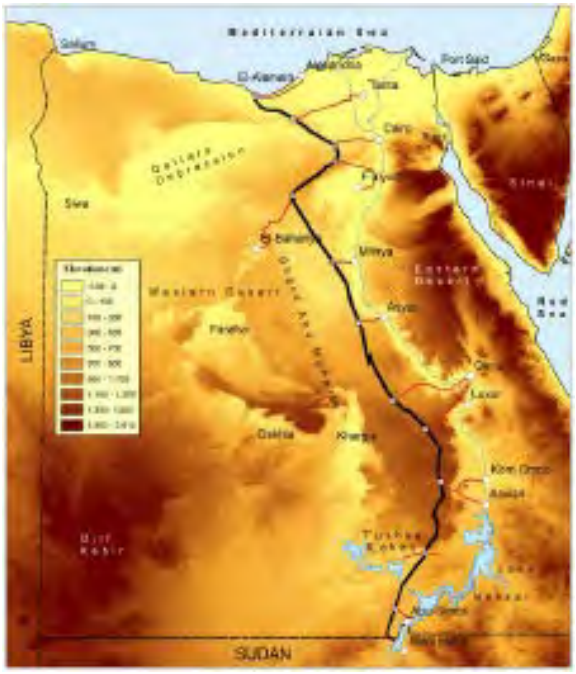


Figure 41: Topographic data

Figure 42: Sand distribution map of Egypt

Source: (EL-BAZ, no date)

Furthermore, the region is endowed with plentiful sunlight and persistent northerly wind. These conditions allow the generation of renewable solar and wind energy in the future.(EL-BAZ, no date)

2.3.2 Corridors in western Desert

2.3.2.1 North-South Highway

The superhighway of the north-south axis of the Development Corridor runs parallel to inhabited land from Egypt's Mediterranean Sea coastline to its border with Sudan. Its distance from fertile fields varies from 10 to 80 kilometers, based on the nature of the crossed land. It begins at a point close to El-Alamein, selected to establish a new international port. Egypt requires a technologically advanced port to serve future needs of import and export. Near the southern terminal point, branches extend to Lake Nasser, Abu Simbel, and the Tushka depression – all regions that have promise in development of fisheries, tourism, and agriculture, respectively. The highway ends at the border with Sudan to allow future extension to better link the two neighboring countries. Ground links between Egypt and Sudan are essential for the proper development of the economies of both countries.
The characteristics of the superhighway require the establishment of a private sector organization to manage the road and its maintenance. The organization would be responsible for manning the toll stations, providing emergency services, and maintaining the utility of the superhighway. Naturally, such an organization requires a specific mandate and clear laws and regulations by the Egyptian Parliament to assure the safety and utility of the highway, while placing limits on excessive government regulations or company profits.

2.3.2.2 East-West Branches

These are four-lane highways with parallel rail tracks to be oriented in a roughly east-west direction to connect the north-south axis to the main centers of population along the length of Egypt. They assure easy transport between the overpopulated cities of Egypt to the main production areas and the outside world. Such branches may include, at least, the following:
Alexandria Branch: an east-west branch that connects the main north-south axis to the road leading to Alexandria, its port and airport. This northernmost branch of the highway extends eastward through the Nile Delta coastal highway to Rosetta, Damietta, Port Said, and to El-Arish in northern Sinai, as well as Rafah at the border of Palestine. The westward extension leads to Mersa Matrouh and Sallum and inward to Benghazi, Tripoli, Tunis, Algries and Casa Blanca along North Africa's coast.

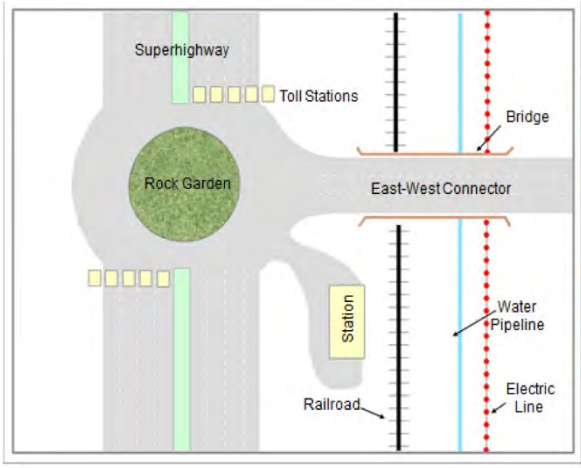


Figure 43: Sketches of The Main North-South Transportation Axis

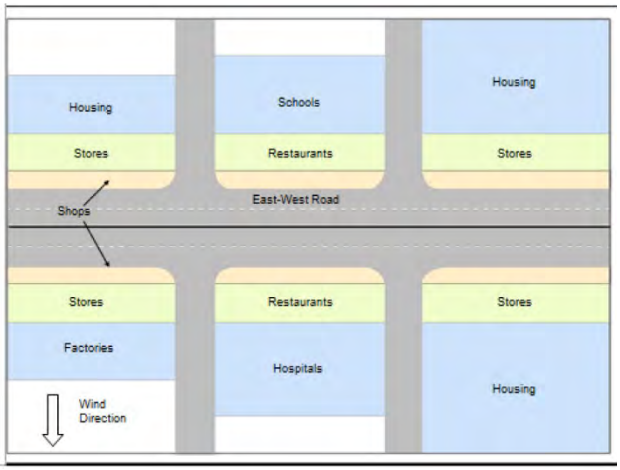


Figure 44: The East-West Branches of The Proposed Development Corridor

Source:(EL-BAZ, no date)

Delta Branch: This connects the north-south axis to the heart of the Nile Delta, at the beltway of Tanta city. The branch would be a straight line in the open desert and then follows the existing road leading to Tanta. It may be elevated in certain sections to limit encroachment on fertile land. It also might require a new bridge over the Rosetta Branch of the Nile River.

From its terminal point at Tanta, it connects with roads leading to cities and towns throughout the Nile Delta. This would assure better links between the Delta and the rest of Egypt, and the world.

Cairo Branch: This connects the north-south axis with the Cairo-Alexandria desert road and farther east to Cairo. It opens a large territory for new communities, government offices, and other facilities, away - but not too far - from the capital city. An eastern extension would link it with upgraded roads leading to Maadi and further to the east all the way to Suez. This will allow the use of cargo land transport between Alexandria and Suez (the Mediterranean Sea and the Red Sea) as an alternative to the Suez Canal when necessary.

Faiyum Branch: The loop around the Faiyum Depression will allow the development of the desert north of it by establishing sites for industry to the west and tourism in the east as well as new communities along the proper segments. It also will allow the initiation of solar energy generation along a swath of land that receives the highest concentration of solar rays. In fact, this location would be most appropriate for the so-called “Desertec” project for concentrated solar energy generation in the Great Sahara, as stated below.

Bahariya Branch: This branch improves the existing road to the Bahariya Oasis, which is the northern link to the New Valley Province. It will complete a loop connecting the oases of the Western Desert with the Nile Valley. It will also allow further development of the natural resources of the Bahariya depression including ore deposits.

Minya Branch: El-Minya city has been one of the major population centers from ancient times. However, like other southern cities, little development has reached its shores because of the centerlization of economic development projects in and near Cairo. It has a university and can generate numerous avenues for local and regional development if it were better connected to the national market. A similar setting is that of Sohag farther to the south, where another branch has appropriately been suggested.

Asyut Branch: This case is identical to that of Minya. In addition, that the city of Asyut has an airport that could be upgraded for more efficient human and industrial transport. It is also the end point of the road from Kharga Oasis, the capital of the New Valley Province. This road was paved over part of the ancient Darb El-Arbain, the road of camel caravans connecting the Nile Valley and the oases of Selima as well as Darfur in northwestern Sudan. The road may be upgraded and revitalized for better connection with northwestern Sudan.

Qena Branch: This connector will open - for agricultural development - a vast area south of the Nile from the Qena Bend in the east to Nag Hammadi in the west. This plain represents fan deposits of streams that were more active during wetter climates in the past; therefore, it will be underlain by groundwater resources. It is significant to note that the extension of Wadi Qena to the east promises to be viable for expansion of agriculture. In addition, there is a road and a parallel rail track that connects Qena to the Red Sea, thus making an eastward link to the Red Sea, in addition to that of Suez farther north.

Luxor Branch: This is a unique case that may allow unlimited growth of tourism and recreation on the plateau that overlooks the largest concentration of ancient Egyptian archaeological sites. It allows the erection of hotels and resorts on top of a magnificent plateau overlooking the Nile Valley. The views of the Nile Valley in the distance below the plateau with sail boats and green surroundings amid a bright, rose-colored desert are unique. That vantage point would rival any other worldwide. The territory is virgin and the land strip is pristine, having never been used in the past. Its development in eco-tourism would have no equal anywhere in the world.

Kom Ombo-Aswan Branch: More than the Qena branch, the Kom Ombo-Aswan segment opens up a vast tract of fertile land west of the Nile for reclamation. The region once hosted a channel of the Nile; segments of its ancient courses were recently revealed by radar images from space. Because of geological reasons, the Nile shifted its course consistently eastward to its present location. Therefore, the abandoned land to the west would include fertile soil of ancient Nile sediments. This makes it an excellent location for the expansion of agriculture west of the Nile. The Aswan segment connects to the city of Aswan. It would allow the transport of products to and from the northern parts of Egypt and the outside world. It would also allow the expansion of winter recreation resorts and tourism near the many archaeological sites near Aswan and west of the High Dam region.

Tushka Branch: The north-south axis goes through the northeastern edge of a major depression, where a canal from Lake Nasser has created the Tushka Lakes. This region is slated for agricultural expansion. It is presently devoid of an adequate transportation infrastructure. The Development Corridor provides all necessary mechanisms to transport people, material and products to and from the region. Thus, it would alleviate present problems of the Tushka agricultural project.

Lake Nasser Branch: This connector is to be selected at a site that is amenable to the development of a major fishing port along the shores of Lake Nasser to the north (downstream) of Abu Simbel. Plentiful fish from the lake could be transported via the railroad to distribution centers throughout Egypt. The branch might also increase the potential use of Lake Nasser for eco-tourism. (EL-BAZ, 2006)

2.3.2.3 Modern Railway

Egypt was among the first countries to establish a rail system in the 19th century; the first rail track connected Cairo and Suez as far back as 1854. Thus, its rail tracks are very old and were laid on relatively soft soils that do not allow fast movement by heavy loads. Thus, the need exists for an advanced rail system to serve present and future requirements of trade and economic development. A rail track parallel to the north-south highway would serve that purpose. As deemed necessary by railroad experts, connecting tracks should be established along all the east-west braches to facilitate efficient transport of people and products all along the Development Corridor.

The north-south axis of the Corridor ends at the southern border of Egypt along the Edfu-Selima camel caravan route, which is part of Darb El-Arbain. At this point, a short segment of road would connect it to the shores of Lake Nasser across from the town of Wadi Halfa, near the southern border to link with eastern Sudan. Thus, it would facilitate transport between Egypt and the main cities and town of Sudan.

In the meantime, it is envisioned that plans should be made to extend the proper segments (e.g., the road and railroad) of the Development Corridor southward to Khartoum and Juba. In the future, there must be an easy way to link people and products of Egypt and Sudan. From ancient times, linking the Nile people in the north and the south was of great advantage of both.

Roads and rail tracks have been the backbone of economic development plans worldwide.

2.3.2.4 Water Pipeline

No development could be assured without the presence of freshwater. Northern areas of the path of the north-south axis promise the existence of groundwater, specifically west of the Nile Delta. However, a pipeline of fresh water (from the Tushka region) is required to run the length of the north-south axis for human consumption and services along its path. It is envisioned that a pipe of about one meter in diameter would provide the necessary resources for this purpose.

Agricultural and industrial development along the east-west branches would be supplied by groundwater resources. In some cases, it might be necessary to extend subsidiary canals from the Nile as conditions might dictate at various locations.
The length of the required pipeline is about 1,100 km. This is less than half that of the Great Man-Made River Project (GMRP) in Libya. In the latter case, the main pipeline is four meters in diameter, and is buried under seven meters of soil. Water is supplied from numerous wells with smaller pipelines (1.6 meters in diameter) to feed the main pipeline. In comparison, the proposed pipeline for the Development Corridor is neither technically difficult nor economically taxing to accomplish.
For the water from the Tushka Lakes (or Lake Nasser, if advisable) to be lifted onto the plateau requires pumping-up less than 300 meters. However, it would flow northward along the topographic gradient without any need for energy. It is even possible that the water flow down-gradient might be usable to produce mechanical energy that can be converted to electricity or used for light industries along the length of the north-south axis.

2.3.2.5 Electricity Line

Initial phases of the proposed project require energy for lighting, refrigeration, etc. Therefore, supply of electricity is one of the requirements of the project. The required power can be first supplied by any one of the power plants along the Nile Valley as deemed appropriate.
Urban communities, industrial plants and agricultural farms to be initiated along the east-west branches should be encouraged to utilize solar and/or wind energy resources as much as possible. This encouragement can be in the form of tax breaks or grants from the Egyptian Government or international environmental agencies.
In the meantime, the erection of an electric line to be connected to the main grid is a vision toward the future. The segment selected for the north-south axis of the Development Corridor is known to be part of the driest place on Earth, where the received solar radiation is capable of evaporating 200-times the amount of rainfall(Henning and Flohn, 1977). Thus, this region is the most appropriate for solar energy generation in all of Great Sahara of North Africa. It would be ideal for the generation of concentrated solar energy in the future. Thus, erecting an electricity line connected to the power grid of Egypt would limit the cost of solar energy generation in the future. This way, Egypt would present the best example for generating solar energy on a large scale. It would give credibility to the Desertec concept, which was developed by an international network under the direction of German physicist Gerhard Knies and HRH Prince Hassan bin Talal of Jordan.

2.3.3 PROJECT BENEFITS

The evaluation of the pros and cons of the proposed Development Corridor is naturally left to others. The only question that comes to mind that I could not answer is “how long it would take to secure a return on the investment of such an elaborate infrastructure?” This question can only be answered by the experts based on a detailed economic feasibility study.
In the meantime, it is possible to list the benefits of the proposed Development Corridor for the social and economic development of Egypt. These benefits may be enumerated under the following sub-headings:

2.3.3.1 Utilizing New Land

Opening of 10.5 million feddans of land in a strip that is directly adjacent to the present living area of Egypt allows the initiation of thousands of new development nodes. Figure 5 indicates the location of that strip just west of the presently used space. Utilization of this added space is essential for two reasons. First, it is the necessity to provide land for urban growth away, but not too far, from the fertile land. As stated above, the latter is being destroyed at the rate of 30,000 feddans per year by urban encroachment. Continuation of this alarming rate (average during the last 20 years) would mean that all the fertile land of Egypt would disappear under cement in 183 years! The second reason is that Egypt must provide for the growth of its young population. It is estimated that the population will increase by 60 million people by 2050. Thus, development plans must provide the space and the opportunities for such an increase in population.

2.3.3.2 Upgrading Transportation

Providing transportation arteries, with the potential of future expansion, away from the fertile land of Egypt is essential to saving the irreplaceable fertile Nile soils. It has been repeatedly proven worldwide that a viable and modern transportation network and ease of movement are critical requirements of progress and development. In the meantime, any plans for additional roads or rail tracks within the fertile valley would encroach on the productive land. Thus, there must be a visionary way to deal with transportation mechanisms in Egypt, which are required for both present and future needs.

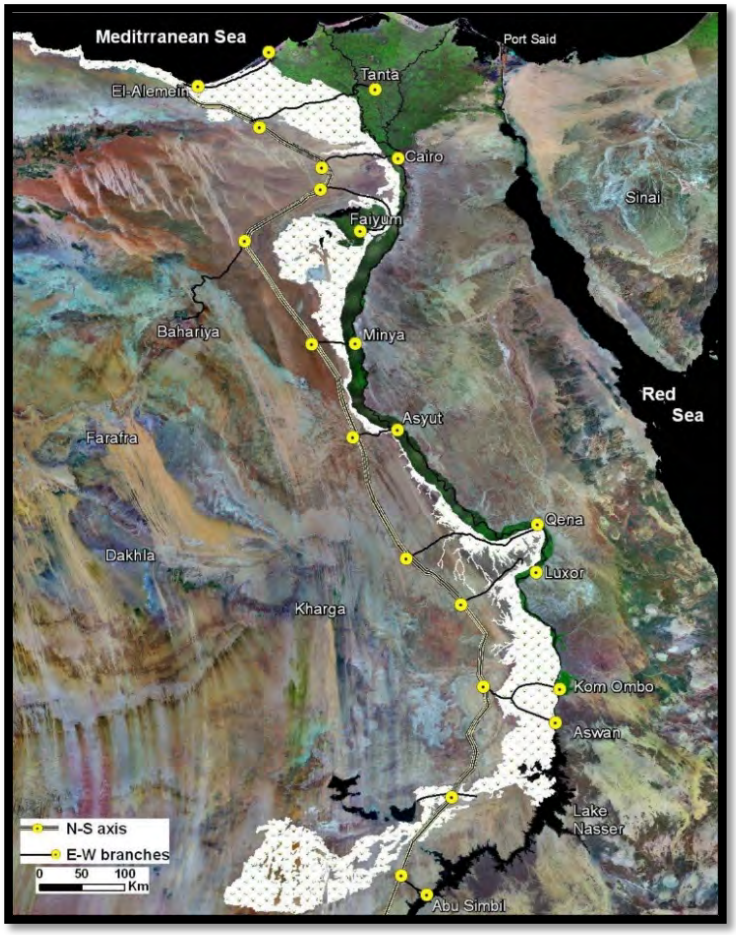


Figure 45: Usable flat land (white strip) west of the Nile and east of the Development Corridor.

Source: (EL-BAZ, no date)

In addition, starting the north-south axis near El-Alemein allows the potential of building a new international port to serve an expanding maritime activity. This requirement would underline the need for removal of the landmines left by warring parties during WWII in that region. For as long as the area remained uninhabited, there was no urgency to do this. However, if the mine clearing necessity is to be presented to them as a prelude to major economic development, then England and Germany would contribute to the initiative. This is exactly what the Egyptian Ministry of International Cooperation plans to do.

2.3.3.3 Countrywide Development

Allowing varied development initiatives along the whole length of Egypt, particularly in its undeveloped southern provinces, is one of the great facets of the proposed project. It is historically known that Egyptians are emotionally tied to, and prefer not to venture too far from, their town or village of origin. It is for this reason that the east-west branches are designed to gradually extend from dense population centers along the Nile, one kilometer at a time. More significantly, the east-west branches are distributed equally along the length of Egypt to provide equal opportunities throughout the land, particularly in the less developed southern parts.

2.3.3.4 New Urban Communities

Encouraging economic growth in necessary in all aspects of development, including urban communities, industry, agriculture, tourism, services, etc. The addition of a vast area (10.5 million feddans) to the utilized space (5.5 million feddans) opens up the potential for development in all its forms. Most significant is the potential for urban growth, including cities, villages, new schools, universities, hospitals, sports arenas, etc. This also allows the expansion of industries of all sorts away from population centers and taking the wind direction into consideration (see Figure 3, right). Also, the placement of the main transportation axis above the plateau allows future expansion of storage facilities, packaging of agricultural products, etc., on a strip of land that could not be used in agriculture or human dwelling.

2.3.3.5 Groundwater Resources

Limiting agricultural expansion to areas with proven groundwater resources excludes use of additional quantities of Nile water for crop production. It alleviates future problems of Nile water volume committed to Egypt. This is doable because the flat land west of the Nile and east of the Western Desert plateau is partly covered by fertile Nile silts and numerous fans of wadis. This land has also been proven to be underlain by groundwater resources. Numerous areas have been utilized in agriculture using local water as shown by the 8 examples in Figure 6. If only 10% of that flat strip of land is good enough for agriculture, it would mean the addition of more than one million feddans to Egypt‟s 5.5 million now under cultivation. This would help in assuring food production for the growing population.

2.3.3.6 Utilizing Solar Energy

Erecting an electricity grid infrastructure would allow large scale utilization of future solar power generation along the north-south axis of the Corridor. The proposal of an electricity line along the main axis assures the initiation of this costly infrastructure at the outset. In reality, the electricity line is not essential to the function of the Development Corridor in the initial stage. The required energy could be produced locally at each location as necessary. However, the establishment of that infrastructure at the outset would limit the expense and necessary linkages

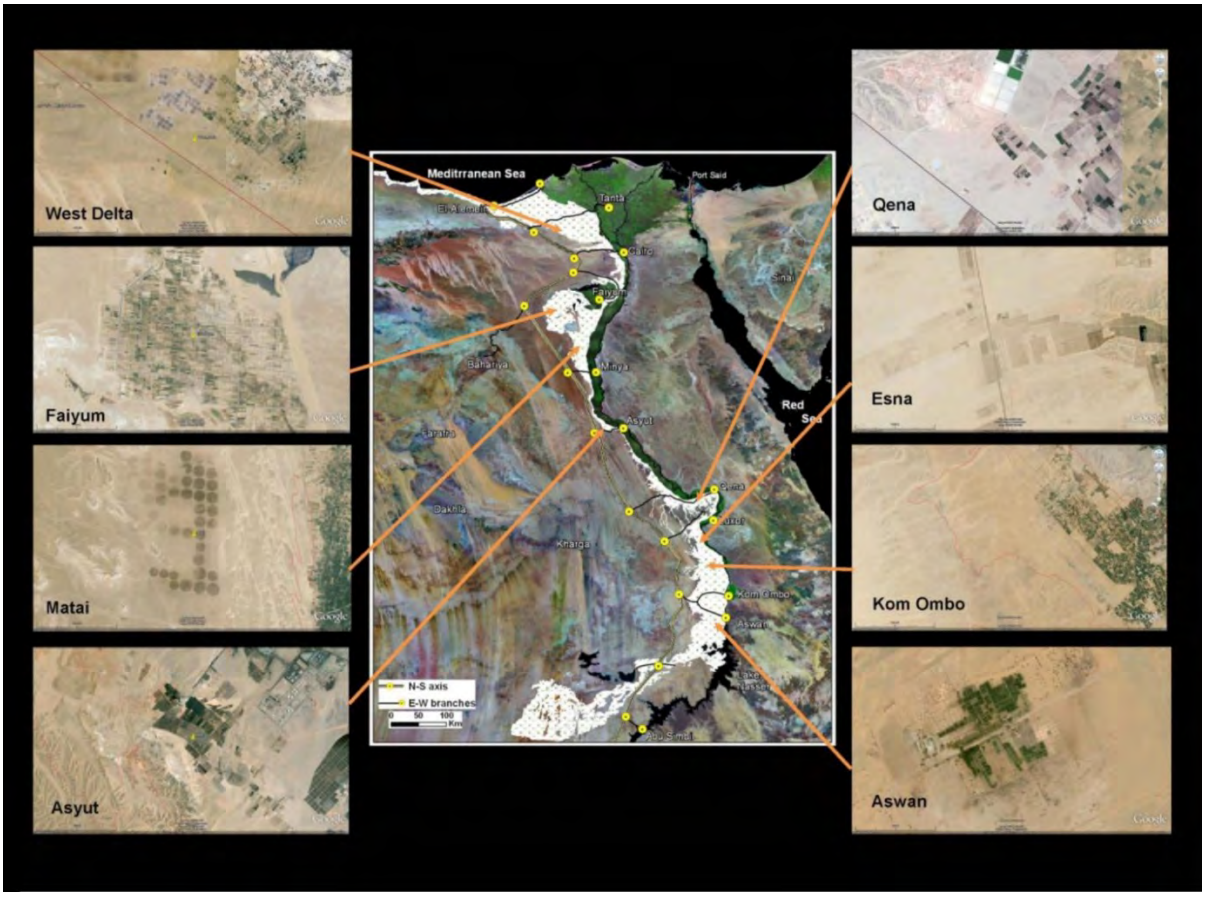


Figure 46: Examples of eight areas in the flat land east of the north-south axis of the Development Corridor where groundwater resources have already been used for agriculture. Wells were drilled by local communities to water cropland, some by circular spray irrigation.

Source: (EL-BAZ, no date)

of solar power generation in the future. To the west of the north-south axis, in particular, energy from the sun has been measured to be higher than anywhere else in the world. Solar radiation in that part of the Earth can evaporate 200-times the amount of received moisture (Henning and Flohn, 1977). Thus, Egypt should certainly plan now for how to fully utilize this unutilized resource in the future.

2.3.3.7 Public Financing

Suggesting project financing by issuing bonds to Egyptians first allows the government to subsidize more urgent projects in the Sinai and elsewhere It is clear that the Development Corridor opens up unlimited potential for growth and development throughout Egypt, particularly for future generations. For this reason, it is conceivable that its funding would be based on issuing bonds. These could be offered to Egyptians first, in country and abroad. The estimated 8 to 12 million Egyptians working abroad could substantially contribute to the project's initiation. If the collected funds were not enough, the bonds could be offered to Arab investors, and if that would not be sufficient, to international investors. If that is accomplished, then the government may commit its scarce resources to more pressing development programs. As stated above, these include such projects as the development of the Sinai Peninsula, which has been neglected for too long. It also includes regions of the

oases of the New Valley Province and the wadis of the Eastern Desert, as well as viable segments of the northern coastal region

2.3.3.8 Southward Extension

Establishing possible future extension southward to Sudan assures the potential of benefits from commercial exchanges with African nations. Thus, extending the north-south axis of the Development Corridor, or at least essential parts of it, to Sudan is a visionary possibility. Egypt has for long neglected its role as a major African nation. For this reason, it is suggested to consider the future extension of the Development Corridor southward all the way to Cape Town (Figure 28). Several east-west connectors would link major parts of the continent. From the economic development point of view, Egypt should at least consider the potential of trade between African nations and others. During 2010, the trade volume between China and African countries added up to $141 billion. The same between India and Africa was $35 billion, and between Brazil and African nations reached $24 billion. Thus, Egypt could become the outlet of a major component of this vigorous trade activity. This should be seriously considered because this trade is expected to increase in the future.

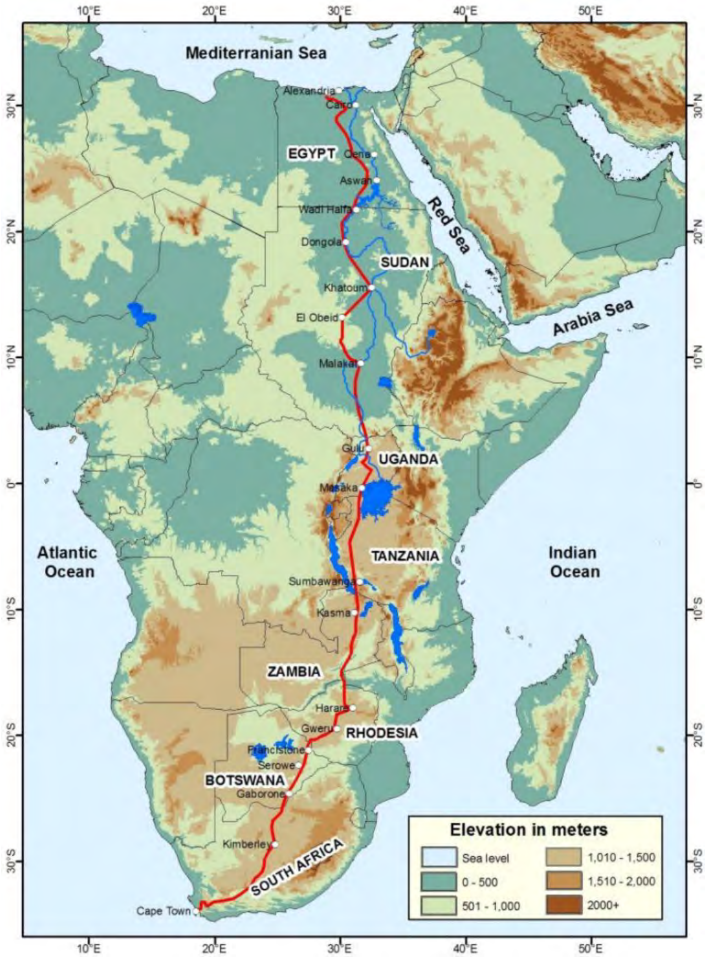


Figure 47: Sketch of the possible extension of the Development Corridor from Alexandria in the north southward to Cape Town to serve as a north-south link throughout Africa.

Source: (EL-BAZ, no date)

2.3.4 Method of Execution:

Though the project originally was presented by the Egyptian government it's scope & diversity shows that private sector can accomplish it better. Twenty years ago, it's budget was equal Six million dollars now the necessary infrastructure would cost much more. However, the cost would not be too high for decisive solutions to many of Egypt's present problems, and tangible options for a better future. Furthermore, it would not represent a burden to the Egyptian Government, because it would be totally financed by the private sector (local, regional & international investors). Naturally, this would require a vigorous and well though-out marketing campaign.

2.3.5 Reply to the critics

- Corridor project is not only agriculture but to expand the living space and its comprehensive development, agriculture, industry, trade & tourism, and open up new areas for the Egyptian Youth to a decent life also broad in valid qualifying innovation environment.
- Dr. El Baz proposed the boardwalk over the flat limestone plateau bordering West Nile Valley because they are built by deep valleys of the flat that serve to establish a comprehensive IT infrastructure on a highway and a water pipeline and power line to use the human as well as future projects to produce solar energy and expand horizontally without abuse of fertile land in the Nile Valley and Delta.
- Thirdly: he never suggested over agriculture in karst plateau West of the Nile Valley. FAO proposed that sediment Nilotic and flat land between West Nile and down the eastern plateau and West Delta.
- Drinking water pipeline needs 10 water lifting stations through the longitudinal axis. That start from the beginning point above the plateau which is the highest point & water is Self-propelled therefore the corridor is running from south to North by pressing. The difference between the level of the Dam Lake to the plateau is 300 meters which requires optimum lifting engineering.
- One of the benefits of development corridor is linked with the rest of the toshka project in all types of transport. Toshka project is failing, but the draft is not yet complete, and linked to the population centers of accumulation and transfer of people eligible products nationwide to quickly, easily and safely, i.e. the toshka project revive the development corridor.
- Proposal development corridor has been the subject of study by 41 experts under the supervision of Dr. Mohamed Fathy Sakr, Minister of Planning. The study, that was produced estimated the total cost of the project to be $23.7 billion. Based on this study, the Government is currently considering the announcement of Further detailed feasibility study for non-governmental institutes to validate decision-making study.

2.3.6 CONCLUTION

It is my firm belief that the Development Corridor is a viable project that uses the special characteristics of the geology and the geography of the land. It offers the best possible way to assure younger generations of Egyptians of a better future. Only through giving our youth numerous possibilities to think, innovate and create in a new and expanding environment would Egypt be able to regain its glory. Anyone who considers the project's basic features, thinks about what it adds now, and analyzes its future benefits, would strongly support it. What is required at this stage is to support a detailed economic feasibility study.

During the past twenty years, I have repeatedly written and widely lectured on the proposal at universities and research centers throughout Egypt. Audiences receive it with great enthusiasm and consider it ideal for a "national project," that is something the whole nation, and particularly its youth, can get involved in its planning, execution and utilization.

The Egyptian Government initiated a preliminary study in 2006 that assured that the project assures the social and economic viability of the country. It further suggested the increase of east-west branches from 12 to 15. It also estimated the total cost to be $23.7 billion. The proposal is expected to undergo the required detailed feasibility study by a non-governmental organization in the future. Naturally this will have to await the stability of the nation after the numerous „aftershocks" that followed the „earthquake" of the revolution of 25 January 2011. It is envisioned to involve experts from universities and research centers in the study and evaluation of various aspects of the proposed project in the future. It would also be necessary to plan the training of workers in numerous fields for employment in the various aspects of the project. In addition, each governorate or province should be able to initiate lists of the kinds of development projects that could be established in their territories once the project begins.

Because the project is proposed to assure a better life for future generations, it is advisable to involve the young in the planning process. University students could compete for prizes in recommending projects on either side of the east-west branches of the Corridor. High school students could be given opportunities to compete for other prizes for naming the east-west branches and the new towns and villages to be established along them. If a large number of people become involved in the project, it would have a better chance for being considered a "national project," one that the society as a whole would own and protect.

From the earliest times of recorded history, civilization blossomed among groups of people who were collectively able to achieve: (1) production of excess of food, for the growth of their bodies and mind; (2) division of labor among the society, in fair and well-organized manner: and (3) easy living in urban areas, where some of them could create and innovate. Therefore, Egypt needs to satisfy these three conditions before paving the road for the re-spread of civilization along the banks of the Nile River. It is my belief that the proposed Development Corridor would go a long way toward achieving these goals. This needs strong faith in the resilience of the descendants of the energetic builders of the Pyramids. It would require a mere generation or two for this development initiative to bear fruit. This is not a long time in the long history of Egypt – a country that deserves a distinguished position among great nations now and in the future.(EL-BAZ, no date)

2.4 CHAPTER FOUR: ANALYTICAL STUDY FOR DEVELOPMENT OF THE GOLDEN TRIANGLE AREA IN UPPER EGYPT

2.4.1 Idea of creating a Mining Triangle

The development of the Mining Golden Triangle (Qena / Qeft-Safaga-Qusair) comes as one of the major national projects within the framework of the national plans which seeks to alleviate the population pressure in the existing urban areas and achieve the optimal use of the natural resources spread over the land of Egypt. Especially South of the valley because it is known to be less developed and with poorer areas. Taking into account the greatest equitable distribution of the benefits of development throughout the Republic.

The idea of founding the International Mining City in the area between the Qena / Safaga axis to the north and the Qift / Qusair axis to the south, which was later called the "Golden Triangle" area. The area of the Golden Triangle (Qena/ Qeft-Safaga- Qusair). When the trends and interests of the state converged to accelerate and stimulate the entire national economy and the Upper region in particular through the establishment of economic projects packages driving with quick and direct financial return, perhaps the most important is taking out and mining industries. Hence, the decision to maximize the utilization of resources and mineral wealth in the governorates of Upper Egypt to achieve comprehensive sustainable development.

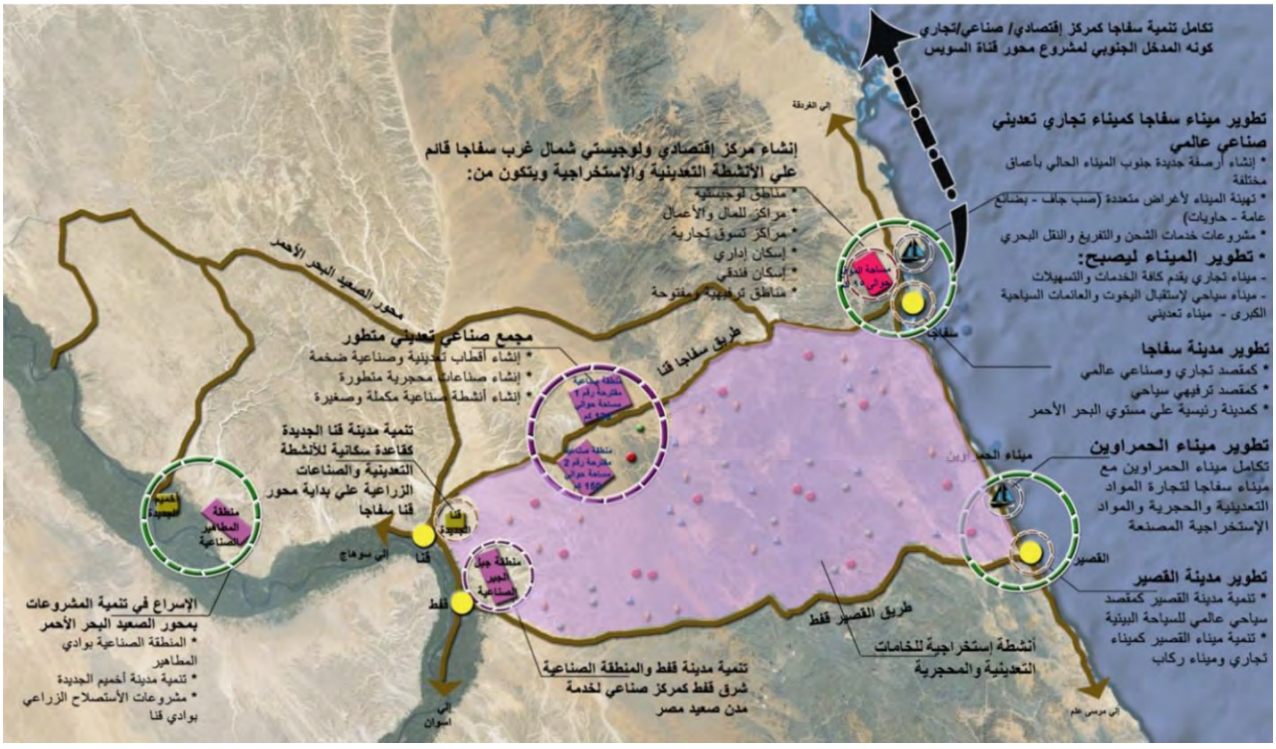


Figure 48: The Planning Idea for the Development of the Golden Triangle in the Context of the National Strategic Planning of the Urban Development of Egypt

Source: (GOPP - Ministry of Housing Utilities and Urban Communities, 2014c)

2.4.2 Project Objectives:

The project aims to establish a new economic zone in Upper Egypt that will drive the development movement in various cities, in the area between the provinces of Qena from the western side, the Red Sea Governorate from eastern side, the cities of Safaga north and El Qusair south. So, the main Objective of developing the area is:

- Advancing from the available labor in the cities of Upper Egypt to work in the development projects to be established in that region.
- Creating new industrial communities based on the use of the many mineral resources available in this region. Given the genius and unique location of this triangle and the natural resources it should make its development sustainable is an urgent and national demand, which will make this triangle an investment attraction and an international and industrial economic center with a significant benefit from natural resources and human resources available in Egypt.
- Utilization of the components of uninhabited urban communities.
- Redistribution of roles between urban communities and the integration of spatial differences, especially in small town groups and medium-sized enterprises according to the strategy of South Upper Egypt.
- Sustainable development of Upper Egypt by establishing the largest industrial, economic, commercial, Tourist, residential, and mining activities.
- Benefiting from the exploitation of resources in the formation of a population base for mineral and industrial activities (reconstruction of the Egyptian inhabitant areas and a new settlement area outside the existing world). (GOPP - Ministry of Housing Utilities and Urban Communities, 2014c)

2.4.3 Current Situation

2.4.3.1 The Natural and Environmental features of South Upper Egypt and their impact on the project:

The Region is about 206,055 km^2 (49 million Feddans) It includes the governorates of Sohag, Qena, Luxor, Aswan and the Red Sea. While the wider range of the golden triangle project area is between the Red Sea and the eastern border of the Nile, bordered north with Upper Egypt – Red Sea Road, and south with the Edfu -Marsa Alam road, with an area of 38,281 km^2.

The Golden triangle zone is located in the Red Sea and Qena, and passes through it the coastal road that connects the Egyptian eastern border from the north to the southern border, the East base represents a coastal Facade 80 km of length confined by Safaga city in the north to the border of Qusair city in the South, as for the triangle head it overlooks the Nile River in the province of Qena from the western Side, the average lateral extension of the triangle from east to west is 155 km.

2.4.3.2 Natural and environmental features of the Southern Upper Egypt Region and its implications on the project

The surface of the region is characterized by the passage of the valley and the Nile River along the western side, and the surface is tilted at an average of 1/10000 north.
The Valley is bordered in the east by the Red Sea Mountains, and the mountains have a number of valleys that represent the most viable land for cultivation such as Wadi Naqqara and Wadi Qena in the east of the Nile. These lands represent attractive areas for investment in the agricultural field and, so it represents a natural physical component of the project.

2.4.3.2.1 Natural Constraints:

The surface features in the Upper South Egypt have four geomorphological units as described above, and this is indicated as follows:
- The Red Sea Mountains, which serves as the backbone of the eastern zones of southern Egypt and Upper Egypt.
- Limestone and Sand plateaus, which is widespread in the east and in the west.
- Sandy Plains, which are also widespread in the east and in the west.
- The coastal stream of the Red Sea and the Islands, located in the far east.

2.4.3.2.2 Reflection of the natural and environmental features of the Southern Upper Egypt Region on the project:

The area of the project includes several valleys, which represent the most suitable land in the agricultural field, and so it is represents a natural spatial rectifier for the project.
The mountain chains and beach bays formed by the valleys are important for tourist attraction, especially leisure tourism.

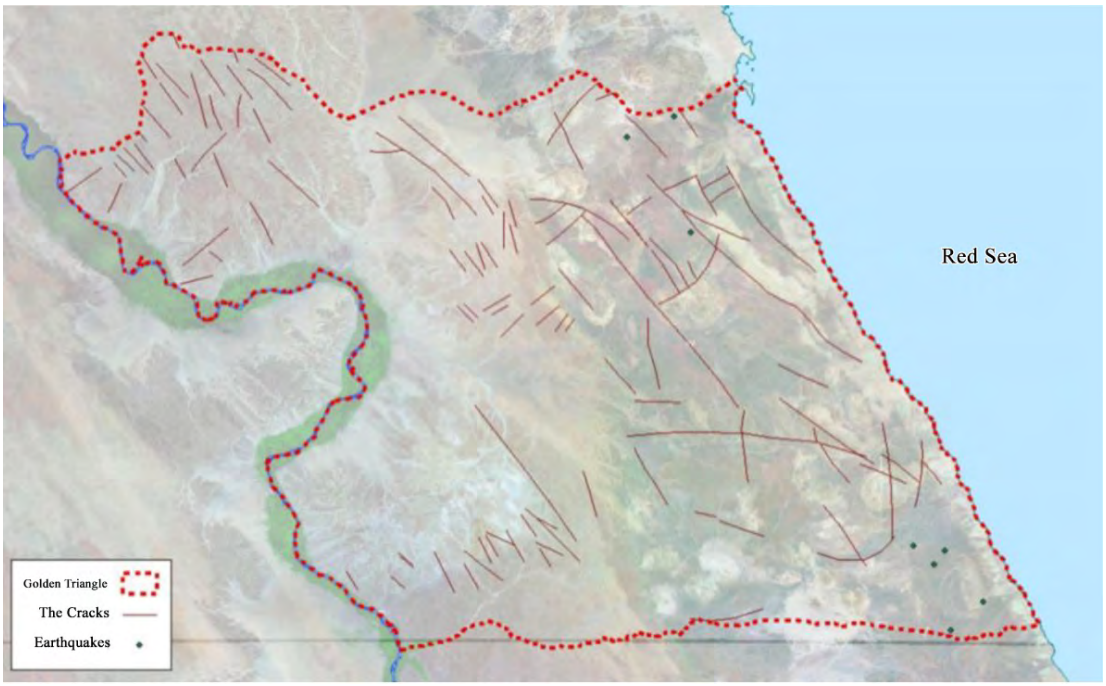


Figure 49: Faults in the study Area

Source: (GOPP - Ministry of Housing Utilities and Urban Communities, 2014c)

Earthquakes and floods are among the most important natural hazards facing the study area and should be taken into account in the distribution of development projects in the region.
The project area is characterized by high brightness of the sun, which allows for high

photosynthesis and increase the productivity of plants as well as use in the provision of new and renewable energy sources in addition to high wind speeds can be exploited in the provision of new sources of energy.

2.4.3.3 Current Urban Situation

The administrative structure of the province consists of the governorates of Sohag, Qena, Aswan, Luxor and the Red Sea, with a total of 39 Markaz, 43 towns and 585 villages (157 main villages, 420 following village and 80 villages not within rural protected units).
The Golden Triangle area is located within the administrative boundaries of Qena, Qift, Qous, Safaga and Quseir. It includes about 6 cities, 19 main villages (local units) and 42 following village.

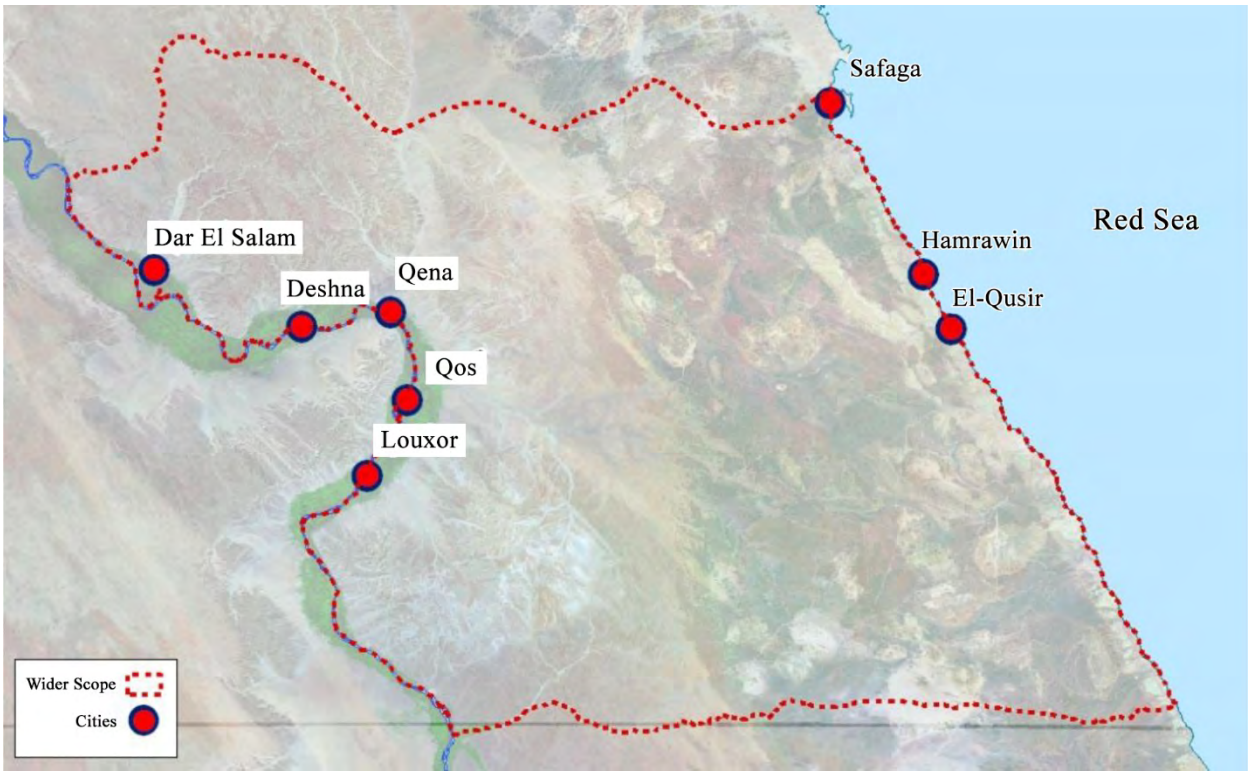


Figure 50: urban communities within the actual scope of the study area

Source: (GOPP - Ministry of Housing Utilities and Urban Communities, 2014c)

2.4.3.4 Current demographic and social Aspect:

The total population of the region reached 8,681,399 people in 2006, representing 11.9% of the total population of the Republic, occupying the fifth rank at the level of the seven regions in terms of population which is distributed as follows:
Sohag by 43.2%, Qena by 34.6%, Aswan by 13.7%, Louxor by 5.2%, Red Sea by 3.3%.
The Southern Upper Egypt Development Plan was prepared to accommodate about 4.4 million people from the population increase until 2017, of which about 2.2 million people to cope with the natural increase in the region and about 2.2 million population as a result of attracting new activities for the population of the north and south of the valley, that does not only stop the migration stream but reverse it.
The southern Upper Egypt region accounts for LE345 billions of investments, and a large proportion of them are directed to the development of desert areas within the region, especially the Red Sea region. The plan gives utmost importance to sectors and activities

Leading in the fields of agriculture, industry and tourism and modernization, and strengthening the elements of human development, especially education and health Technological development, informatics and practical research in addition to housing and urban development services, to meet the requirements. Population Growth and New Urban Communities in Desert Areas.

2.4.3.5 Economic activities and investment opportunities available

Strengthening the regional role of the region through the various linkage axes (longitudinal and cross sectional) and basic activities (Export) of the region, whether in the field of extractive, industrial or agricultural activity.

• Building on a number of locations as growth poles, as home to major industries and regional services (eg, institutions of University education).

• Strengthening economic activities by exploiting the elements of the site and climate in strengthening the economies of the region (Red Sea - Aswan - Luxor) and establishing urban communities that represent centers of population polarization.

• To give a strong motivation to the economic activities with comparative advantages to the region such as the agriculture, industry and services of the region.

• Graduation of the development of the targeted industrial zones so as to complete the components of the areas under construction and the extent of all its facilities and services before starting to establish new areas, taking into account the precise selection of industries to be settled to avoid duplication and waste of productive capacities and capital assets.

• Focus on labor-intensive projects with growth potential to enhance the region's ability to provide employment opportunities for residents in the coming years.

2.4.3.6 The Ease of internal and external mobility

Transportation in South Upper Egypt serves all different transport networks and means, even if the degree of diffusion varies of road and rail networks, as well as airports and seaports, also a major river transport hub.

- Road Network:

The national road network in southern Egypt extends mainly along the Nile River, either on its eastern or western coast, in addition to occasional links linking the Nile Valley with the Red Sea, and another with the Western Desert in the New Valley Governorate, such as Cairo-Aswan Axis, Red Sea Coastal axis that starts from Suez in the north, Aswan-Abu Simble-Wadi Halfa Road, Qena-Safaga road (East/West), Qaft-Qusir road (East/West), Edfu-Marsa Alam road (East/West).

- River transport.
- Railway Network.
- Ports & Airports Network: where the main port is Safaga, in addition to 4 airports, 3 international & one locals.

The transportation Network requires the development of an integrated network of trans-lateral and long-distance transportation linking East and West Nile (New Project Areas and Red Sea Ports) linking the north of the country and its seaports to the south through the following important traffic hubs:

A new international coastal road of the Red Sea linking the Egypt with Sudan.

Developing existing airports and improving their services.

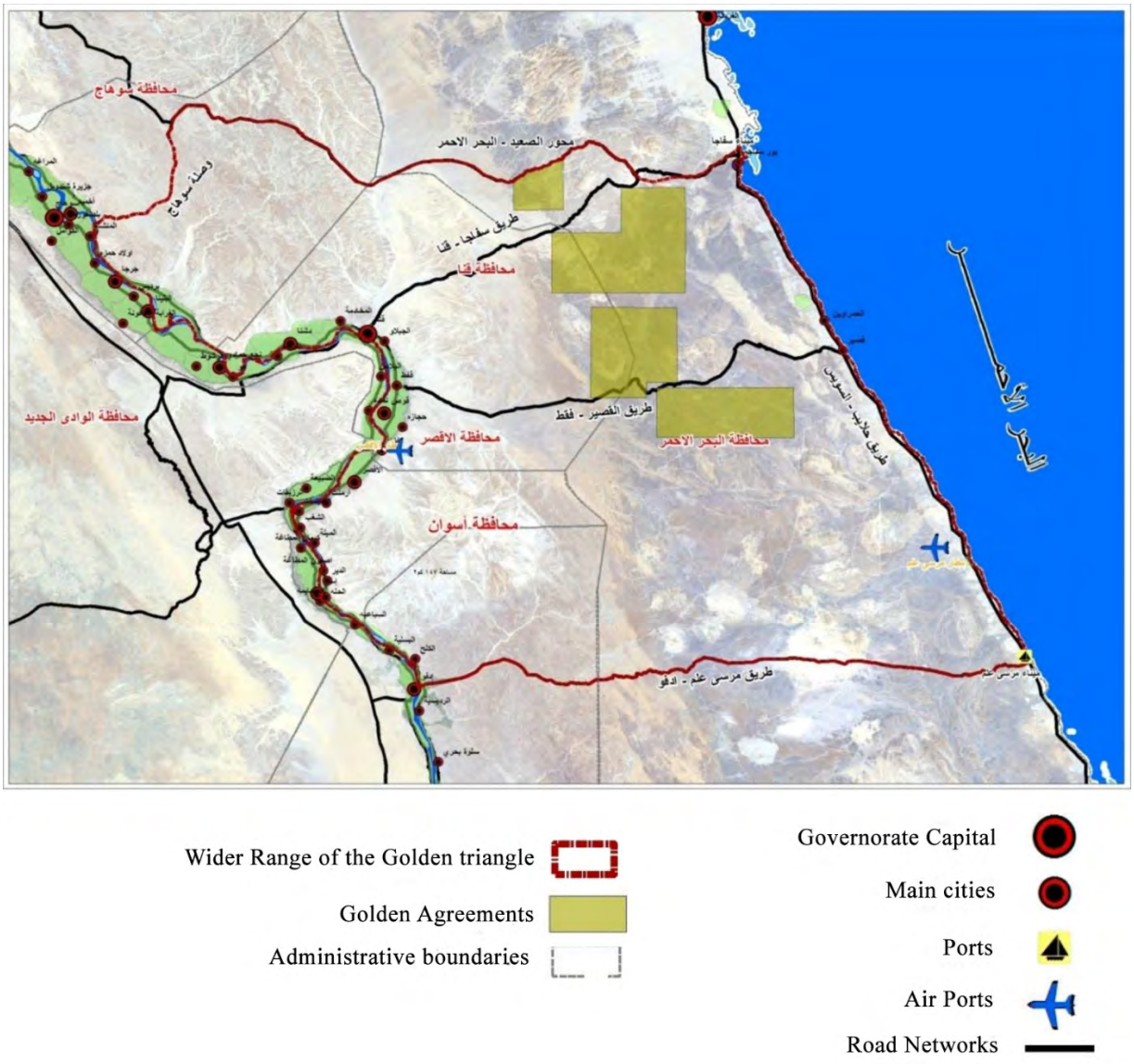


Figure 51: Road & transportation Network & Hubs

Source: (GOPP - Ministry of Housing Utilities and Urban Communities, 2014c)

2.4.3.7 Infrastructure

The infrastructure sector needs to establish of a set of water purification plants in the centers of the provinces of the region and expansion of existing stations, with extension of networks to centers and villages, and the establishment of a group of wells and cisterns.

Establishment of a number of generating stations and transformers, and extension of air lines to meet the needs of the region of electric power and to ensure the stability of nutrition and continuity in the medium and long term.

Focus on teaching the languages needed to employ worker in multinational firms and attract investment to local employment..

Renewable energy:

Solar Energy: The region contains one of the highest global rates of Solar energy, which encourages the establishment of solar projects in both thermal and photovoltaic in that zone, that could be used in:

- Generating electricity using various solar concentric systems such as cylindrical pieces and solar towers.
- Heating and air cooling for tourist villages, commercial malls, hospitals, schools and large buildings, like similar projects in the Smart Village.
- Water heating for domestic and industrial use.
- Drying of agricultural crops and medicinal and aromatic plants
- Agricultural processing and protected agriculture (according to need)
- Use solar cookers to cook and prepare hot drinks.

Other Renewable Energy such as **Wind Energy, Biomass Energy, Petroleum Clay, Uranium.**

2.4.4 Proposed spatial development plan for the Golden Triangle Project

Urban Development Strategy for the Golden Triangle Project in the framework of the Comprehensive Development Strategy for Southern Upper Egypt

2.4.4.1 Pillars and obstacles of spatial development of the golden triangle (Safaga - Qusair - Qena - Qeft):

By monitoring the most important architectural dimensions to the wider scope of the project area (South Upper Egypt Region), many basic pillars could be derived, through which the development process could be guided:

- Efficient utilization of areas of extractive activities of quarry and mining materials for the establishment of major industrial projects areas
- Benefiting from mining resource areas with tourist advantage such as the gold mines and exploiting them spatially as mining and touristic areas.
- Benefiting from the exploitation of resources in forming a population base for mining and industrial activities
- Creation of investment zones for mining activities and agro-industries
- Exploitation of coastal and natural areas in the identification of tourist development zones. considering the areas of environmental sensitivity and mineral potential.
- Activating the role of transverse axes (Upper Egypt / Red Sea axis - Marsa Alam / Edfo axis).
- Taking advantage of the existing urban centers as an example to establish economic logistic centers, especially the exploitation of the port of Safaga, in addition to the docks available in Quseir and Hamrawin.
- To activate the integration of the proposed activities according to resources and their development in a system of specialized and integrated urban networks at the level of the broader scope of the Golden Triangle.

2.4.4.2 Vision of spatial development of the golden triangle (Safaga - Qusair - Qena - Qift)

Through the above-mentioned principles, the spatial development vision of the Golden Triangle can be formulated. Which is based on the creation of a number of economic fields that are integrated to create an economic (logistical / tourism / environmental / archeological / global) development center on the Red Sea in the Upper Egypt. The development depends on a number of major investment projects attracting housing and employment within the framework of efficiency Exploiting the available and diverse resources of the project in the light of its environmental absorptive capacity to reduce regional development issues, especially the issue of regional disparities, poverty and migration in the broader scope of the project.

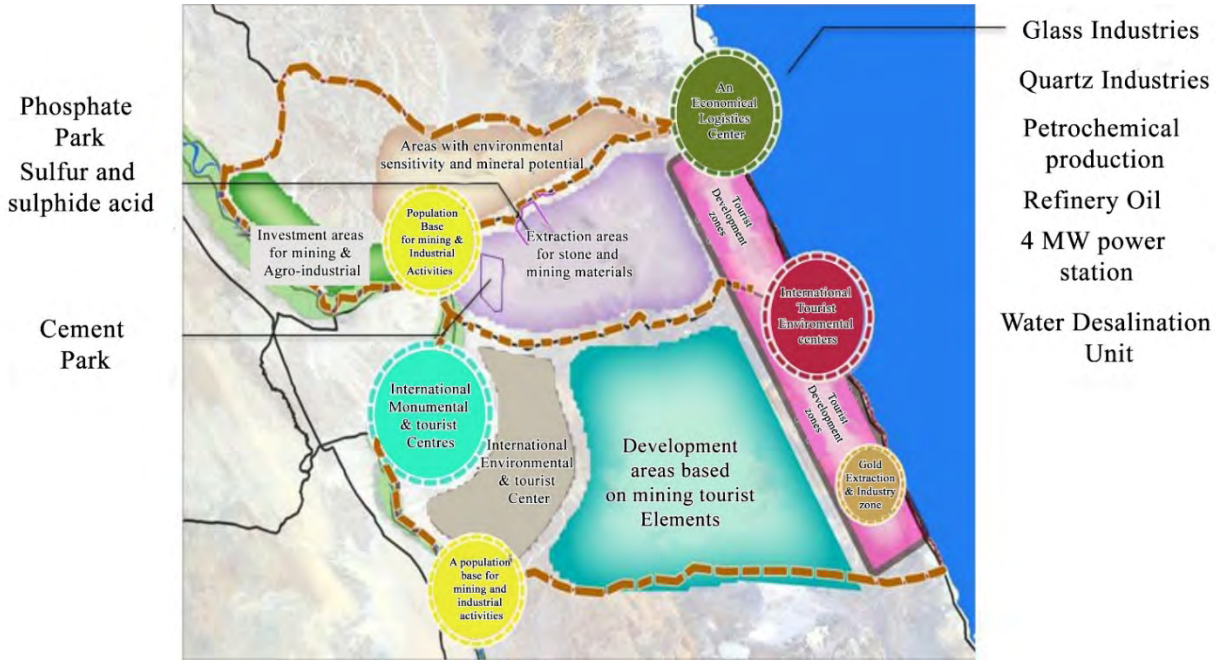
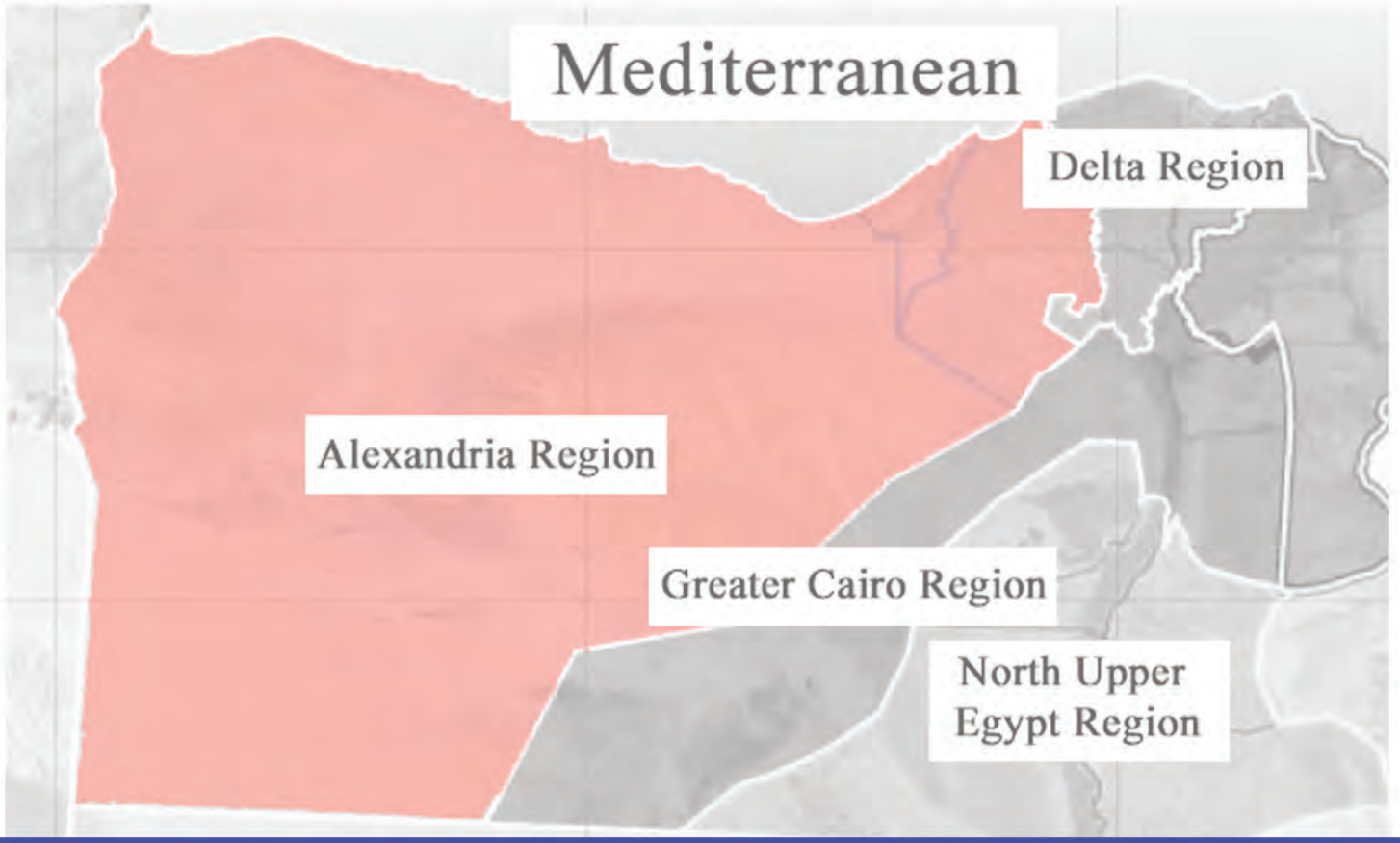


Figure 52: Vision of spatial development of the golden triangle & its wider scope
Source: *Made by Researcher based on* (GOPP - Ministry of Housing Utilities and Urban Communities, 2014c)

2.4.5 Proposal of mechanisms for the implementation of the Triangle Project

1- Mineral wealth and development of the Golden Triangle area.
2- Development of mining industries in the Golden Triangle.
3- Investment in the Golden Triangle area.
4- The role of the state in developing the resources of mineral wealth to optimize its utilization.
5- Policies for the development of mineral resources and the promotion to export the abundant resources the region is characterized by it with comparative advantage.



PART THREE
URBAN DEVELOPMENT FOR ALEXANDRIA REGION - CASE STUDY

*Chapter One : Historical Background For Previous Future Visions of Alexandria Region

*Chapter Two : Alexandria Region Current State

*Chapter Three : Future Vision Of Alexandria Region 2050

3 PART THREE: SUSTAINABLE URBAN DEVELOPMENT FOR ALEXANDRIA REGION – CASE STUDY:

Alexandria region is considered one of the most important regions in the arab republic of egypt for several developmental considerations that will be clarified in the course of the study. Therefore, it was needed to begin the study of the future vision at the regional level of Alexandria governorates, which are respectively Alexandria, Beheira and Matrouh governorates. The fourth part deals with the study of the Alexandria region (case study). Where the first chapter was devoted to study and analyze the previous efforts made in this regard - although they are few – in order to achieve a strategy to develop Alexandria region. It is noted that most of the studies was prepared by the general organization for physical planning that follows the ministry the of housing, utilities and urban development. It is useful to shed light on the most important of these studies, including:

4.1.1 "development strategy for the governorates of the republic - Alexandria region - 2008"

4.1.2 "environmental perspective of the urban development strategy at the republic level - Alexandria region - 2010"

4.1.3 pervious plans concerning the region in the national strategies

the second chapter examines and assesses the current state of the Alexandria region from several angles by studying geographical, urban distribution and natural determinants. the study goes on to identify the mutual influence between Alexandria and other regions in the Arab republic of Egypt on the national perspective. the third chapter is devoted to developing the features of the future vision for the development of the Alexandria region according to a specific methodology that can be followed in the development of any region of the Arab republic of Egypt, which was clarified in the case study.

3.1 CHAPTER ONE: HISTORICAL BACKGROUND FOR PREVIOUS FUTURE VISIONS OF ALEXANDRIA REGION:

Alexandria region is the second of the 7 regions of Egypt, in addition to Alexandria governorate it has also Beheira & Matrouh governorates with area 224075,891 km2 (53330,06 thousand feddan) represents about 22.2% of the total area of Arab republic of Egypt. So, it’s a significant region that’ s considered the second after the capital region with very high developing potential, which make it important to look back at the previous future visions & studies that were planned to upgrade the region such as:

3.1.1 Development Strategy for the Governorates of the Republic - Alexandria Region – 2008

This study was made in 2008 by the GOPP (general organization for physical planning) on all the seven regions of Egypt, Alexandria region is one of them. It consists of four axes one for the region, & the other three are for each of the three governorates (Alexandria, Beheira & Matruh).

3.1.1.1 Introduction of the study

The first axis addresses the data of the three governorates all together It starts with the identification of the region, it's natural and Administrative features, then moves on to population of the region by studying the mass and population increase, the relative distribution and the urban / rural structure, then the urban features which deals with the land Use, Population density and the Volumetric categories. After that it shed light on the economical features like the labour market, the workforce, and the educational state, then the Economic base identifying the workers distribution among economic sectors, and the leading sectors. In order to complete the economic picture, the study also reviews the Natural and Urban resources such as the reservations, mining resources, agricultural resources, Livestock, Fisheries, Archaeological and tourist resources. As for the urban resources they are Industrial conglomerate, New industrial conglomerates.

Then Infrastructure which is the main spine the development could grow and prosper on by its national and international roads, the railway roads, the eastern and western Alexandria ports, Marsa Matrouh Port, Airports, communication network, energy, electricity, Fresh water supply and Sewage Network.

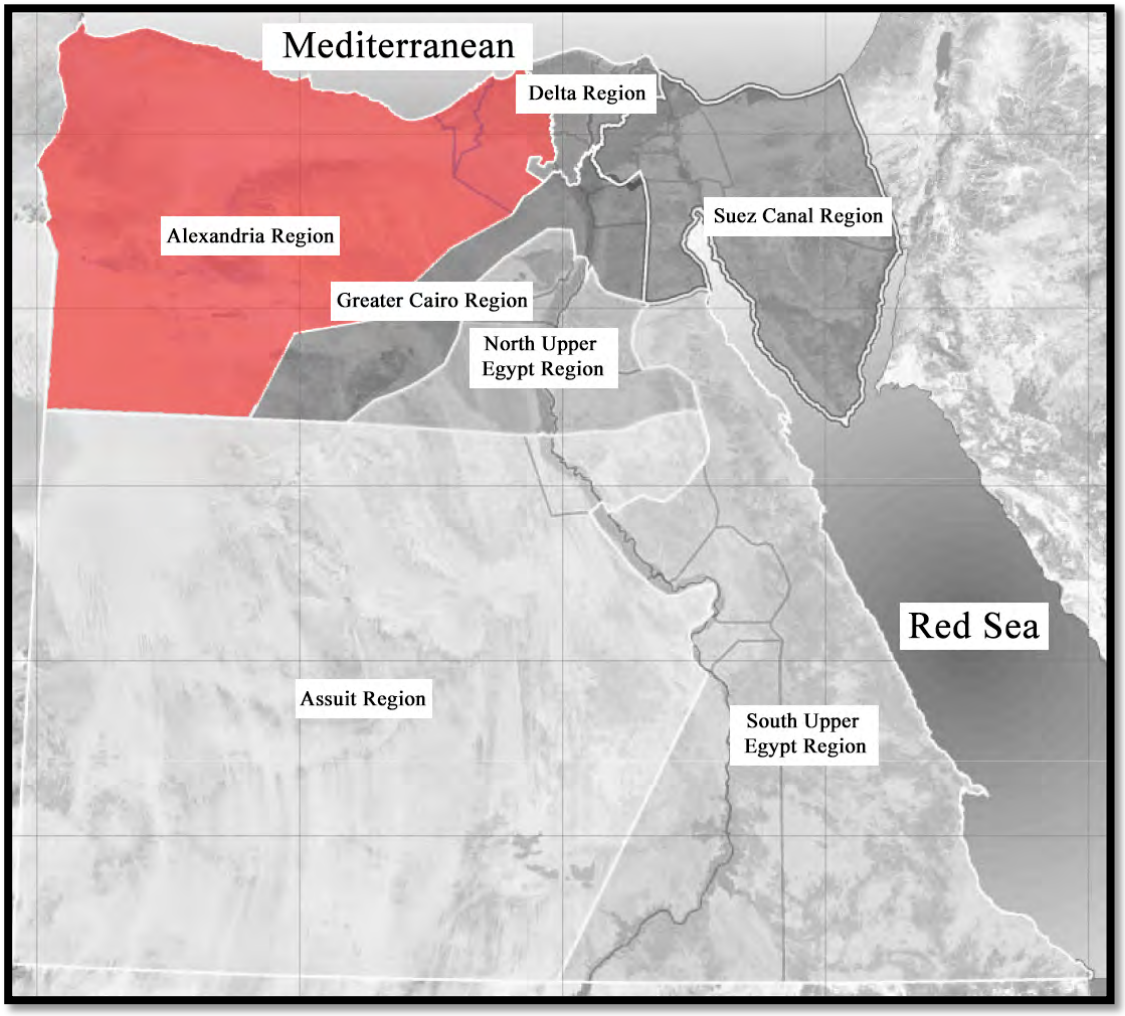


Figure 53: Alexandria Region

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2012a)

3.1.1.2 Development Strategies for Alexandria Region

The development strategy of the region was based on the previous urban, economic and social studies and their interactions with both the local, regional and international conditions and data at the time of the formulation of the strategy. Thus, the development strategy of Alexandria region and its governorates, which culminated in determining the orientations of urban development at the level of the seven regions of the Republic.
Several attempts have been made to formulate long-term plans for urban development within the Alexandria region, in its three governorates (Alexandria - Matrouh - El-Beheira). All these attempts have been made to achieve the following:
- Reorganization of the current urban space of the region.
- Going out towards the desert lands in the region.
- Organizing transport and linking the new development programs with the existing urban areas through the existing and proposed main movement axes within the region.

The long-term plans of the Alexandria Region were based on a combination of planning and development efforts at the lower local levels:
First, at the level of governorates and planning sectors within the region.
- Regional plan for the development of the North West Coast - August 1998
- Regional vision of Wadi Al-Natroun / El-Alamein / Alexandria - June 1999.
- Comprehensive Development Strategy for Siwa Oasis - May 2003 - "Regional Approach".
And secondly at the level of Markaz, cities, villages and neighborhoods in the provinces of the region, in order to build the plan starting from the base ‘Bottom Up Approach’, as will be demonstrated when the strategy for the development of the provinces of the Region is presented separately.
Hence, the study of the development strategy of the region of Alexandria as an addition to all aspects dealt with in previous studies, as formulated in the light of the response to current and future variables, which in turn reflect the trends of economic development in the region, within the framework of the state towards a free market economy, The structure of the state economy, in line with the national development goals in all its dimensions.
Based on the above, the objectives and pillars of the region's development strategy were set as follows:

3.1.1.2.1 The objectives & the Pillars of the region’s development strategy:

The development efforts in the Alexandria region are aimed at achieving:
- Preserve agricultural land and reduce the urban encroachment on them.
- Improving environmental quality and conserving environmental resources while optimizing utilization to ensure sustainable development.
- Exploiting the distinguished location of the Alexandria region - especially the governorates of Alexandria and Matrouh - to enhance its international standing and support its attractiveness in the field of investment and international trade.
- Opening new horizons for development in the desert of the region to alleviate the population congestion not only in the province but in the urban areas
In the Republic, through the establishment of new urban communities to accommodate more than 3 million people.
- Enhancing the export potential of the region by supporting the activity of free zones and export ports (Alexandria - El-Dekheila, Marsa Matrouh), and directing more investments for commodity and service activities with comparative advantage.

Export of crude oil and its derivatives, textile and garment products, furniture, wood products and footwear agricultural exports and fish production.
- The interest in providing and upgrading the efficiency of productive services and infrastructure.
- Enhancing the productive capacity of the Alexandria region through vertical expansion in agriculture on the one hand, and reclamation and cultivation Land in the promising areas on the other hand, and the settlement of industries of feasibility in industrial areas and cities (New Nubaria - New Borg El Arab).
- To increase and deepen the integration of the various activities in the region.
- Increasing the rates of balanced urban development between the coastline and the agricultural lands.
- To improve the level of services provided to the citizens of the Region, while reducing disparities between urban and rural centres between the constituent governorates.
- Providing incentives to the private sector and creating an appropriate environment for its role in the field of economic and social development.
- Encouraging handicraft industries, as there is a broad base in the region that absorbs a lot of employment.
- The rationalization of energy consumption and the need to find alternative sources clean and renewable in the face of increasing consumption.
- Taking preventive measures necessary for industrial drainage and sanitation because of their great impact on the sewerage water bodies, beaches and groundwater, which adversely affects development, tourism, agriculture and human resources.

- Achieving the functional and social cohesion of the Alexandria region in the other regions of the Republic on the one hand and in North Africa and South Europe, on the other hand, to stimulate and deepen regional development efforts through the consolidation and development of a group
The existing urban axes, the opening of new axes, the strengthening of existing regional road networks and the establishment of new roads,
And strengthening existing airports and ports in Alexandria, and Matrouh , in addition to the establishment of modern airports in Both Burj Al Arab and Al Alamain.

- Joining Matrouh governorate of the unified electricity grid and establishing regional control systems.

As For the pillars, they are 3 main ones:

- Raise economic efficiency
- Rationalization of investments
- Encourage population mobility

3.1.1.2.2 The parameters of sectoral development strategy and policy

The Urban Development Strategy for the Region can be summarized considering the general objectives through the economic sectors including agriculture and industrial sectors (complementary and craft industries) and the tourism sector, so that the development strategy depends on Configuring field of urbanization to produce by addressing three main components:
First component: Population and Urbanization

Second component: Strategic infrastructure and Services.
Third component: economic development strategy
There are 2 more main points in the Urban Development Strategy of the region which are Criteria for selecting projects for investment and Sectoral investment projects.
The study moves on to identify each governorate starting by the natural and administrative features, then the population feature, urbanization features, resources and economic savings, agricultural, land, water, mining, and tourist resources, industrial potential, infrastructure, development and reconstruction strategy, goals and pillars of the governorate development strategy, general dimension for the development strategy, the strategy fields, and sectoral investments projects of the governorate.

3.1.2 Environmental Perspective of the Urban Development Strategy at the Republic Level - Alexandria Region – 2010

This study is more concerned by the environmental aspect of the Alexandria region. Based on two axes the first is about general background of the region's governorates and the second is about data analysis and analysis of land authorities.

3.1.2.1 General background of region's governorates

This axis is concerned by the study of the general features of Alexandria region and its governorates. First the identifying the features of the region as a whole like natural features, topography, the weather, the administrative structure, the urban and population features and the infrastructure and the services of the region.

Then survey certain points on the governorate level such as the main features, social, and population features, then the environmental and natural features of the region like the natural reservations, water resources of the region, marine Phenomena, land resources, agricultural resources, livestock, fisheries, archaeological and tourist resources.

Furthermore, the natural characteristics of the region's governorates for example topography, geomorphology, geology, hydrological, pollution and natural risks.

3.1.2.2 Data & Land authorities Analysis;

This axis here is interested in the Objectives of Alexandria development plans and environmental analytical methodology, Urban analysis from the environmental perspective, assess current development trends from an environmental perspective where the current state of the development strategies of the region and it's governorates is reviewed, the overall picture and main directions for planning the region, asses the overall picture for the plans according to the different uses of the land authorities, then exploring the current land authorities with recommendations for the development of efficient land use and finally review Land use scenarios using the results of validity analysis and cartographic modelling.

3.1.3 Pervious plans concerning the region in the National Strategies:

Alexandria region is an important region with lots of development potential, so by looking at the national plans and surveying the previous visions.

3.1.3.1 National strategic plan for urban development and priority development areas:

First the North-west coast is mentioned to Focus on the implementation of pilot projects to link the generation of electricity from solar energy to seawater desalination in the North-West Coast region, for its one of the most important development zones that can accommodate a large part of the population growth of Egypt estimated at 34 million people in 40 years, It extends from the northern coast to a depth of 280km and a length of 500 km, and it accommodate more population further than the targeted year.

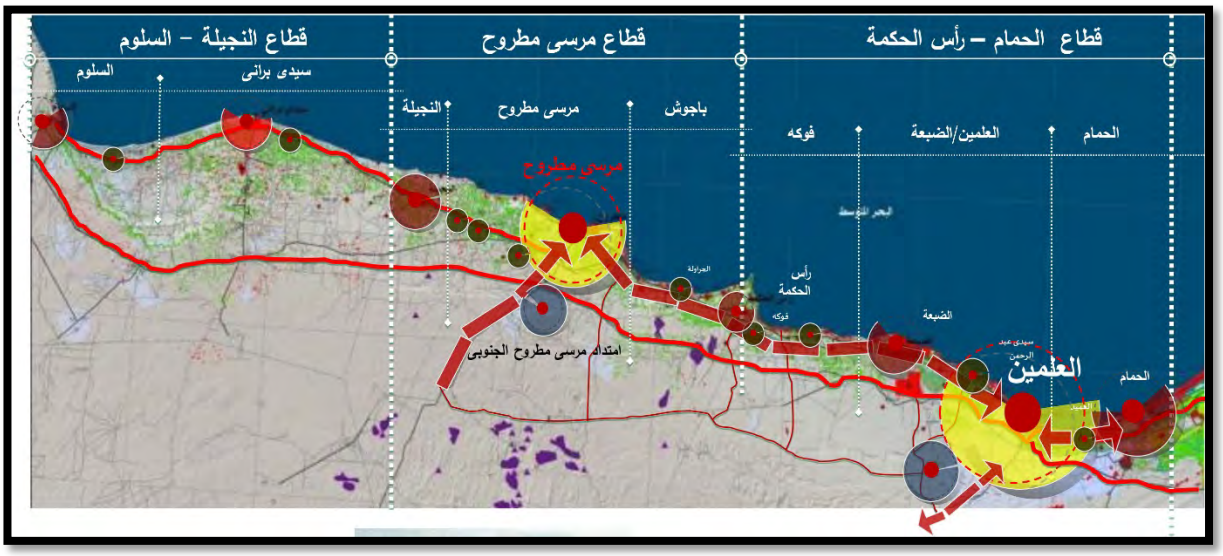


Figure 54: North-West Coast Development project as an international tourist
Source: (GOPP - Ministry of Housing Utilities and Urban Communities, 2014 b)

Second Development of the North-West Coast and the Sahara Desert as a destination for international tourism. By making several points to fulfil the plan, first create an eco-friendly population city in Al-alamein, an international centre for hospitalization and war injuries, an international scientific and university city & an industrial environmental sophisticated zone.

Al-Alamein Eco-city: Establishment of an environmentally compatible city that provides high standards of quality of life and applies best environmental practices, particularly when supplying infrastructure:

1. Use of new and renewable sources of energy
2. Use of desalination technology and reuse
3. Provide an appropriate amount of open and green areas
4. Solid waste recycling
5. Creating an advanced urban environment
6. Establish an environmentally friendly industrial zone

3.1.3.2 The National Urban Development Framework in the Arab Republic of Egypt:

This national vision was concerned by the national & regional development projects of Egypt in order to display the strategic National plan for urban development (2052). Alexandria region had a fair share of this vision by introducing several projects such as Development strategy for the North Coast of the Nile Delta, North-western Coast, & Cairo-Alexandria Road, as well as general & detailed strategic plan for Alexandria city and containment of informal areas – Slum – in Alexandria. For all these projects are concerned by the Alexandria region affecting its governorates. (GOPP - Ministry of Housing Utilities and Urban Communities, 2014a)

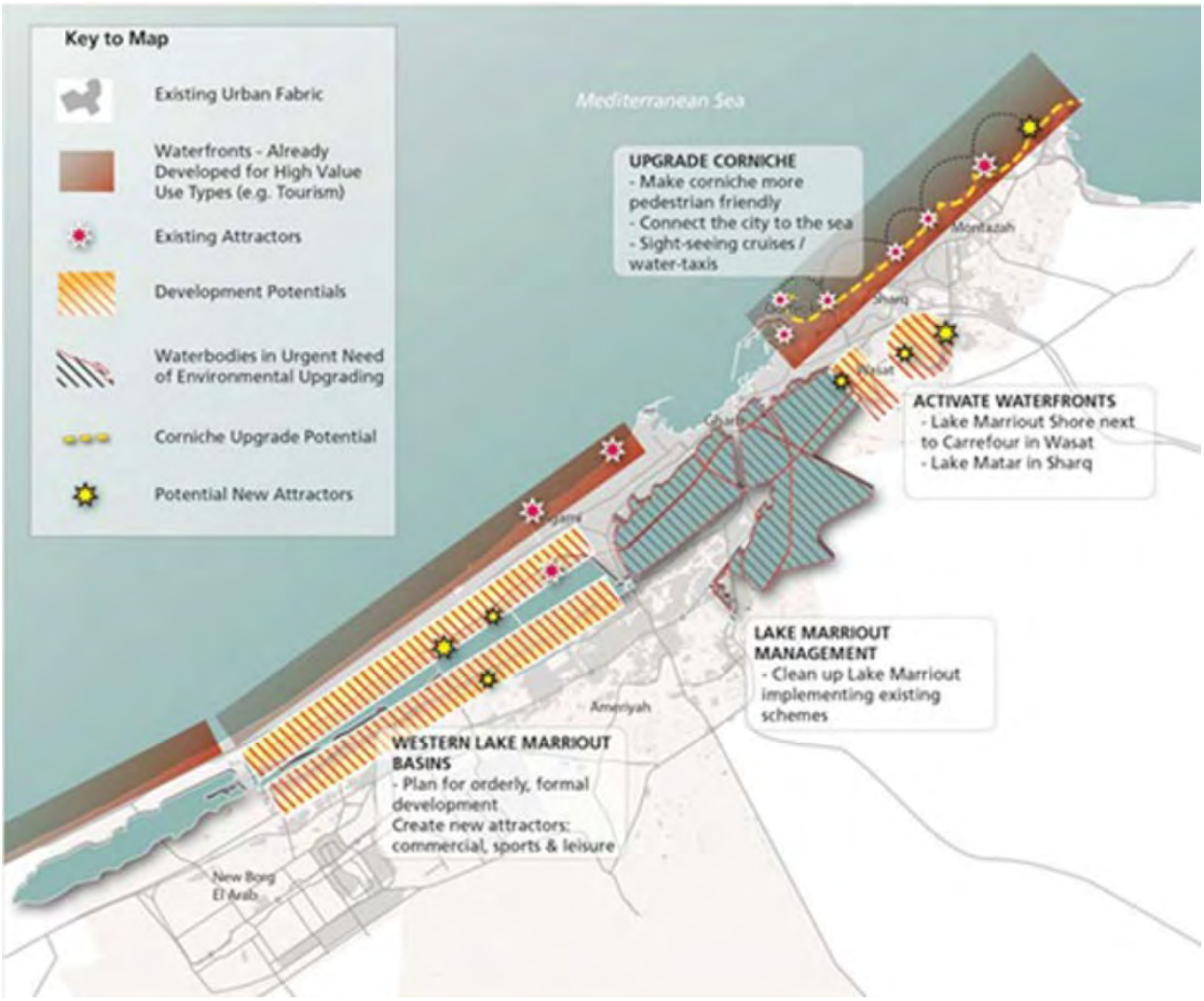


Figure 55:Vision of Alexandria city (A Mediterranean Metropolis)
Source: (GOPP - Ministry of Housing Utilities and Urban Communities, 2014 a)

3.1.4 Conclusion

Poor production of urban regional plans on Alexandria region, that makes it important for the GOPP to consider having more regional plans not just local or national levels plans.

3.2 Chapter Two: Alexandria region current state:

3.2.1 Natural & Geographical distribution of Alexandria region governorates':

Alexandria region is considered one of the largest regions in the Arab Republic of Egypt, where it ranks second among the regions of the republic. It has an area of 224075.891 km^2 equivalent to 22.2% of the total area of the Arab Republic of Egypt which has an area of 1,009,400 km^2 (Table No 1).(GOPP - Ministry of Housing Utilities and Urban Communities, 2008a)

Table 2: Geographical distribution of the regions of the Arab Republic of Egypt

Regions	Area (km^2)	Area (feddan)	%
Greater Cairo Region (Cairo – Giza – Qalioubia governorates)	17342.0	4100000	1.73
Alexandria Region (Alexandria – ElBeheira – Matrouh governorates)	224075.891	53330060	22.2
Suez Canal Region (ElSharkia – Port Said – Ismailia – Suez – North Sinai – South Sinai governorates)	80588.73	81279900	7.65
Delta Region (Gharbia - Kafr El Sheikh – Monufia - Dakahlia – Damietta governorates)	12357.4	2940000	1.22
North Upper Egypt Region (Faiyum - Beni Suef – Minya governorates)	69825.0	16620000	6.90
Assuit Region (Assuit – New Valley governorates)	402431.0	95780000	39.90
South Upper Egypt Region (Qena – Luxor – Aswan – Sohag – Red Sea governorates)	206055.0	49000000	20.40
Total Area of the regions of the Republic	10126750.021	303049960	100

Source : Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2008 b)

3.2.1.1 Natural Features of the region:

Alexandria region occupies the western part of the north of the Republic, extending 560 km along the coast of the Mediterranean. As well as it extends south to the northern border of the new valley governorate (Assuit region), east to the great Cairo and Delta regional borders, west to the Egyptian Libyan border and 400 kilometers south of the coast of the Mediterranean Sea. The region is the western land entrance to Egypt for the Maghreb Union through the port of Salloum and the main northern sea entrance for the Mediterranean countries and Europe through the port of Alexandria, the first port in Egypt.

Alexandria region consists of three governorates: Alexandria, Beheira and Matrouh. Matrouh governorate is the largest in terms of area 212112.0 km^2, which occupies 94.66% of the total area of the region representing 21% of the area of the Arab Republic of Egypt, followed by El-Beheira governorate with an area of 9130.121 km^2, or 4.08% of the total region, which represents 0.98% of the total area of the Republic, while Alexandria is the smallest governorate with an area of 2833.77 km^2, or 1.26% of the total region, which represents 0.27% Of the total area of the Republic. (Table No 2)

Table 3: Geographical distribution of Alexandria Governorates

Governorates	Area (Km^2)	Area (Faddan)	% of the Region	% of the Republic
Matrouh	212112.0	50482660	94.66	21
El-Behiera	9130.121	2172970	4.08	0.98
Alexandria	2833.77	674440	1.26	0.27
Total	224075.891	53330060	100	22.2

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2008 a)

The region extends between Latitude 27º 40` & 31º 35` to the north & Longitude 30º 50` & 25º to the east, the geographical location of the region is very distinct. Its three governorates have a wide frontier on the Mediterranean coast. The north-eastern section extends along the Rasheed branch, extending southward to the depth of Western Sahara. therefore, the region has several different natural environments, coastal environment in the northern strip, the agricultural environment in the delta region, and the desert environment which represents most of the region in Western Sahara.

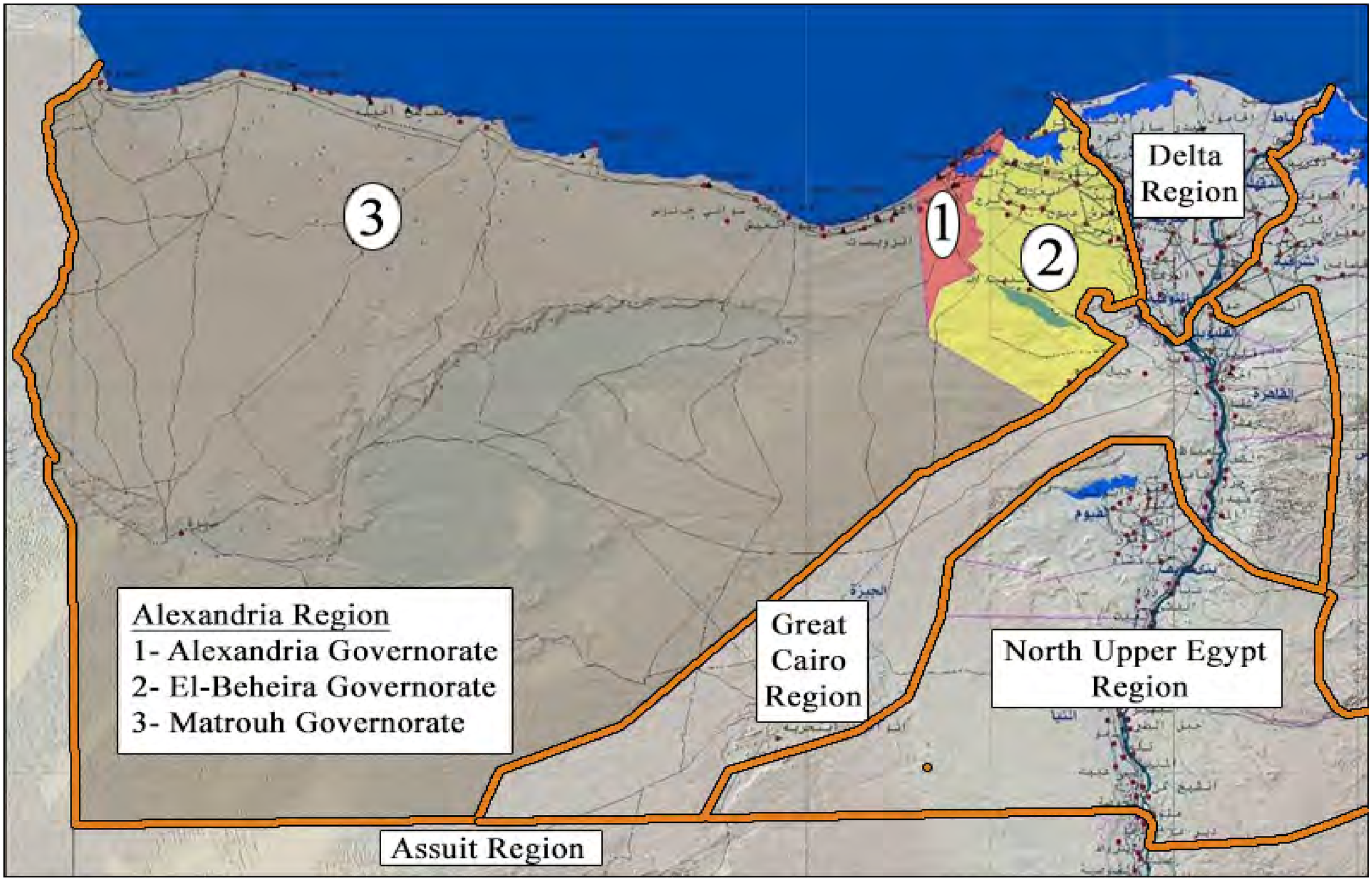


Figure 56:Alexandria Region & its surrounding
Source: Made by the researcher

3.2.1.2 Topography Features of the region:

The topography of the region differs from one governorate to another. Of the three governorates, El- Beheira governorate is characterized by low surface height, as the vast majority of the area is located within the eastern part of the Nile Delta. Alexandria governorate is characterized by the rock chains that extend along the coast parallel to it including Longitudinal valleys in the same direction, the southern part of the province is characterized by sand formations over a wavy surface, and as for the North-Western coast extending from El-Hamam to El-Salloum the area is divided into two main geographical sectors: the eastern sector extending up to Ras al-Hikma, which is characterized by a semi-continuous sequence of white limestone sand dunes and the western sector, which runs from Ras al-Hikma west to the Egyptian-Libyan border and is characterized by its relatively narrow coastal plain located at the foot of the huge rocky plateau Which is known as the Libyan plateau and is cut by a number of valleys.

3.2.1.3 Climate Features of the region:

The climate of the region is different, especially on the northern coast of Egypt (the Mediterranean coast). The conditions of the governorates of Alexandria, El-Beheira and the northern part of Matrouh governorate on the Mediterranean Sea in the north were influenced by the Mediterranean climate.

According to the climate stations distributed in the region temperatures range from 30 ° C in August to 9 ° C in January. The north-Western winds prevail throughout the year. As for the southwestern part of the region climate it can be considered as a desert climate because of the high temperature and the intensity of the sun in the summer where the average temperature is 30 degrees Celsius and the wind comes from the north-west to deviate slightly to take a north-northeast direction whenever we moved south further away from the shore where the rate of rainfall and wind speed are lower.

3.2.2 The administrative structure for Alexandria Region:

The administrative structure of the Alexandria region consists of three governorates: Alexandria, El-Beheira, & Matrouh, with a total of 25 city, 143 main villages, 143 local units, 555 villages and 49 villages not within the local units, in addition to 6135 Kafr and Azaba (Table No 3)

Table 4: Administrative Structure of Alexandria Region

Governorates	No of Markaz	No of City	No of Local Units	No of Villages & Satellites	Villages not within local unit	Kafr – Naga – Azaba
Matrouh	8	8	56	98	39	241
El-Behiera	15	15*	84	497	6	5737
Alexandria	1	2	3	9	4	157
Total	24	25	143	555	49	6135
* does not include Markaz & City of Badr						

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

3.2.3 The Urban & Demographic features for Alexandria Region:

3.2.3.1 Urban Features:

The urban features represent an important focus in the studies of the region as they link between both geographical and administrative features (spatial dimension) and demographics, the urban features include the distribution of land uses in the governorates of Alexandria region, urban densities, and size groups in the cities of the region.

Analysis of land use in the governorates of Alexandria region shows that Agricultural uses (inside and outside the urban contour) are the most spread Use of the inhabited land, occupying an area of 8480 km^2 with 66.8% Of the total area inhabited by the region, followed by fallow land 2.6% And urban uses are 29.1% of the total inhabited area Of the region.
It is also noted that Matrouh governorate is the first in the region when it comes to urban uses, as the area of urban uses is 2906 km^2 representing about 78.7% of the total area of inhabited area, The governorate of Alexandria ranked second, with urban uses representing 16.9% of the total inhabited area as for El-Beheira Governorate is the last place where the urban uses occupy an area 163.04 km^2 with 4.4% of the total area inhabited area.

The governorate of El-Beheira also maintains the first place in terms of agricultural uses, Accounting for more than 6612 km^2 (about 1.7 million Feddan) represents approximately 78% of the total agricultural use in the region, and the remaining area is divided between Matrouh (12%) and Alexandria (10.1%). In addition, the inhabited area in the two governorates of Alexandria and El-Beheira exceeds the barrier of 72% of the total area of each governorate, while the inhabited area in Matrouh governorate represents only 2.4% Of the total area of the governorate, because Matrouh governorate predominates with a desert character, while the governorates of El-Beheira and Alexandria extend Within the territory of Delta, represented in the East Delta region. (GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

Note: There was a different in the region Area between the 2 sources of same organization [(GOPP) General Organization for physical Planning]:

The total area of Alexandria region is 224075.9 km^2 according to Development strategy of the republic governorates (Alexandria Region – 2008) & Total Area = 178689 km^2 according to Environmental description for the urban development on the republic level (Alexandria Region – 2010) which differ in all aspect of the regional current state.

Table 5: Land Use of the region governorates

Gover-norates	Populated areas	Agriculture Use (km^2)	%	Urban Use (km^2)	%	Fallow Land (km^2)	%	Cemeteries & Services	%
Alexandria	1675.50	852.5	10.1	622.3	16.9	135.30	41.8	65.40	33.5
El-Behiera	7093.84	6612	78	163.04	4.4	188.54	58.2	129.54	66.5
Matrouh	3921.40	1015.2	12	2906	78.7	0	0	0	0
Total	12690.74	8480	66.8% of the region	3691	29.1% of the region	323.84	2.6% of the region	194.94	1.5% of the region

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

3.2.3.2 Demographic Features:

The demographics features of the Region include the study of growth (evolution), distribution and composition as well as migration from and to the governorates of the Region. Including the comparison between the different population Census of the 7 regions of the republic in 1996, 2005 & the expected population in 2022.

Table 6:Population Census of the regions of Egypt

Regions	Population census 1996		Population census 2005		Population census 2022	
	million	%	million	%	million	%
Greater Cairo Region (Cairo – Giza – Qalioubia governorates)	14.8	25.09	17.7	25.22	23.6	25.57
Alexandria Region (Alexandria – ElBeheira – Matrouh governorates)	7.53	12.77	8.83	12.58	11.8	12.79
Suez Canal Region (ElSharkia – Port Said – Ismailia – Suez – North Sinai – South Sinai governorates)	6.19	10.5	7.42	10.57	9.85	10.67
Delta Region (Gharbia - Kafr El Sheikh – Monufia - Dakahlia – Damietta governorates)	13.5	22.89	15.8	22.55	20.60	22.33
North Upper Egypt Region (Faiyum - Beni Suef – Minya governorates)	7.16	12.13	8.52	12.14	11.02	11.94
Assuit Region (Assuit – New Valley governorates)	2.8	4.74	3.5	4.98	4.3	4.66
South Upper Egypt Region (Qena – Luxor – Aswan – Sohag – Red Sea governorates)	7	11.88	8.4	11.97	11.1	12.04
Total Area of the regions of the Republic	58.98	100	70.17	100	92.27	100

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2008 b)

Note: According to the 2017 census which is the most recent census in Egypt the republic population has reached 104 million exceeding the expected population of the year 2022 but the detailed census of 2017 has not yet been published to correct that future estimate, so the 2022 estimate is used until publishing the new 2017 census.

3.2.3.2.1 The classification of Population in Alexandria Region:

The total population of the Alexandria region was 9.2 million according to the census of 2006, making it the third largest demography among the Republic regions after Cairo & Delta regions, and about 12.5% of the total population of the Republic. As for the relative distribution of the population in the constituent governorates of the region, it was found that About 51.6% of the population is concentrated in the El-Beheira governorate (4,747,283 according to the 2006 census) the first among the governorates of the region, followed by Alexandria governorate by 44.9% (4,123,869 inhabitants), while Matrouh occupies the last rank - 3.5% of the total population (323,381 inhabitants). At the regional level, the proportion of the urban population is about 57% Of the total population of the region, while the rural population constitutes the remaining 43%.

At the governorate level, the governorate of Alexandria is predominantly urban in character Which accounts for 99% of its population, followed by Matrouh Which urban population represents about 70% of the size of its population, and finally El-Beheira governorate is predominantly rural, with urban residents accounting for only 19% Of the total population of the governorate, while the rural population reaches 81% The following table shows the population classification of the governorates of the Region by urban area And the countryside, as the classification itself shows.

Table 7: Classification of population in Alexandria region according to census of 2006

Governorates	Total Population of the governorate	%	Urban Population	%	Rural Population	%
Alexandria	4,123,869	44.9	4,084,672	99	39,197	1
El-Behiera	4,747,283	51.6	907,800	19	3,839,483	81
Matrouh	323,381	3.5	227,788	70	95,693	30
Total	9,193,533	100	5,220,160	57% of the region	3,974,373	43% of the region

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

3.2.3.2.2 The general density in Alexandria Region:

The density of the population varies in the governorates of the region, due to the different population numbers on the one hand, and the difference in area in the governorates of the region.

The first either in terms of general density or inhabited area (1794 - 2461 people, respectively) is Alexandria governorate. It is also natural that Matrouh governorate is ranked last among the governorates of the region in terms of general density or inhabited area for its

general density does not exceed more than 2 people per km^2. It is clear that the general density of the region is very close With the average general density at the level of the Republic, but this density varies within the governorates of the region.

This means that Matrouh is one of the most promising governorates in development and population attraction if employment-attracting projects are available from various densely populated governorates, and the province El-Beheira comes at an average rank (483 people/km^2 -669 people / km^2).

Table 8: Population Density of Alexandria Region

Governorates	Total Population of the governorate	Total Area km^2	General Density people/km^2	Inhabited Area km^2	Density of inhabited Area People/km^2
Alexandria	4,123,869	2300	1794	1675.5	2461
El-Behiera	4,747,283	9826	483	7093.84	669
Matrouh	323,381	166563	2	3921.4	82
Total	9,193,533	178689	51	12690.74	725

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

3.2.3.2.3 The population volumetric categories in Alexandria Region:

As for the geographical distribution of the cities and population sizes of the region, most of them are concentrated in El-Beheira governorate. Of the 24 cities in the region, 16 are in El-Beheira governorate, but cities with more than 100,000 people/city are only two: Damanhour and Kafr El-Dawar. The rest of the cities of the governorate are less than 100 thousand people, as for the city of West Nubaria it comes last of the cities of the governorate and the region with a population of a little more than five thousand people.

The governorate of Matrouh includes six cities in the forefront the capital city Matrouh, the only city with a population of more than 100 thousand in the governorate, while Alexandria - an urban governorate where the population is urban 99% of the size of its population as already mentioned - includes one of the largest cities in Egypt, the city of Alexandria, and whose population, according to the 2006 census, is more than 4 million people. The governorate also includes the new city of Burj Al Arab.

Table 9:Regional cities sorted by their sizes according to 2006 census

Volumetric size	Number of cities in the region	Cities in the region	population
Million cities	1	**Alexandria**	4,123,869
Million -250 thousand people	-	-	-
250-100 thousand people	3	Damanhur –Marsa Matrouh – Kafr el Dawar	244.043 – 120.539 – 114.030
100-50 thousand people	2	Edko - Rashid	97.168 – 68.947
50-25 thousand people	11	Hosh Eisa – Abu el Matameer – El Delngat – El Hamam – Borj El Arab – Etay El Baroud – Abu Homos – Kom Hamada – El Rahmanya – Shobrakheet – El Mahmoudia	46.994 – 44.415 – 41.768 – 41.741 – 41.661 – 40.744 – 39.350 – 36.334 – 29.393 – 28.505 – 28.277
25-10 thousand people	6	Wadi El Natroun – Sidi Barany – Badr – El Dabaa – Markaz Siwa – El Saloum	21.540 – 21.060 – 20.971 – 16.559 – 16.056 – 11.197
Less than 10 thousand	1	West of Nubaria	5.321
Total	25		9,193,533

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

In general, the demographic distribution of the region has an important significance: the clear concentration of the population in the eastern part of it, which is the Delta area, in addition to the adjacent coastline. In contrast, the population along the coastline of the Mediterranean is decreasing in the form of an intermittent urban strip Is predominantly tourist-oriented, while the population is scarce in the desert range extending in the center and south of the region, particularly in Matrouh governorate.

It is necessary to look for reasons for the scarcity or disappearance of the population in these areas, in addition to looking for the elements of population attraction, and therefore encourage the establishment of new communities provided they are environmentally friendly.

3.2.4 The Economic features for Alexandria Region:

The employee distribution in Economic sectors according to the 1996 census are 29.4% of the active population (15 years or more) work in the agricultural sector, 17.4% in industry sector, 10.5% in commerce, 8.33% in building & construction, 6.57% in transportation & communicator sector.

3.2.4.1 Agriculture

The Economy is based on three main sectors in Alexandria, Egypt. These activities are agriculture, industry & Tourism. First the Agricultural sector the total cultivated land area in the region is 1963,808 thousand faddan representing 24.2% of the whole republic, with the highest percentage in El-Beheira governorate 61.4% of the total percent of the region & the lowest in Alexandria governorate 9.4%, while Matrouh governorate is 29.21% of the whole region.

As for the reclaimed land it represents 2,949 thousand faddan, 42% of the whole republic, focused particularly in Matrouh which has 2,596 thousand faddan. Also, the data refers to 2.6% fallow land in which a great percent of it could be planted.

Figure 57: Reclamation projects on the Nubaria canal and its branches

Source:(GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

3.2.4.1.1 Livestock

The estimate of goats & sheep number in the region is about 1.3 million head, the camels 22.3 thousand head, while the cows 557.9 thousand head concentrated mainly in El-Beheira, the livestock is estimated for 13.2% of the total in the republic.

3.2.4.1.2 Fisheries:

The region is considered an extension to the Mediterranean Fisheries to the west, also Mariot lake & Edko lake are considered two of the most important resources of fish in the region. There is also lots of Fish farms & the fishery production is about 55 tons which represents about 11.53% of the total production of the republic.(GOPP - Ministry of Housing Utilities and Urban Communities, 2008a)

3.2.4.2 Monumental & Touristic resources:

The region includes many archaeological and tourist resources represented in the Pharaonic, Greek, Roman, Coptic and Islamic monuments spread throughout the region, as well as the modern sites of environmental and craft activities, as well as coastal recreation areas; tourism activity in the region includes the following tourist patterns:

- **Archaeological tourism:** The three governorates of the region are abundant in many sites Archeological artifacts of the Pharaonic, Greco-Roman, Coptic, Islamic and modern era.
- **Cultural tourism and conference tourism**: the governorates of the region include many diversified museums, plus Alexandria has the New Bibliotheca Alexandrina Annex Conference Center.
- **Beach tourism:** The beaches extend along the northern coast for the governorates of the region; this tourism is a seasonal in the summer months that depends mostly on domestic tourism.
- **Recreational and recreational tourism:** include parks, gardens and cinemas, theater and shopping malls ... concentrated mainly in the capital of the region and is increasingly popular in the summer months.
- **Eco-tourism and safari tourism:** Located in Western Sahara in Matrouh Governorate where the desert nature like sand dunes, different rocky valleys and oases, small Badawi communities... There are also protected reserves declared in ElAmeed and Siwa.
- **Medical tourism:** It is located in Siwa in Matruh governorate and in Wadi Al-Natroun in El-Beheira governorate where there are therapeutics tourism sites which are based on environmental resources such as hot sand and Water eyes, while the natural advantages of the King Mariot area were wasted in the governorate of Alexandria due to industrial pollution, so therapeutic tourism is limited to therapeutic institutions and currently planning to establish a tourist therapeutic center in the west of the governorate.
- **Marine tourism and yacht tourism:** located in Alexandria Governorate a Marine with Passenger Terminal at West Port to receive ships and yachts, there is also Porto Marina Yacht Marina in Matrouh governorate.
- **Sports tourism:** Alexandria Governorate has Mubarak Stadium Which can accommodate 80,000 spectators with international requirements.

The data indicate that tourism services are highly concentrated in Alexandria Governorate, where 65 hotels are located at 85% of the total hotels at the regional level. The data also indicate the weakness of tourist services in the governorate of El-Beheira, where there are no 5 or 4 stars hotels. 3 stars are generally in the regional level followed by 2-star hotels and less.(GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

Table 10: Tourism Services in Alexandria Region

	Alexandria	El-Beheira	Matrouh
5 Star Hotel	5	-	-
4 Star Hotel	10	-	1
3 Star Hotel	13	-	11
2 Star Hotel & less	27	1	6
Under classification	10	1	10
Total Number of Rooms	5314	27	2586
Occupancy rate %	75	-	25
Total Number of Beds	10628	54	5172
Total Number of Tourist nights	1003	-	269

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2008a)

3.2.4.3 Industry

Alexandria region has multiple urban resources; industrial, agricultural, livestock and fishery resources. As for industrial resources, the region has a large industrial base (Existing and new industrial conglomerates) and industries vary in the region and depends mainly on the outputs of the agricultural sector & its intermediate Supplies, Heavy Industries, Petrochemicals and building materials.

3.2.4.3.1 EXISTING INDUSTRIAL CONGLOMERATE

Many industries in the region are endemic, such as Paper and food industries, Wood and basic metal industries are distributed in the region along the three governorates in the Alexandria governorate in the areas of: Abi Qir, Smouha, El-Suiof, El-Dekheila, El-Max, the Free zone in Al-Amriyah, Mirgham area and Umm Zoghbo. In El-Beheira overnorate, textile industries are mainly settled in Kafr El Dawar, Damanhour, Wadi El Natroun, and Rasheed, as for Matrouh governorate there are petrochemical industries, raw materials, building materials, heavy industries, Sumid pipes in markaz Marsa Matruh, and Markaz El Hamam.

3.2.4.3.2 New industrial conglomerates

THERE ARE MANY INDUSTRIAL ZONES - WHETHER IMPLEMENTED OR ALLOCATED, NAMELY:

- An industrial zone in the new city of Burj Al Arab, with an area of about 70.5 Faddansperiority in this zone for labor-intensive industries while not allowing any environment polluting industries.

- An industrial zone in the new city of Nubaria, with estimated area about 25 Faddans.
- An industrial area in Wadi Al-Natroun, with estimated area about 260 Faddans
- A new industrial area in Kilo 26 southeast of Marsa Matrouh with a surface area of 14107 thousand m^2 (3355 faddans).
- An industrial area south of El Alamein with a surface of 14100 thousand square meters (the priority of this zone for Heavy industries).
- Industrial area west of Qtara depression with a surface of 99 thousand m^2 (Heavy industries).

In addition to a large proposal project called "Coast of Technology" in the sector (Njaila / Salloum) similar to the project "Valley of Technology" in other sites in the Republic, where Salloum is considered the gate of Western Egypt to Libya and the Arab Maghreb and can be set as a large market to discharge products in addition to Ease of access to raw materials required from various European countries for their proximity.

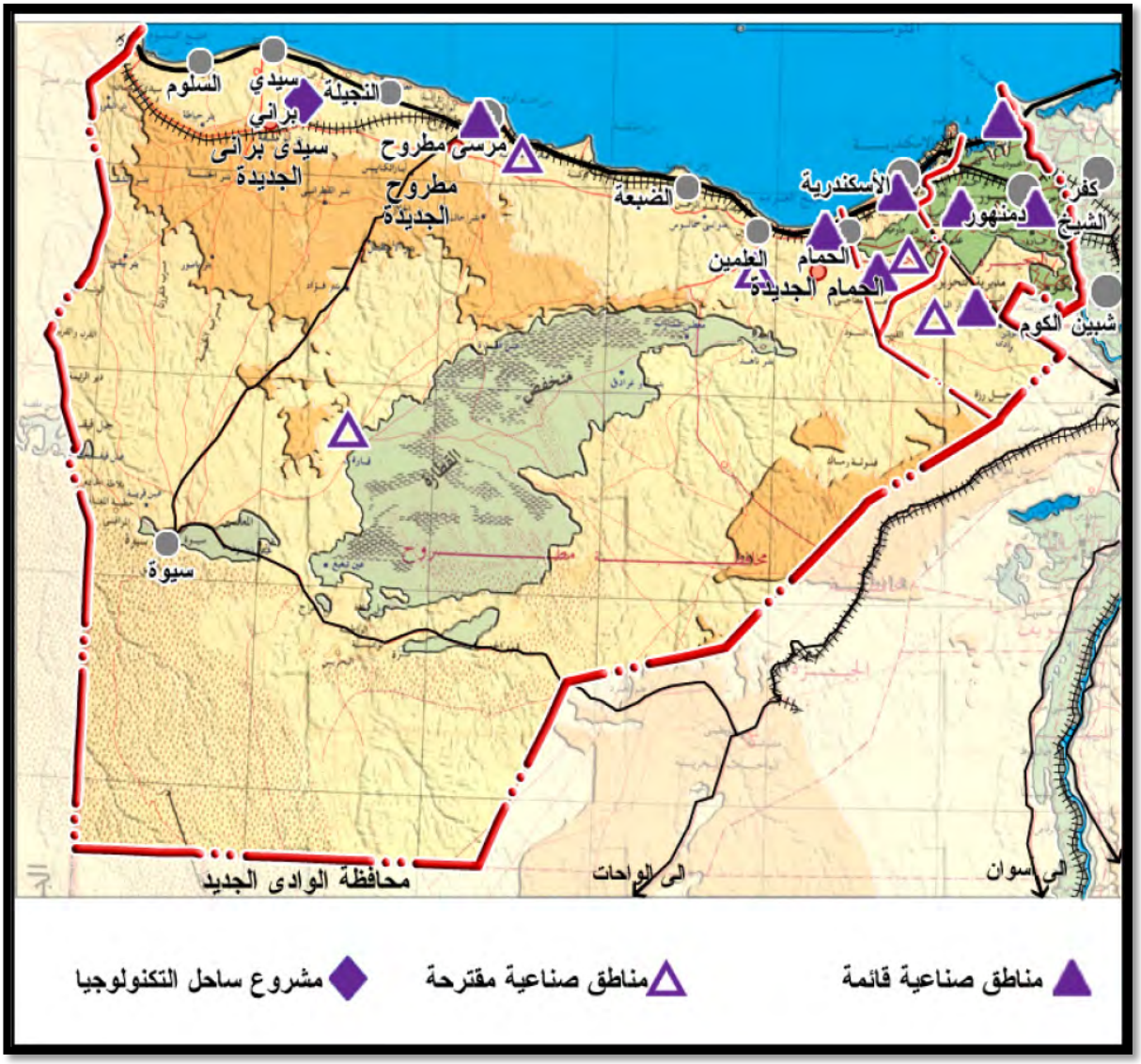


Figure 58:New & Existing Industrial Zones in Alexandria Region

Source:(GOPP - Ministry of Housing Utilities and Urban Communities, 2008a)

3.2.5 Infrastructure:

Infrastructure is the key drivers of development in any Society, so it is assumed to have a special priority and dominate the largest share of investments that are pumped by state institutions,
Both in the form of important projects such as housing, roads, bridges and tunnels, Sewage, water, electricity, gas and telecommunications projects
In order to achieve the welfare of citizens, through the delivery of basic facilities, and the provision of basic services. It is therefore necessary to study the pillars of this structure and those services provided to the region population, and then identify the status quo for them in order to support the adoption of the resolution on development of all kinds, especially urban development.

Egypt has a unique geographical location .. one of the international trade routes between East and West, and one of the oldest nations of the world familiar with navigation, shipbuilding And using it, also the oldest in the construction and paving of roads, railways for Egypt has one of the oldest railways in the world, since the opening of the first railway line of Egypt in 1853 to connect Cairo and Alexandria, as well as One of the first countries to pay attention to air transport which founded the first airline company In May 1932. Today Egypt has good transportation network and the transport sector has become one of the most vital sectors where it is closely linked to the comprehensive development of the State in its broad sense, through which
the requirements of economic, urban and social development flow from the production areas to
consumption areas, to become one of the most important pillars of the infrastructure in Egypt. in addition to the development of the Alexandria port: in order to promote it and its infrastructure
which has made it occupy a global position as one of the most important ports of the Mediterranean Sea.

In any case, Alexandria Region - especially in the Alexandria governorate And El-Beheira – is characteriszed by a good network of integrated roads and railways linking it to the capital and most of the major cities in the neighboring governorates, as well as enabling the LAN to reach all villages and dependencies in the governorates of the region.
The national and regional road network includes the international coastal road which runs from Salloum to El Arish and from Rafah border on the eastern border crossing to El-Salloum land port on the western border, where it runs parallel to the northern coastal area of the Republic, and is considered an international land hub linking the Arab Mashreq region in El-Maghreb as well as the land axis linking villages which is currently being constructed or proposed along the North West Coast of the Republic to the rest of the National Road Network. also the National Network stretches some axes to connect the region with neighboring regions such as the Cairo / Alexandria Agriculturalroad, and Cairo / Alexandria Desert Road.

3.2.5.1 Roads Network in Alexandria region

Regional roads link the capitals and governorates of the region to each other such as Alexandria / Matrouh Road, Wadi El Natroun / El Alamein Road, Alexandria / Rasheed, El

Guish Road / Delta Road on the Bridge of Mahmudiyah, and Marsa Matrouh / Siwa Road. The national railway network includes the Cairo / Tanta / Alexandria / Marsa Matrouh / Salloum, and the railway extends in a distinctive network in the governorates of Alexandria, El-Beheira and with a lonitudinal stripe pattern in Matrouh Governorate.

The ports of Alexandria governorate the western port and Dekheila are located on the Mediterranean Sea - including berths for general merchandise and container berths - to serve the governorate of Alexandria, Matrouh and west of El-Beheira mainly & helps to provide transport service directly in the region, as well as serves the rest of the regions and other governorates as the port of Western Alexandria port is the first and oldest in the Republic, Also the port contributes to linking Egypt to Europe and various countries of the world in the trade and tourism aspects. The total area of the west port 8,40 km^2 of which 6.80 km^2 water area and 1.60 km^2 land area while the total area of Dekheila port is 6.24 km^2 of which 2.74 Km^2 water area and 3.50 km^2 land area.
The Territory also includes three oil ports in Sidi Kerir, Al-Alamein and El-Maadia, five major fishing ports, and two tourist ports for Yachts (Shown in Table 10)
As for airports, the region has two airports for international and domestic aviation to serve the tourism development in the region: Nozha Airport and Borg El Arab Airport in Alexandria governorate in addition to Al-Alamein Airport in Matruh governorate for Sharter trips, the region also has a military airport located in the southern part of the Marsa Matrouh city which is used as a civil airport where it receives two flights per week during the summer only.

Table 11:Ports & their most important characteristics in Alexandria region

Port Type	Port	Governorate	Total Area (Km^2)	Maximum Immersion	Maximum weight that could be received
Commercial	West Port	Alexandria	8.40	12.8	150000
	El- Dekheila	Alexandria	6.24	18.9	168000
Petroleum	El-Hamra	Matrouh	7.24	00	45000
	Sidi Kirir (Somid)	Matrouh	00	00	00
	El-Maadia (Petroget)	Matrouh	00	4.5	00
Fishing	Abu kir	Alexandria	00	11.0	00
	Bogaz El-Maadia	El-Beheira	00	00	00
	El-Anfoshi	Alexandria	00	00	25
	Matrouh	Matrouh	00	00	00
	Bogaz Rashid	El-Beheira	00	00	00
Tourism	Porto Marina Al-Alamein	Matrouh	00	00	00
	San Stefano (Under construction)	Alexandria	00	00	00

Source: Ministry of Transport - Maritime Transport Sector, 2008

3.2.5.2 Communication

Egypt has succeeded in achieving a tangible technological renaissance through a boom in communications and information to create employment opportunities for young people which has helped increase the number of workers in the field of communications technology And information to tens of thousands, to enable the provision and dissemination of services communication to all segments of the society through a strategy that contributed to the transition
quality in network communication.
In the context of these developments, Egypt witnessed the spread of mobile phone service at an unprecedented rate globally, by increasing the number of users of mobile network to reach more than 20 million subscribers.
in addition to INTELIGENT NETWORK and the smart network entry of ADSL services that is a new and important contribution to provide more telephone services for subscribers, as well as the spread of Internet service. The concept of e-government has also emerged an advanced level that improves performance efficiency and quality in government institutions, economic entities, companies and banks by providing the highest level of direct service to citizens and investors without engaging in administrative complications or bureaucracy through the provision of government services remotely to reach all dealers in their places of existence as quickly and efficiently as required. E-Government project involves the implementation of a portal for the Egyptian government on the Internet so that citizens can terminate their transactions through it.

As for the region's telecommunications network, data indicate that the best telephone service available in the governorate of Matruh governorate at a rate of 42.7 lines per 100 inhabitants the best postal service in Matrouh governorate where there is a post office in the countryside per 7.4 thousand people and urban post office for every 11.1 thousand people.

3.2.5.3 Electric Power

The importance of electric power is due to being a vital factor in achieving comprehensive development. It is a key factor in the process of production and service, which has a positive impact on improving the standard of living of individuals. Therefore, the state has been keen to develop the electricity sector since the establishment of the Egyptian General Electricity Corporation In 1962 and until the establishment of the Holding Company for Electricity under Law No. 164 of 2000.

In general, the following table (No.11) gives a true picture of the geographical distribution of electric power in the governorates of the region, and it is clear that:

- The governorate of El-Beheira occupies the first place among the governorates of the region in terms of per capita lighting electricity, estimated at 1740 kW per year, followed by Matrouh governorate (1469 kWh) while Alexandria governorate comes in third place, About 859 kW per year, also rural areas of El-Beheira has a per capita increase in lighting electricity compared to rural Matrouh.
- Due to the large industrial base in Alexandria governorate, it is natural to acquire more than 93% of the total electric power allocated to industry in the region, and the rest is distributed between El-Beheira governorate (6.3%) and Matrouh (less than 1%).

- Therefore, it is natural that the governorate of Alexandria occupies the first place with the highest amount of electricity from the region. The governorate consumes about 8731 million kW in the year, accounting for about 67.7% of the total electricity in the region. Followed by El-Beheira governorate which consumes about 3873 million kW in the year, accounting for about 29.8% of the total amount of electricity used in the region, while Matrouh governorate occupies the tail of the list.
- Lighting consumes about 57% of the total electricity consumed in the region, but this percentage varies from one governorate to another. It does not constitute more than 40% in Alexandria, and not less than 90% in the remaining two governorates

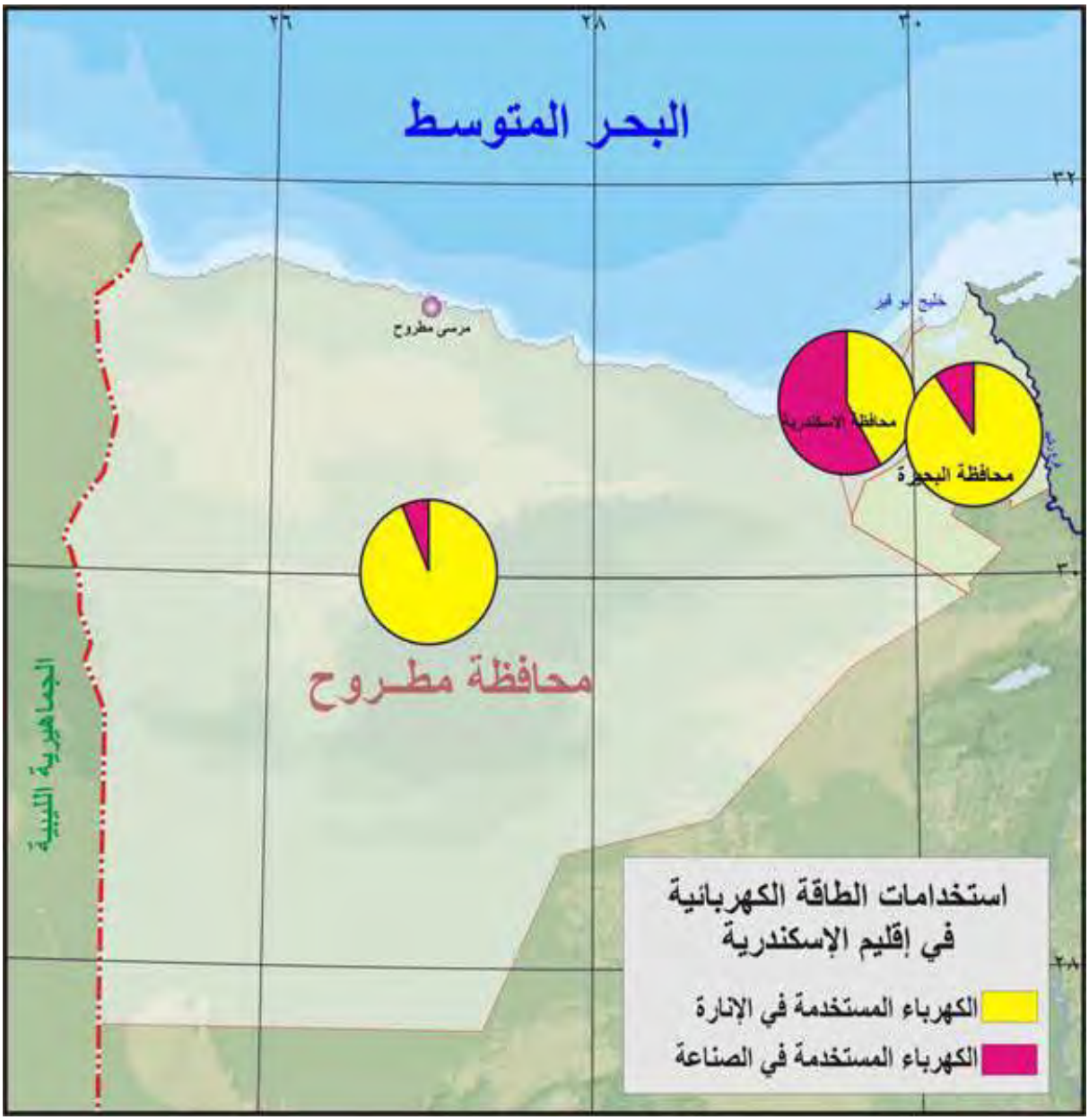


Figure 59:Electrical Power Usage in Alexandria Region

Source: (GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

3.2.5.4 Water Network:

3.2.5.4.1 Drinking Water & Sewage:

According to the 2003 data on drinking water, the highest per capita drinking water consumption was found in the urban area of Alexandria Governorate (407 liters / day). The highest per capita share of the sewage capacity was found in Alexandria Governorate with 372 liters per person / day. The lowest per capita rate in El-Beheira rural area is up to 6 liters / day.

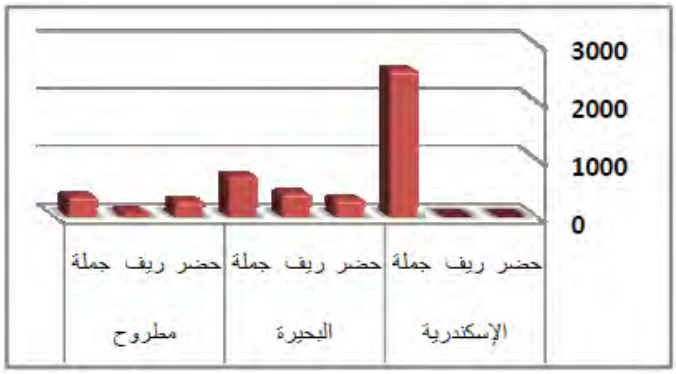


Figure 60: Distribution of potable water in the region

Source:(GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

The figure shows the distribution of potable water produced in the governorates of the region. The figure confirms the increase in the share of Alexandria from this water, followed by the lake, while Matrouh governorate is the last place.
The percentage of beneficiary households in water is also high in Alexandria governorate, followed by El-Beheira governorate, while the percentage is lower in Matrouh governorate, especially in rural areas. As for the average per capita drinking water, the figures confirm the occupation of the province of Matrouh first place, followed by Alexandria, and occupies the lake ranked last.

3.2.5.4.2 Solid waste

Solid waste includes all materials left behind by different human activities, Alexandria governorate produce approximately 2,400-3000 tons of solid waste / day, and is disposed by a private sector company that operate the general cleaning and solid waste system management;
while the governorate role is limited to follow-up and supervision. Alexandria has 2 sanitary landfills
As for El-Beheira governorate the accumulation of solid waste is one of the most important pollution problems in the governorate due to deficiencies in the service of solid waste collection in the cities of the governorate due to the lack of large equipment of transport and collection. As well as the lack of sanitary landfills, the solid waste in the governorate is led to disposal in open dumps resulting in many of negative environmental impacts. The volume of solid waste is about 911 tons / day
The solid waste weight in Matrouh governorate is estimated at about 197 tons / day. The collection of this waste in the cities is done by local units, and the level of service varies from one city to another is fairly acceptable in some cities; while the rest of the cities, there is a clear shortage in this regard due to the lack of necessary labor, Mechanical drive and waste bins.

Table 12: Geographical distribution for Electric power in region's governorates

Statement	Alexandria			El-Beheira			Matrouh		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Number of subscribers in the electricity network	-	-	1858	-	-	1190	-	-	99
Total Used Electricity (Million KW/Year)	-	-	8731	1838	2035	3873	354	32	386
Total Electricity Used in lighting (Million KW/Year)	-	-	3528	1579	1940	3519	333	31	364
Total Electricity Used in industry (Million KW/Year)	-	-	5203	259	95	354	21	1	22
Electricity per capita KW/Year	-	-	858.4	1740.3	506.6	742.9	1469.2	324	1129.2

Table 13: Geographical distribution for drinking water per capita in the region's governorates

Statement	Alexandria			El-Beheira			Matrouh		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Amount of Drinking water produced 1000m^3/day	-	-	2536	303.5	402.8	706.3	274.3	77.2	351.5
Amount of Drinking water consumed 1000m^3/day	-	-	1546	211.2	339.5	550.7	269.5	77.2	346.7
Percentage of Families that have access to water %	-	-	99.6%	98.6%	88.9%	90.9%	86.7%	36.3%	123
Amount of Drinking water consumed per capita litre / day	-	-	376.2	232.8	88.6	116.3	1189	806.8	1075.6
Amount of Drinking water produced per capita litre / day	-	-	617	334.5	105.2	149.1	1210.2	806.8	1090.5

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

3.2.6 Services:

To complement the basic infrastructure and the importance of studying the pillars of services provided to the people of the region, to identify the current status quo, which helps in supporting decision-making on development of all kinds, especially urban development.

3.2.6.1 Health Services

The characteristics of health services in the Region can be identified by examining the number of hospitalsaccording to their type in the Region,
It is clear that the governorate of Alexandria comes first in terms of the number of hospitals. It alone includes 148 hospitals, although most of them are private hospitals with 110 hospitals representing about 74% of the total hospitals in the governorate, the bed has a population of 323.5 people / bed. Followed by El-Beheira governorate (93 hospital) with a population of 888.6 people / bed & laste Matrouh governrate which does not have access to healthcare except with only 14 hospitals, with population of 307.9 people / bed.
Although the number of hospitals is closely linked to the population, it is necessary to spread the health service throughout the inhabitant areas, even if they were in the Bedwin areas communities, no matter how little the number of their people.
As for the number of health service providers in the region (doctors, nurses and pharmacists), the region employs about 24.7 thousand between a doctor, a nurse and a pharmacist distributed over the three governorates. El-Beheira occupies the first place (48.4%) followed by Alexandria (46.4%) then Matrouh at the end of the list with a small percent only 5.2% of the total Employees in the health sector.

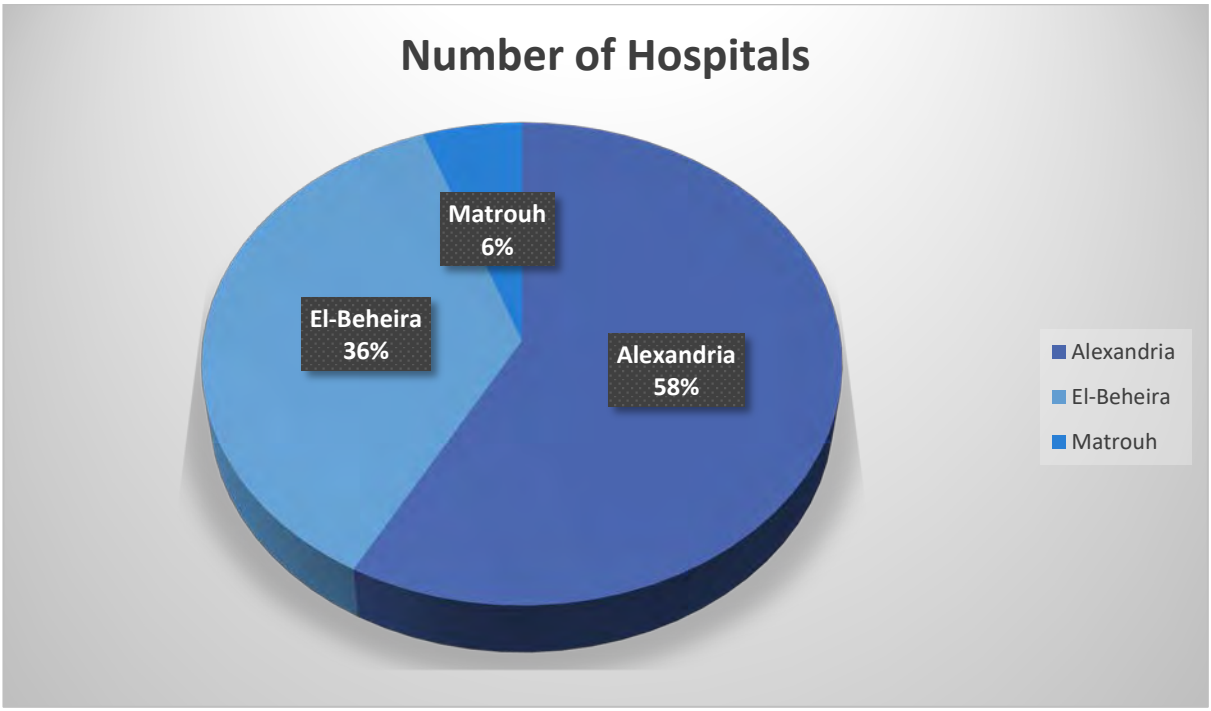


Diagram 10: Indicates the percentage of hospitals in the three governorates of Alexandria region

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

3.2.6.2 Education Services:

The region accounts for slightly over 12% of the total educational services (schools, classrooms and pupils) at the level of the Republic. If we know that the population of the region represents about 12% of the total population of Egypt. However, we note a clear difference in the internal distribution at the governorate level. Although Matrouh governorate absorbs only 3.5% of the total population of the region, it accounts for about 9.5% of the total number of schools. Also El-Beheira governorate accounts for about 57.6% of the region's schools although it Does not comprise more than 51.6% of the total population of the region. This can be explained by the fact that the state is working to spread schools in the remote areas of the two governorates in order to spread the educational service throughout the Egyptian inhabitanted.

In the governorate of Alexandria, the density of the class reaches 44.33 pupils / class while the teacher's share of pupils reaches 18.25 students / teachers, As for El-Beheira & in its Urbans Area the density of the class reaches 39.45 pupils / class while the teacher's share of pupils reaches 22.18 students / teachers, while in the rural areas the density of the class reaches 26.09 pupils / class while the teacher's share of pupils reaches 17.25 students / teachers, finally Matrouh, the density of the class reaches 30.81 pupils / class while the teacher's share of pupils reaches 21.81 students / teachers,
Alexandria Governorate is characterized by the presence of the Alexandria University with its various faculties as an important campus for higher education, & El-Beheira governorate has a branch of the University as well.

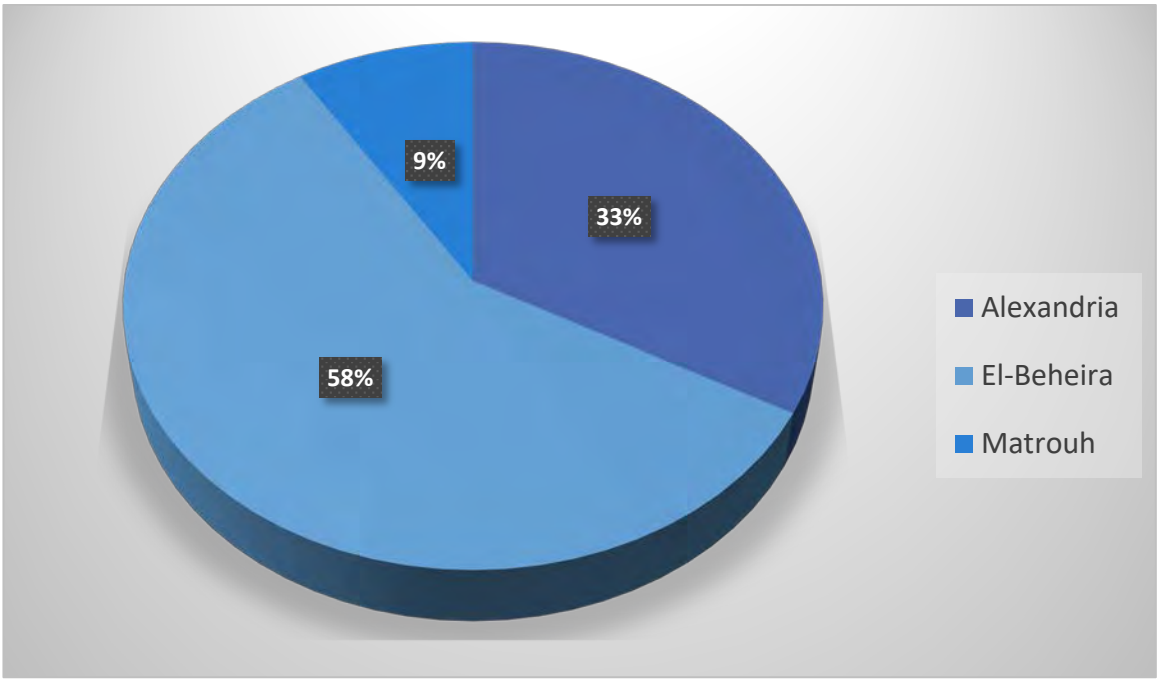


Diagram 11: Indicates the percentage of schools in the governorates of Alexandria region

Source: Made by researcher based on (GOPP - Ministry of Housing Utilities and Urban Communities, 2010)

3.2.6.3 Cultural & Entertainment Services:

There are many museums in Alexandria governorate, the most important of which are the Greek-Roman Museum, National Museum of Alexandria, Royal Jewelery Museum, Hussein Sobhi Fine Arts Museum, Mahmoud Saeed Museum, Kavafis Museum, Museum of Marine Sciences. In addition to the modern Bibliotheca Alexandrina attached to it the International Conference Hall and the Heavenly dome. The governorate is also famous by its Opera House (Syed Darwish Theatre).

As for El-Beheira governorate there is the National Museum of Rasheed is located in Rasheed and Damanhour National Museum. Last is Matrouh governorate which contains El Alamein Military Museum in El Alamein city, The Rommel Museum at Marsa Matruh, two monuments
of the famous World War II.

3.2.6.4 Sportive Services:

There are 3 stadiums in Alexandria governorate Borj El-Arab (86,000 Spectators), Border Guard Stadium (22,000 Spectators), & Alexandria Stadium (20,000 Spectators) in Addition to Several Clubs, while in El-Beheira & Matrouh there isn’t any sportive services for its residences.

3.3 Chapter Three: Future Vision of Alexandria Region 2050:

The third chapter is an attempt to develop the features of the future vision of the region of Alexandria, which represents the development strategy of the region through 4 main axes where the trends of urban growth is the first axis of that study while the second axis deals with economic development policies in the region supported by the study of the third axis of infrastructure, To provide all services in an appropriate manner to the region of Alexandria, which is one of the most important regions of the Arab Republic of Egypt.
The proposed strategic plan aims at making the Alexandria region's a motto is "sustainability of urban development".

3.3.1 Directing Urban growth trends at the regional level:

This point is interested in studying the current urban distribution and assess the rate of population growth in the three provinces, taking into account the expected population increase, especially the provinces of Alexandria & El-Beheira in addition to studying the establishment of new towns and residential areas which attract the expected population growth in the future, such as the new city of El Alamein, the development of new Nubaria city and study the establishment of a new residential community in Matrouh province that help maintain the demographic balance with Alexandria and El Beheira governorate and the formation of new job opportunities.
Controlling directed urban growth work on rarefaction the population densities and moving the residential areas towards the desert without encroaching on agricultural land

As a result of occupying the third place in terms of population after Cairo& Delta region, the Alexandria region which amounted to 9193533 people in the 2006 census, which represented 12.5% of the population of Egypt and based on the census of 2017 Alexandria became in fourth place in terms of population after Cairo, Delta & North Upper Egypt, is 11760987 people, or 12.3% Of the population of the Arab Republic of Egypt.

Table 14: Development of the population in the Alexandria region and it's governorates

Governorate	%	Census 2006	%	Census 2017	%	Census 2050
Alexandria	44.9	4123869	43.9	5163750	42.3	10418736
El-Beheira	51.6	4747283	52.48	6171613	50.56	12452270
Matrouh	3.5	323381	3.62	425624	7.14	1755303
Total	100	9193533	100	11760987	100	24626309

Source: Made by researcher based on Statistics of the Public Authority for Public Mobilization and Statistics

From the above we find that the governorates of Alexandria still retains its ability to attract the population of the region, especially the governorates of Alexandria and El-Beheira, based on population studies

The indicators show that the population of the region will reach 24626309 in 2050, an increase of 12865322, which is 109.39% of the current population of the region.
From this perspective, the strategy of the future vision of Alexandria region depends on the need to provide urban growth sites capable of absorbing the expected population increase referred to above.

By studying of the strategic plan for the development of Alexandria Governorate, which has a population of 5163750 inhabitants (according to the 2017 census), we find that the new urbanization trends are moving towards three main axes, which can accommodate 2500000 people:
a. South of Al-Montazah neighborhood.
b. New Amreya area.
c. Construction of the new city of Burj Al Arab.
The governorate of El-Beheira, which currently has a population of 6171613 people (census 2017), is based on urban development in existing cities such as Damanhour, Rasheed, Edkou, etc., depending on the strategic plans of the towns and villages of the governorate of Beheira. Which allows to accommodate about 1,500,000 people.

As for Matrouh governorate, which is the least of the three governorates with a population of 425624 (census 2017), the strategic plans of the main cities (Marsa Matrouh, Siwa, Sidi Barani, Salloum) are targeted for the urban expansion that can accommodate about 150,000 people.

From the previous analytical study, the total population of urban extension areas in the three governorates of the Region reaches 4150000 million, or about 32.25% of the expected population increase until the target year 2050. Taking into account the efforts of the Ministry of Housing, Utilities and Urban Development represented by the New Urban Communities Authority The establishment of a new million city which is the new city of Alamein and is planned to accommodate 5 million people, or about 38.86% of the expected population increase.

The total population of urban areas in the cities and villages of the three governorates in addition to the new city of Alamein, we find that the expected population will be 9150000 people, or 71.11% of the expected population increase until the target year 2050. And Accordingly, the researcher finds that the locations of future urban communities should be pursued to accommodate the rest the expected population increase which is about 3175322 people, or 28.89% of the expected population increase. The researcher suggests choosing the locations of the new urban settlements in the following proposed places as shown in map
a. New city of Natroun Valley
b. New Nubaria City
c. New Hammam City
d. The new city of Dabaa

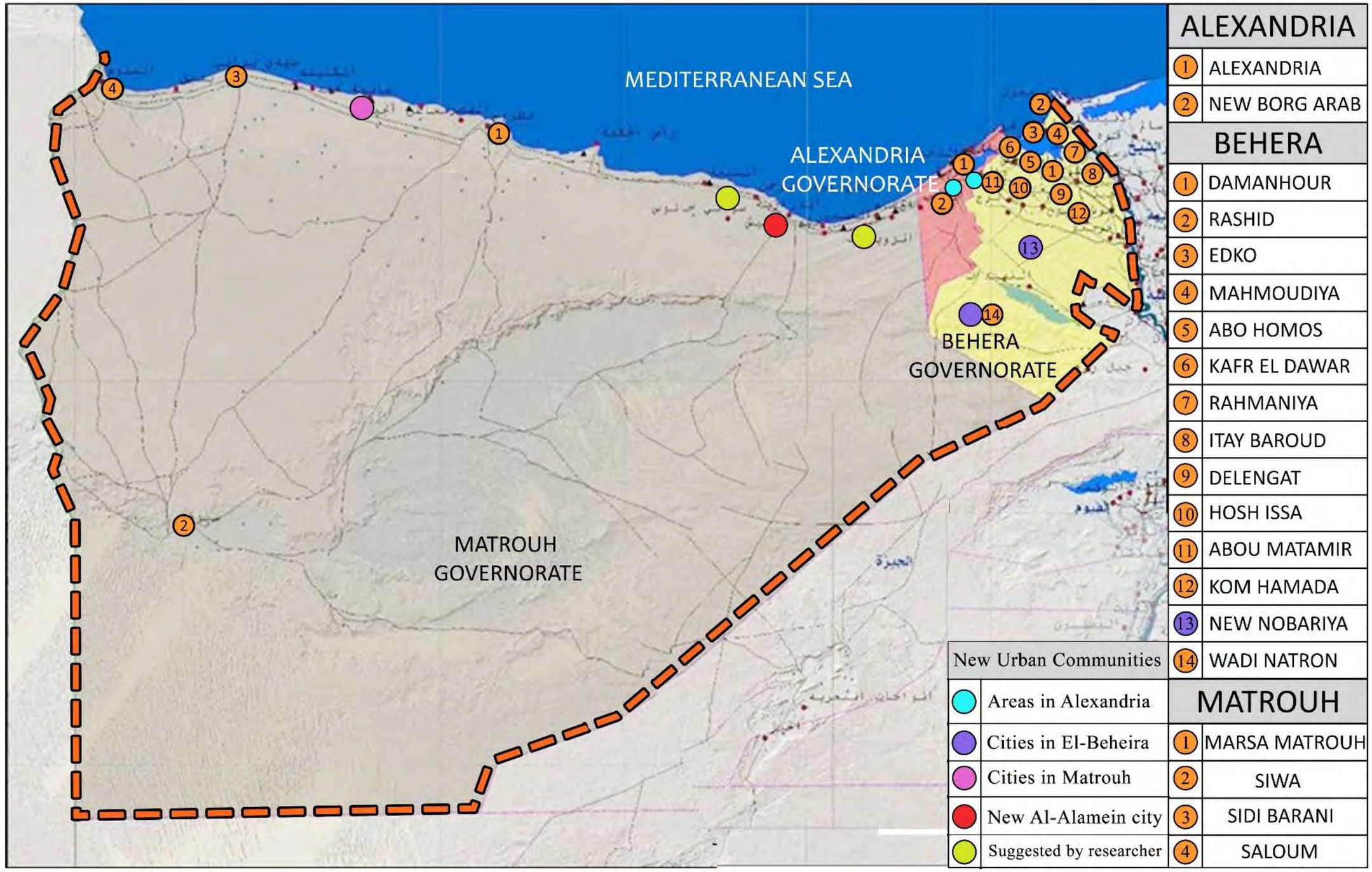


Figure 61: Existing & New Urban Communities in Alexandria Region
Source: Made By researcher

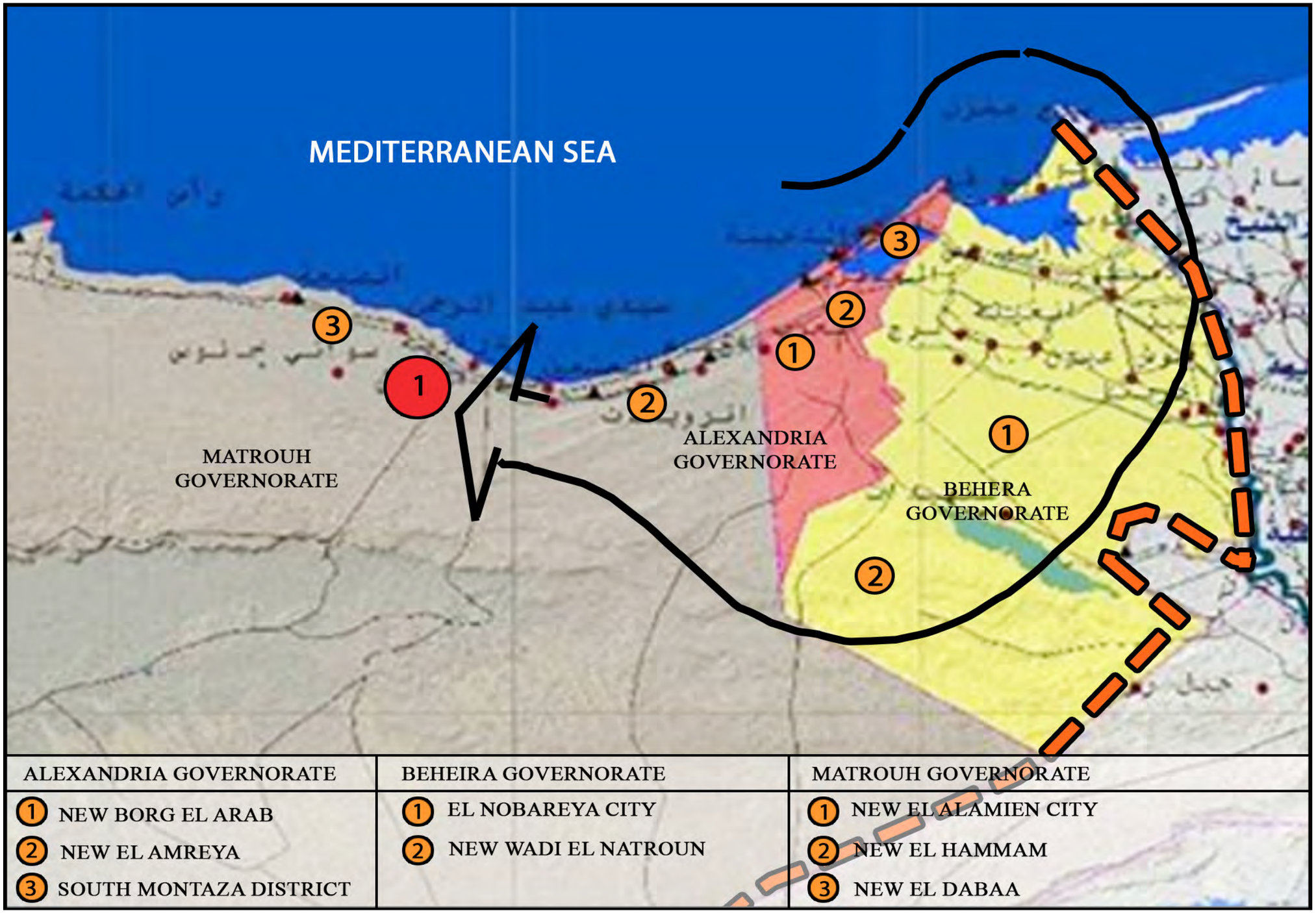


Figure 62: Future Vision for Urban Balance of Alexandria Region 2050
Source: Made by Researcher

Table 15: Stating the extension sites and new communities in Alexandria Region

Extension Sites & Future Urban communities	Population	%
Urban Extension Areas in Alexandria governorate in the existing cities	2 500 000	19.43
Urban Extension Areas in El-Beheira governorate in the existing cities	1 500 000	11.66
Urban Extension Areas in Matrouh governorate in the existing cities	150 000	1.16
Al-Alamein new city (New Urban Communities Authority	5 000 000	38.86
Urban communities Suggested by the researcher	3715322	28.89
Total Number of population increased till 2050	12865322	100

Source: Made by researcher

The future vision for urban growth in the region is based on three main axes:
a. New Intermediate Urban communities between Alexandria City and New Al-Alamein City (New Hammam City -
b. New urban communities balanced with the cities of the El-Beheira governorate (the new city of Wadi Al-Natroun - the new city of Nubaria)
c. As well as intermediate urban communities between the cities of Matruh and the new Al-Dabaa city.

From the previous analysis, we find that developing Alexandria region, according to the efforts of the state and the future vision of the researcher of the region, a balance in the geographical distribution of the population of the three governorates is obtained where Matrouh witnesses a major change and an important breakthrough towards attracting the future population increase by the construction of the new city of Al-amein and urban communities proposed by the researcher, Where the population of Matrouh by 2050 exceeds 7 million people, which creates a balance between the three governorates in terms of population and employment opportunities.

3.3.2 Ways to Stimulate Economic Development:

3.3.2.1 Agriculture sector through:

- the agriculture sector benefit from the geographic location of the Alexandria region, with its diversified production to increase exports of some food commodities with comparative advantage, the most important of which are vegetables and fruits (El-Beheira and Alexandria) and sheep (Matrouh), which contributes to the exports increase more than the current rate.
- To benefit from the availability of infrastructure in the region to achieve industrial – agricultural integration, which contributes to increase the added value of the agricultural sector.
- Contribute to reducing the food gap in some of the agricultural crops available in the region, such as grain crops, oil and sugary crops (sugar beet).
- Reclamation and cultivation of about 300 thousand feddans, in which 150 thousand feddans in

the scope of El Nasr canal and the extension of El-Hammam, 80 thousand feddans in the range of El Bostan Canal, about 20 thousand feddans in El- Bosaily and the sand basin, 30 thousand feddans on groundwater in Wadi Natrun and about 20 thousand feddans in Siwa Oasis leading To increase both the productivity per feddan and the agricultural area.

- Establishment of automatic agricultural service stations in the new reclamation areas of the region in Wadi Al-Natroun, Al Bustan, Al-Hammam and Al-Hammam extension, as well as the construction of a station in Marsa Matrouh that includes heavy equipment to construct dams under the program of water and land resources conservation.
- Support the existing station in Matrouh governorate to resist locusts, by equipping them with machines, equipment and technical gear to predict locust raids.
- The increase in the region's Fishery production from about 55 thousand tons at present to 200 thousand tons of different fisheries.
- Expansion of pasture development in the Northwest Coast by establishing protected pasture cooperatives and sheep fattening cooperatives and establishing governmental centers for rangeland and sheep under the Matrouh Resource Development Project.
- Work on the conservation of land and water resources and reduce its deterioration by the establishment of dams and ground reservoirs.

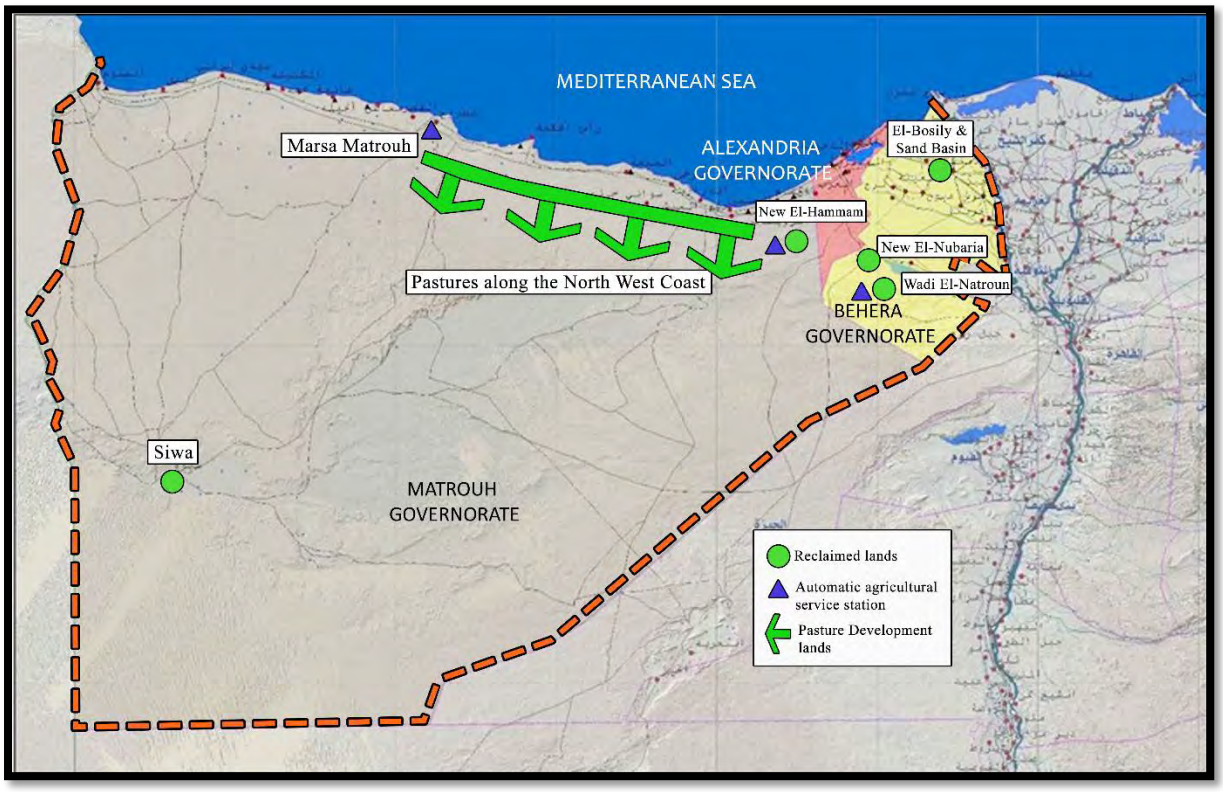


Figure 63: Agricultural Development in Alexandria Region
Source: Made by Researcher

3.3.2.2 Industrial Sector through:

- Exploitation of the urban extension west of the Delta, the North West Coast and Matrouh area to establish new industrial zones and clusters which includes the pillars of integrated urban communities.
- Intensifying investments directed at industry - both extractive and transformational - as a major pillar of development and due to its high productivity compared to other economic sectors.
- To stimulate the export orientation of the industrial activity, through the development of maritime and air ports services, communication systems and facilitate export procedures, in addition to the benefits of export activity.
- Give priority to the development of existing industrial projects and address the bottlenecks and imbalances suffered by them, especially mega-projects that have large production capacities and employ large numbers of labor, such as spinning and weaving factories in Kafr Al-Dawar and Alexandria also the iron and steel factories in Dekheila.
- Encouraging the industrial orientation of activities that integrate with other economic sectors, such as the food industries (transformational industries) which are related to the agriculture sector, as well as the industries based on quarries, salts, petroleum oil, natural gas, light and environmental industries that meet the needs of the tourism sector.
(Damanhour - Kafr El Dawar - Wadi El Natroun - Edkou - Rashid ..etc.)

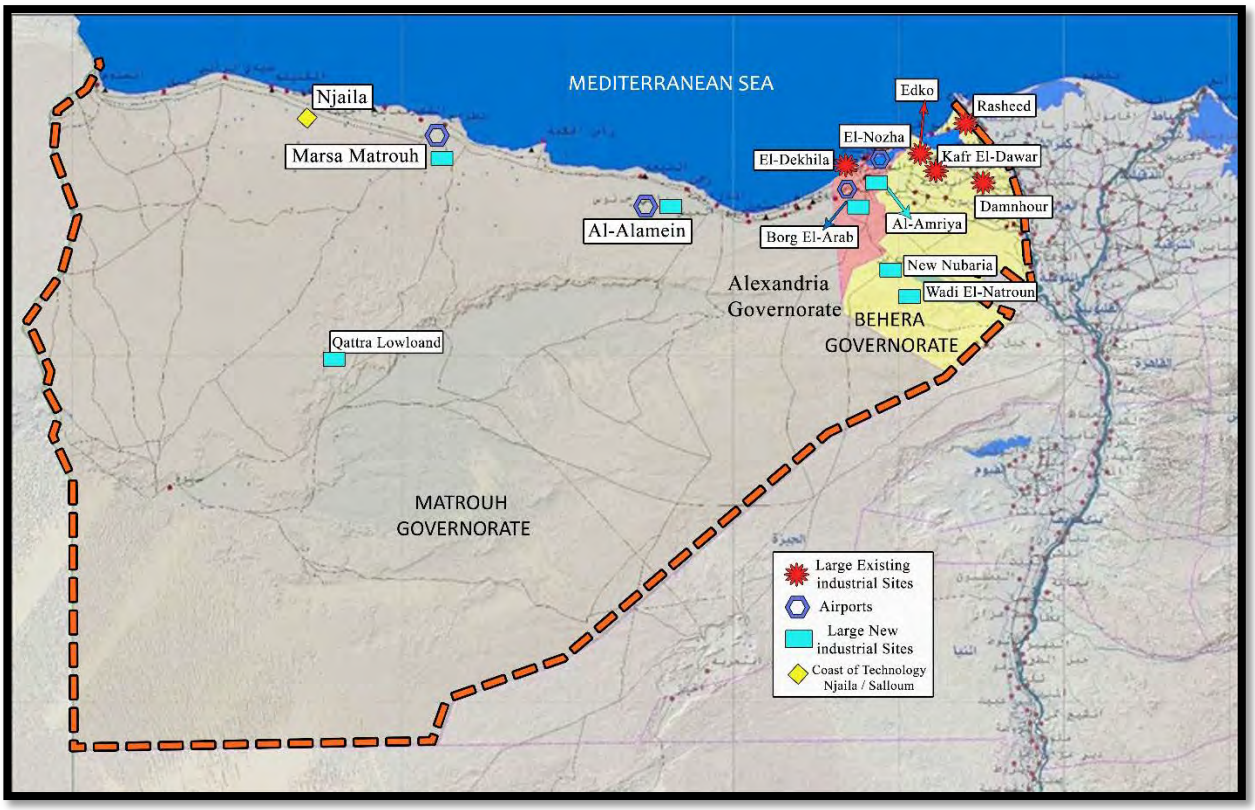


Figure 64: Industrial Development in Alexandria Region
Source: Made by researcher

- Expanding small-scale & labor-intensive small-scale industries by increasing youth projects, social fund and business associations that adopt craft projects and small industries, providing soft bank loans, and processing special areas for workshops and small industrial businesses (such as the small industrial workshops in Al-Ameriya, Abu al-Matamir and Kafr Al-Dawar), in addition to achieving the spatial spread of industrial areas to receive small and medium-sized enterprises
- Intensifying the Search and prospecting exploration of oil and natural gas along the coasts of Delta, Alexandria, Matrouh and Western Sahara, while developing petroleum agreements to encourage companies with advanced international expertise to search for oil in new and promising areas, especially remote areas that require large investments.
- Expansion the establishment of industrial zones perviously mention in (4.2.4.3.2 New industrial , the development and completion of existing ones, such as the industrial area of Al-Ameriya on an area of 1000 feddans, the industrial area west of Wadi Al-Natroun city on an area of 357 feddans, the industrial area west of the city of Rashid on an area of 300 feddans, and other industrial areas in Damanhour, kafr El-Dawar & Edko With a total area of 300 feddans (allocated to small and medium-sized industries), heavy industries area north of Qattara lowlands and South Al-Alamein, which include cement, oil refining, chemical and petrochemical industries.

3.3.2.3 Tourism Sector through:

- Preservation of the tourist and historical character of the cities of the region, such as: Alexandria, Rashid, Edko, Al-Alamein, Marsa Matruh and Siwa.
- Achieving the comprehensive development of coastal tourism development areas in the North West Coast and linking them to the economic back (agriculture, grazing and industry), as well as other tourist patterns suitable for this area, such as adventure tourism, desert tourism and oases.
- Exploiting the various tourism components in providing new tourist patterns and diversifying the tourism product in the region to include beach tourism, archaeological, adventure, desert, cultural, historical, therapeutic, festivals and conferences.
- Linking the tourist region in Matrouh with the one in New Valley and the delta region, through mobility axes, road networks and communications to achieve the integration of the tourist product, as well as attending to air transport and airports to receive the international traffic and charter aircraft, that includes the development of Nozha and Marsa Matrouh airports, in addition to Burg El-Arab & Al-Alamein ports too.
- Development of environmental tourism in the desert areas of the Western Desert and Siwa Oasis to identify the cultural, social and architectural heritage of these areas.
- Environmental upgrading of tourist and historic areas, including the removal of mines left behind by the Second World War in Al-Alamein area and its expansion in the Western Desert to secure visitors and stimulate the desert tourism, adventures and historic tourism in these locations. In addition to addressing the problem of erosion and the beaches destruction of Rasheed, Edko, Alexandria, & Matouh (Lido & Poseet for example)
- Development of museums and castles of historical and archaeological value, such as the Rumeil Museum in Marsa Matrouh, the Rasheed Museum, El-Alamein Museum and Qaitbay Castle in Alexandria.
- To carry out the necessary renovations for the scattered monuments in the region, in particular the cities of Alexandria, Rachid, El Alamein and Siwa.

-Provide the necessary road, entertainment & Accommodation services, as well as assisting attractions in tourist development sites, such as Marsa Matruh / Siwa and Siwa / Oasis.
- Encouraging one-day visits and expeditions by providing good road networks, fast and convenient transportation and parking spaces, which are relatively far from the tourist centers, as well as providing places on the beaches for visitors, separate from the places frequented by resident tourists, And restaurants.
- Intensify the marketing and promotion of tourist attractions in the region's governorates to place them on the international tourist map of Egypt.

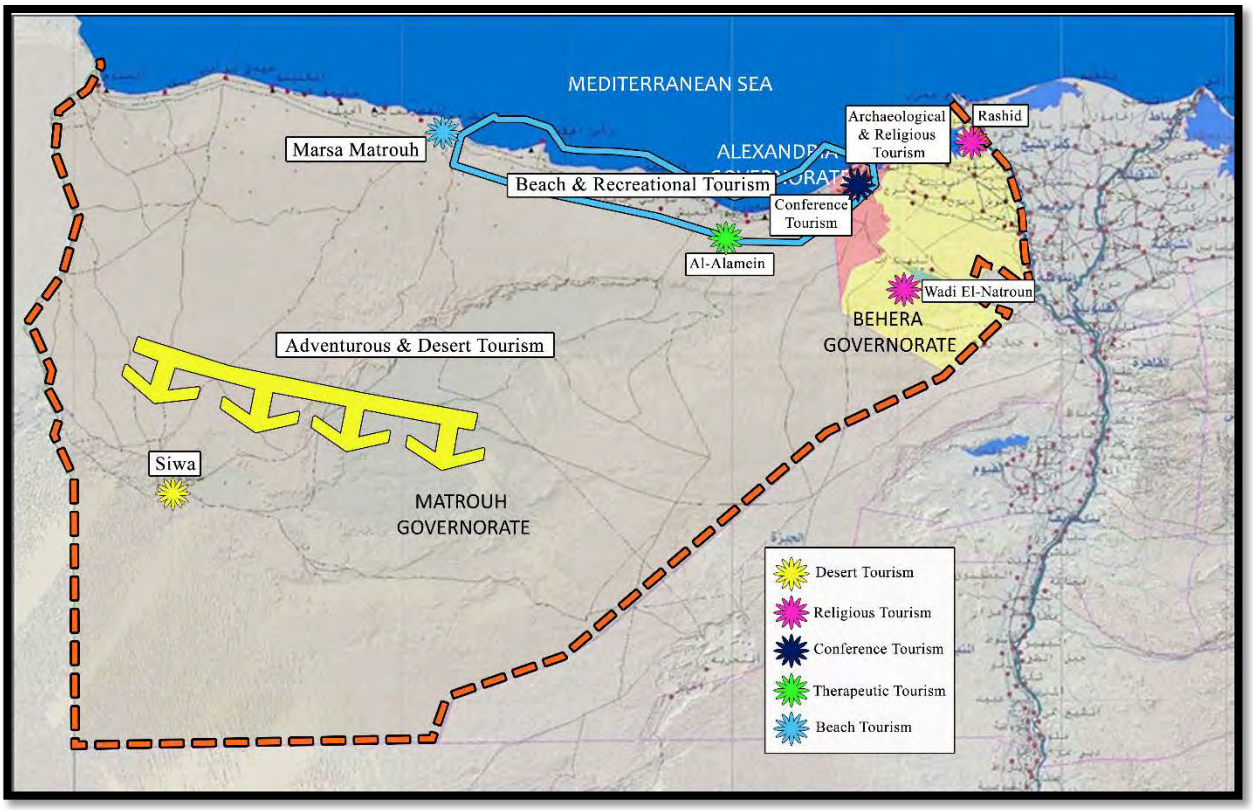


Figure 65:Tourism Development in Alexandria Region
Source: Made by researcher

3.3.2.4 Economic projects of particular importance to the Region

- The Northern International Road Project: Some of its parts have been implemented and are expected to have an impact on the northern part of Alexandria region as a result of linking the north-eastern regions of the country with the western regions and the consequent revitalization of transport, trade and creating a climate for the emergence of new activities.
- Establishment of an international airport in Al-Alamein to serve the development areas of the North-West Coast.
- Establishment of the airport west of Alexandria (international airport) 6 km east of the new city of Burj Al Arab.
- Development of Marsa Matrouh Airport to promote the development process.

- Development of the regional road network (Cairo / Alexandria agricultural and desert roads) by increasing their width between Cairo and Alexandria to 6 lanes.
- The proposal of a zone for food industries & taw in Al-Beheira governorate, providing 180 thousand jobs.
- Construction of new urban communities accommodating about 3 million people.
- Land reclamation projects on the Nile, include the target areas in the range of El-Nasr Canal:
- Reclamation of 300 thousand feddans in Alexandria Governorate.
- Reclamation of about 72 thousand feddans in El-Hammam, which is irrigated from El-Hammam canal that includes reclamation and extension of national and basic infrastructure and the internal and culture of these areas.
- Reclamation of about 148 thousand feddans in the area of Alamein and Dabaa, which are irrigated from the extension of el-Hammam canal and include reclamation and extension of the national and basic infrastructure and the internal and culture of these areas.
- Establishment of agricultural services centers in the areas of: Hammam, Alamein, Foukah, Ras Al Hikma, Marsa Matrouh, Qusayr, Muthani, Nakhilah, Sidi Barani and Salloum.
- Chemical and Petroleum Industries: Recommends to be one of the pioneer activities in the Region.
- Food industries and canning of vegetables and fruits: In addition to the manufacture of palm products.
- Developing fishing ports, raising the efficiency and expansion of fish farms.
- Tourism development of the northern coast from Alexandria to Salloum, where this coast contains opportunities for tourism development in the long term. Detailed planning studies have resulted in the possibility of developing the back areas of the North-West Coast Sector (from the eastern border of Matrouh to Salloum) through the development of integrated service centers with coastal uses at specific points on public beaches and open areas as well as between coastal villages in areas not available Public beach.
-The establishment of a logistics Site on an area of 400 feddans at Alexandria port.

Note: All these development projects are just on the primary phase of the strategic plan.

3.3.3 Infrastructure Development at the regional level

The infrastructure is an important factor in ensuring the success of the Alexandria Development Plan, which includes four main axes, as follows:

A) Raise the efficiency of the roads, transport and communications network at the regional level.
B) Expansion of electricity and power grid in the Alexandria region.
C) Upgrading the telecommunications network in the Alexandria region.
D) Development of the drinking water and sanitation network at the regional level

3.3.3.1 Raise the efficiency of the roads, transport and communications network at the regional level.

- National and regional road networks, railways, river routes and ports are good networks that connect different parts of Egypt. They are the result of the region's central location. It is also considered the link between East Egypt to El-Arish, & Rafah, the West to Salloum and south to

Upper Egypt passing by Cairo the capital of Egypt.
- Based on the future vision of the regional urban growth and the future urban balance between the three governorates of the region, we find that Alexandria - Matrouh International road axis is one of the axes that will become very important after the establishment of the new city of Al-Alamein and some suggested urban communities such as the new Hammam city and El-Dabaa city.
- From the above, the axis of Alexandria / Matrouh is the link road between the east and west of the region in addition to the national roads and axes as well as railways which link Alexandria region to southern Egypt, that increases the importance of the region at the national level.
- The development of Alexandria harbour helps it maintain it's rank as one of Egypt's largest ports as well as the necessity to maximize and develop the port of Matrouh, which can play an important role in the future development of the Alexandria Region.

3.3.3.2 Expansion of electricity and power grid in the Alexandria region.

- Al-Dabaa project for nuclear reactors is a huge project that works to increase electrical energy not only at the regional level, but gain its benefit at the national level as well in order to raise the efficiency of electric power in Egypt.
- The future vision of the region of Alexandria is based on three main axes.
1- Increasing the efficiency of the existing power stations in the three governorates.
2- Establishing new stations in the governorates of Alexandria and El-Beheira. The number of stations in Alexandria governorate will be increased from 7 to 16, with an increase of 9 new electricity stations in anticipation to the projected population increase until the target year 2050. El-Beheira from 9 power plants to 18 stations with 9 new power plants to keep up with the doubling of the governorate's population until 2050.
As for Matrouh governorate, the number of existing stations are 25 power stations sufficient to accommodate the population increase in the governorate until the target year.
3 - The establishment of new power stations commensurate with the number of population expected to be absorbed in these new urban communities, especially El Alamein new city which is being established, & the suggested new city of Hammam and new city of Dabaa .

3.3.3.3 Upgrading the telecommunications network in the Alexandria region

- The communications network in the Alexandria region needs great efforts to upgrade the current network, which is suffering from the current population increase and thus the problem will increase with the population increase in the near future until the year target 2050, in which the population will be double the current number.
- Matrouh governorate is the best of the three governorate in the telephone service this s due to the small population in the governorate, where the average number is 42.7 lines per 100 people, while the lines decrease to 28.2 lines and 23.3 lines per 100 inhabitants in the governorates of Alexandria and El-Beheira, respectively, which requires upgrading the telephone service In both governorates.
- Matrouh governorate is considered the best in the postal service, where there is a post office for every 7.4 thousand people in the countryside and a post office for every 11.1 thousand people in

the urban area, while in Alexandria there is a post office for every 124 thousand in the urban and post office for every 41 thousand in El-Beheira governorate and post office 189 thousand In rural areas.
- The future vision of the region of Alexandria depends on increasing the rate of telephone lines for every 100 inhabitants in Alexandria and El-Beheira governorates, as well as upgrading the postal services by increasing the number of post offices in Alexandria and El-Beheira governorates to reach a post office for every 10,000 to 12,000 people.
- Great attention is paid to new urban communities such as El Alamein new city, El Hamam new city and El-Dabaa new city by establishing telephone and postal services according to the latest systems to suit the Alexandria region at the national and international levels.

3.3.3.4 Development of the drinking water and sanitation network at the regional level

- One of the most important criteria for the success of any future vision for a city or region is the availability of a good network that works efficiently for both the feeding water and sewage network at the regional and local levels.
- Consumption rates in drinking water are proportional to the drinking water produced, where the consumption of the individual in Alexandria governorate is 407 liters / day, while the consumer per capita is 169 liters / day, while its share of the product 233 liters / day.
- In accordance with the future vision regarding drinking water, Feeding all populated areas (urban and rural) should be maintained with high efficiency, in addition to the establishment of water plants in the new urban communities, especially El Alamein new city and the urban cities proposed by the researcher.
As for the sewage network, Matrouh governorate needs a lot of support in this network, while the per capita sewage capacity in Alexandria governorate is 372 liters / day and 251 liters / day in El-Beheira governorate and 6 liters / day in the countryside of governorate, then in the governorate of Matrouh it does not exceed 62 liters / day in the urban areas and does not exist in the countryside of Matrouh province.
- The construction of sewage networks in the new urban communities is taken into consideration to accommodate the projected population increase until the target year 2050.

3.3.4 Upgrade the role of the different services at the regional level:

- One of the most important development axes in the future vision of Alexandria region is to provide the future needs of various services in the preparation of the strategic plan for Alexandria region, which depends on the population increase of the region and the three governorates where the total residential increase expected in the period from 2017 to the target year 2050 is 12865322 distributed people In three governorates where the population increase in El-Beheira is the largest of the three 48.82% of the total population increase expected, while in Alexandria goernorate the population is 5254986 people, or 40.46% & in Matrouh governorate the population will be about 1329675 not more than 10.72% of the total population increase expected.
- It is worth mentioning that these figures are estimated that can change according to the strategic plan at the region level, which works to provide the required urban balance.

- The future vision of the services is based on a detailed study of each of the following services:
1. Educational services.
2. Therapeutic services.
3. Social services.
4. Cultural services.
5. Sport services.
6. Security services.

The detailed study was based on the rates and planning standards for the services sector issued by the General Authority for Physical Planning of the Ministry of Housing, Utilities and Urban Development without forgetting the religious, commercial and logistics services that should be studied with some recreational and entertainment services.

3.3.4.1 Educational services:

- The following analytical study includes the educational services in the Alexandria region for basic education of the primary, middle and secondary levels of education as well as general, commercial, tourism, industrial, agricultural secondary and university education.

- The primary education stage, which represents about 10% of the population of the future increase in Alexandria region, where the number of pupils 128,631 students distributed in the three governorates, 525498 students in Alexandria, about 628066 students in El-Beheira governorate while not more than 132967 students in Matrouh.

- The quarterly density in the Arab Republic of Egypt is 40 pupils / class in accordance with the standards and rates of the Educational Buildings Authority. Based on this, the future need for the primary classes at Alexandria region is 32163 classrooms which are accommodated in about 1340 schools. In which Alexandria governorate will need 13137 Classrooms distributed in 547 schools and in El-Beheira governorate the number of classrooms is 15702 classrooms distributed to about 654 schools and Matrouh governorate needs 3324 classrooms distributed among about 139 schools.

Table 16:Expected population increase on Alexandria region level till 2050

Governorate	Census 2017	Census 2050	Expected population increase	%
Alexandria	**5163750**	**10418736**	**5254986**	**40.46**
El-Beheira	**6171613**	**12452270**	**6280657**	**48.82**
Matrouh	**425624**	**1755303**	**132967**	**10.72**
Total	**11760987**	**24626309**	**12865322**	**100**

Source: *Made by the researcher based on* Statistics of the Central Agency for Public Mobilization and Statistics for the year 2017

- The basic education of the preparatory stage, which represents about 7.5% of the total population increase expected at Alexandria region level, where the number of pupils in the preparatory stage is about 964898 students distributed in the three governorates, Where Alexandria governorate has 394124 pupils and in El-Beheira governorate up to 471049 pupils and the number of students in Matrouh governorate is 99725 students. The total number of preparatory classes in the region is 24122, where Alexandria governorate has 9,853 classrooms distributed in 411 schools. As for El-Beheira governorate has a total of 11776 classrooms divided into 490 School & in Matrouh Governorate 2493 classrooms distributed in 104 schools with a total of 1005 schools for the preparatory stage in the Alexandria region.

- As for secondary education which is divided into several types general, commercial, tourism, industrial and agricultural secondary schools, there are 643266 students in the three governorates. Alexandria governorate has 262749 pupils and in El-Beheira governorate there are 314033 students. In Matrouh governorate, there are no more than 66484 students. According to the The quarterly density for the education stage is 36 student / class based on that total number of classes in the Alexandria region is 17,868 classrooms distributed over 744 secondary schools, where the number of classrooms in Alexandria governorate is 7298, distributed among 304 schools. As for El-Beheira governorate classrooms are up to 8723 classes distributed in 363 schools, while Matrouh governorate has 1847 classrooms which are distributed in 77 secondary schools.

- Regarding the stage of university education, the needs of each governorate differ in terms of number and specialized colleges. In Alexandria Governorate, the future need 2 more governmental universities with an average of 100,000 students / public university and about two private universities with an average of 30 thousand students / private university with a total of 4 universities in the governorate. The governorate of El-Beheira also needs two public universities and four private universities because of the lack of the governorate to the universities commensurate with the large number of current and future urban clusters with a total of 6 universities, while Matrouh governorate need just one government university, to sum up the region needs 5 public universities and about 6 private universities with a total of 11 governmental and private universities spread over three governorates.

Table 17: Educational services in the Alexandria region until 2050

Educational Services	Alexandria Governorate	El-Beheira Governorate	Matrouh Governorate	Total
Basic primary education 10%	525 498	628 066	132 967	1 286 531
Total No of Classes (Primary)	13 137	15 702	3 324	32 163
Total No of Schools (primary)	547	654	139	1 340
Primary preparatory Education 7.5%	394 124	471 049	99 725	964 898
Total No of Classes (preparatory)	9 853	11 776	2 493	24 122
Total No of Schools (preparatory)	411	490	104	1 005
Secondary Education with its kinds 5%	262 749	314 033	66 484	643 266
Total No of Classes (Secondary)	7 298	8 723	1 847	17 868
Total No of Schools (Secondary)	304	363	77	744
Total No of Governmental Faculties	2 Governmental Faculties	2 Governmental Faculties	1 Governmental Faculty	5 Governmental Faculty
Total No of Private Faculties	2 private Faculties	4 private Faculties	-	6 private Faculties
Total No of Faculties	4 Faculties	6 Faculties	1 Faculty	11 Faculties

Source: *Made by the researcher*

3.3.4.2 Therapeutic Services:

- The therapeutic services are one of the most important prerequisites in the services sector at Alexandria region, the three governorates and the important cities of each of them. The study was based on the criteria and the planning principles for the treatment services, which states that there must be 3 beds in hospitals per 1000 people. Following that the number of hospitals can be detected, for different types of hospitals general hospital, central hospital and specialized hospitals such as chest, ophthalmology, fever and psychiatric hospital in addition to the medical centers with capacity of 15 beds / medical center, which serves 20 thousand people at the level of Alexandria region and its three governorates Alexandria, El-Beheira and Matrouh.

- Based on the criteria and planning principles for treatment services, we find that the expected population increase at the level of Alexandria region, which reaches 12865322 people need to have 38595 beds in various hospitals and medical centers as shown in Table (17) therapeutic services.

- The future population increase until 2050, amounting to 5254986 inhabitants of Alexandria Governorate, will need about 15 765 beds spread over 262 medical centers accommodating 3930 beds. The remaining number of 11 835 beds, distributed over Chest, ophthalmology, fever and psychiatric hospital with a total of 400 beds with a capacity of 50-100 beds for each hospital that leaves about 11435 beds for each of the public and central hospitals where the public hospitals accommodate about 60% of that number. Therefore, the future need of Alexandria Governorate reaches about 18 public hospitals, which accommodates 6861 beds with a rate of 381 beds / general hospitals. As for the central hospitals that accommodates 100-300 beds Alexandria governorate needs about 16 Central Hospital accommodates 4574 beds at a rate of 286 beds / Central Hospital.

- The future population increase until 2050 in El-Beheira Governorate, which will be 6280657 people, reaches about 18,840 beds distributed over 314 medical centers accommodating 4710 beds with a rate of 15 beds / medical center. The remaining beds of 14130 beds are distributed to chest, ophthalmology, fever and psychiatric hospital which accommodates 400 beds with a rate of 100 beds / hospitals shown in the following table, the remaining 13730 beds are distributed over the public & central hospitals the total number of beds in public hospitals (60%) is about 8238 beds spread over 21 public hospitals with a rate of 392 beds / hospital. As for the central hospitals in El-Beheira governorate it needs about 19 of them to accommodate 5492 beds with 289 beds / hospital.

- While the expected population increase in Matrouh governorate, which is 1349675 people, needs 3995 beds distributed over about 66 medical centers accommodating 990 beds with 15 beds / medical center. The remaining 3005 beds are distributed to chest, ophthalmology, fever and psychiatric hospital which accommodates 400 beds with a rate of 100 beds / hospitals, while about 2605 beds are distributed to both public and central hospitals in Matrouh governorate, where 4 public hospitals are required to accommodate 1563 beds with 390 beds / general hospital, on the other side the central hospitals accommodates 1042 beds distributed over 4 central hospitals with a rate of 260 beds / central hospital.

Table 18: Therapeutic Services on Alexandria Region Level till 2050

Therapeutic Services	Alexandria Governorate	El-Beheira Governorate	Matrouh Governorate	Total
Population Increase expected till 2050	5254986	6280657	1329675	12865322
Future need for the number of beds	15765 Beds	18840 Beds	3995 Beds	38595 Beds
Public Hospital 300-400 beds	18 Hospitals with capacity 381 bed	21 Hospitals with capacity 392 bed	4 Hospitals with capacity 390 bed	43 Hospitals
Central Hospital 100-300 beds	16 Hospitals with capacity 286 bed	19 Hospitals with capacity 289 bed	4 Hospitals with capacity 260 bed	39 Hospitals
Chest Hospital 50-100 beds	1	1	1	3
Ophthalmology Hospital 50-100 beds	1	1	1	3
Fevers Hospital 50-100 beds	1	1	1	3
Psychiatric Hospital 50-100 beds	1	1	1	3
Total Number of Hospital	38 Hospitals	44 Hospitals	12 Hospitals	94 Hospitals
Medical center (15 beds) serving 20 thousand people	262 Medical centres with 3930 beds	314 Medical centres with 4710 beds	66 Medical centres with 990 beds	642 Medical centres with 9630 beds

Source: *Made by the researcher*

3.3.4.3 Social Services:

- The social services are considered the services that drive the success of the strategic plans at the regional and local levels. The social service components includes the social units, community development associations, the welfare societies and the girls' training centers. Following the criteria and planning principles in the Ministry of Housing, Utilities and Urban Development, a study for the social services for Alexandria region & the three governorates is as follows:

- For the social units, the expected population increase at the level of Alexandria region to about 1286 social units, each serving 10 thousand people, where Alexandria Governorate needs 525 social units, while El-Beheira governorate needs 628 units and Matrouh governorate about 133 social units.
- At the level of community development associeties, as shown in Table (18), the region of Alexandria needs 1286 associations in the future. Each association covers 10,000 people. In Alexandria governorate, 525 associations needs to increase, while 628 in El-Beheira governorate while Matrouh do not exceed 133 Society Development Association.

The number of welfare associations is about 1286 associations that is needed for the expected population increase at Alexandria region distributed to Alexandria governorate, which needs 525 associations, the governorate of El-Beheira, 628 associations, and Matrouh governorate 133 associations.

- The training centers for girls, which represent about 25% of the total population, we find that the region of Alexandria needs 130 centers, where each center serves between 20-25 thousand girls and the attached table shows that the Alexandria governorate needs 53 training centers and El-Beheira about 63 center while Matrouh needs only 14 Girls Training Center.

Table 19: Social Services on Alexandria Region level till 2050

Social Services	Alexandria Governorate	El-Beheira Governorate	Matrouh Governorate	Total
Population Increase expected till 2050	5254986	6280657	1329675	12865322
Social Unit for every 10 thousand people	525 Units	628 Units	133 Units	1286 Units
Community Development Association	525 Associations	628 Associations	133 Associations	1286 Associations
Welfare Association	525 Associations	628 Associations	133 Associations	1286 Associations
Girls Training Center	53 Centres	63 Centres	14 Centres	130 Centres

Source: *Made by the researcher*

3.3.4.4 Cultural Services:

- The study of cultural services included the most important cultural elements in the urban communities, which include the culture palaces, public libraries, cultural houses, children's library, cinema and theater, based on the planning principles and standards of the Ministry of Housing, Utilities and Urban Development.

- For the palaces of culture, the Alexandria region needs 64 cultural palaces as a future need distributed to the three governorates of Alexandria, Beheira, Matrouh 26, 32 and 6 cultural palaces respectively - see table (19) cultural services where each palace serves about 200 thousand people.

- The public libraries are about 64 public libraries at Alexandria region distributed to the three governorates of Alexandria, Beheira and Matrouh 26, 32 and 6 public libraries, respectively.

- As for the culture houses and the children's libraries, we find that Alexandria region needs in the future 514 culture houses distributed to the governorates of Alexandria, Beheira and Matrouh 210 -250 - 53 culture houses respectively and the same numbers for children's libraries at the regional level and the governorates at the rate of 25,000 people / a culture house as well as the Children's Library.

- Same rates and figures are similar in cinema and theater as cultural houses and children's libraries.

Table 20: Cultural Services on Alexandria region level till 2050

Cultural Services	Alexandria Governorate	El-Beheira Governorate	Matrouh Governorate	Total
Population Increase expected till 2050	5254986	6280657	1329675	12865322
Culture Palace 200 thousand people	26 Culture Palaces	32 Culture Palaces	6 Culture Palaces	64 Culture Palaces
Public library 200 thousand people	26 Public libraries	32 Public libraries	6 Public libraries	64 Public libraries
Culture House 25 thousand people	210 Culture Houses	251 Culture Houses	53 Culture Houses	514 Culture Houses
Children's Library 25 thousand people	210 Children's Libraries	251 Children's Libraries	53 Children's Libraries	514 Children's Libraries
Cinema & Theater 25 thousand people	210 Cinema & Theater	251 Cinema & Theater	53 Cinema & Theater	514 Cinema & Theater

Source: *Made by the researcher*

3.3.4.5 Sports' Services:

- Sports services are an important breather for urban communities where sports services include sports stadiums, sports clubs and youth centers. With the expected increase in population until the target year, we find that the region of Alexandria needs.

- A number of 6 stadiums spread over the region, 2 stadiums in Alexandria governorate, 3 in El-Beheira governorate and 1 in Matrouh, where the stadium serves the capital of the governorate and the major cities.

- regarding the sports clubs, the region of Alexandria needs a future expansion between 46 - 64 sports club where Alexandria needs to add between 20-26 sports clubs and El-Beheira governorate between 21-31 Sports Club and Matrouh Governorate between 5-7 clubs Where the sports club serves between 200-300 thousand people.

- For the youth centers, the Alexandria region needs 256 youth centers to serve the expected population increase until the target year. Alexandria governorate needs about 105 youth centers and El-Beheira governorate to 125 youth centers and Matrouh governorate to 26 youth centers.

Table 21: Sports' Services on Alexandria region level till 2050

Sports' Services	Alexandria Governorate	El-Beheira Governorate	Matrouh Governorate	Total
Population Increase expected till 2050	5254986	6280657	1329675	12865322
Athletic Stadium	2	3	1	6
Sport's Club 200-300 thousand people	20-26	21-31	5-7	46-64
Youth Center 150 thousand people	105	125	26	256

Source: *Made by the researcher*

3.3.4.6 Security Services:

- The security services are the balance of safety needed by urban communities, including the police Departments, stations and firefighting Stations & points, according to the standards and the planning principles of the service sector, the Alexandria region needs a future expansion to about 132 police departments where each one serves about 100 thousand people distributed in Alexandria governorate to 54 police departments, 64 departments in El-Beheira governorate and 14 police departments in Matrouh governorate.

- At the level of the police station, the Alexandria region needs about 264 police stations distributed in the three governorates, where Alexandria governorate needs about 108 police stations and El-Beheira 128 police stations and Matrouh governorate needs about 28 police stations.

- As for the fire stations, the future need until the target year will be up to 132 fire stations distributed in Alexandria governorate which needs 54 fire stations and El-Beheira governorate 64 fire station and Matrouh 14 fire station as for the firefighting points, the region needs 264 fire points in the future distributed to Alexandria Governorate, which needs 108 fire points and El-Beheira governorate to 128 fire points and Matrouh governorate 28 points fire.

Table 22:Security Services on Alexadnria region level till 2050

Security Services	Alexandria Governorate	El-Beheira Governorate	Matrouh Governorate	Total
Population Increase expected till 2050	5254986	6280657	1329675	12865322
Police Department	54 Department	64 Department	14 Department	132 Department
Police Station	108 Station	128 Station	28 Station	264 Station
Firefighting Station	54 Station	64 Station	14 Station	132 Station
Firefighting Point	108 Point	128 Point	28 Point	264 Point

Source: *Made by the researcher*

3.3.5 Mechanisms to implement the outlook for the development of the Alexandria region

- The stage of transition from the development of the future vision features to the implementation of that vision requires to perform many tasks that can be enumerated in the following tasks it's also considered a method of preparing a strategic plan at the regional level:

Task 1 – The logical framework, objectives and indicators of follow-up goals.
Task 2 - Setting strategic lines for the development of the region
Task 3 - Workshop for the Basic Group for the Agreement on the final strategy
Task 4 - Preparation of the investment plan for the implementation of priority projects included in the strategic plan of the region
Task 5 - Preparation of land use plan and urban development areas
Task 6 - Preparation of the strategic plan report for the region and the geographical database (GIS)
Task 7 – Preparation of the development perspective of the region

3.3.5.1 Task 1 - Prepare the logical framework for development goals, targets and indicators

(A) Given to the importance of following up and assessing the progress in achieving the vision and goals as well as achieving the general and subsidiary objectives, it is necessary to use indicators to determine the extent of accomplishment in achieving the objectives and therefore these indicators should be clear and linked to the objective, definite measurement, specified content and the future direction of work. These indicators are divied into Quantitative and descriptive indicators.

(B) In this case, the logical framework method is used for goals, objectives and indicators. It is the framework that brings together all activities and associates them with their goals related to the main objective and the achievement of the vision.

(C) Any expert may add projects to priority projects in order to achieve the desired objectives of achieving the vision.

3.3.5.2 Task 2 - Development of strategic lines for the development of the region

(A) The consultant or the team in this task will present the main issues that require solutions to minimize the gap between the current situation and the target situation, and analyze the Strength, Weakness, Opportunities & Threats (SWOT analysis). To determine the future vision with the development partners agreement in the region, the consultant mission is to develop several strategic lines for the development of the region until the target year (Future vision) and different themes for the implementation of priority projects

(B) When formulating the development strategy, the sectoral lines are summarized and the mechanisms that have the ability to improve the region to the agreed vision are presented efficiently and effectively.

3.3.5.3 Task 3 - Consult the core group of the agreement on strategy

In this task, the Consultant will present and discuss the development strategy up to the target year and the program of localization and implementation of priority projects at the regional level to the basic working group as well as the various development partners for agreement

3.3.5.4 Task 4 - Preparation of the investment plan for the implementation of priority projects included in the strategic plan of the region

After the agreement on the final strategy for the development of the region and the identification of priority projects, the strategy is translated into the general strategic plan through the settlement of projects, their dependencies, time overlaps, implementation and funding programs, as well as the impact of these programs and projects in accordance with their priorities on the investment plans of the region supported by descriptive annexes to the priority projects and the investment plan for the implementation of those projects.

3.3.5.5 Task 5 - Preparation of land use plan and urban development areas

(A) In light of the results of the sectoral studies (housing - economy - infrastructure - services), the agreed development projects, the development strategy up to the target year, and the views of the development partners, the information and its spatial dimensions are presented on the map of land use with an appropriate scale and binding construction requirements for development in the region. Land Use map is followed by a report of the Regional Strategic Plan..

(B) The new urban areas proposed for inclusion in the existing boundaries of the region shall be determined by an appropriate scale indicating the future urban areas and the proposed investment services and projects, in addition to the road networks and the comprehensive infrastructure for the study elements for all future uses of the region.

3.3.5.6 Task 6 - Preparation of the report of the strategic plan for the region and the geographical database (GIS)

This task includes the preparation of the final report of the strategic plan according to the indicators, the current situation data, the SWOT analysis, the identification of the objectives and the priority projects, the logical framework for the goals and objectives, the land use plan and the complementary plans.

3.3.5.7 Task 7 – Preparation of the development perspective of the region

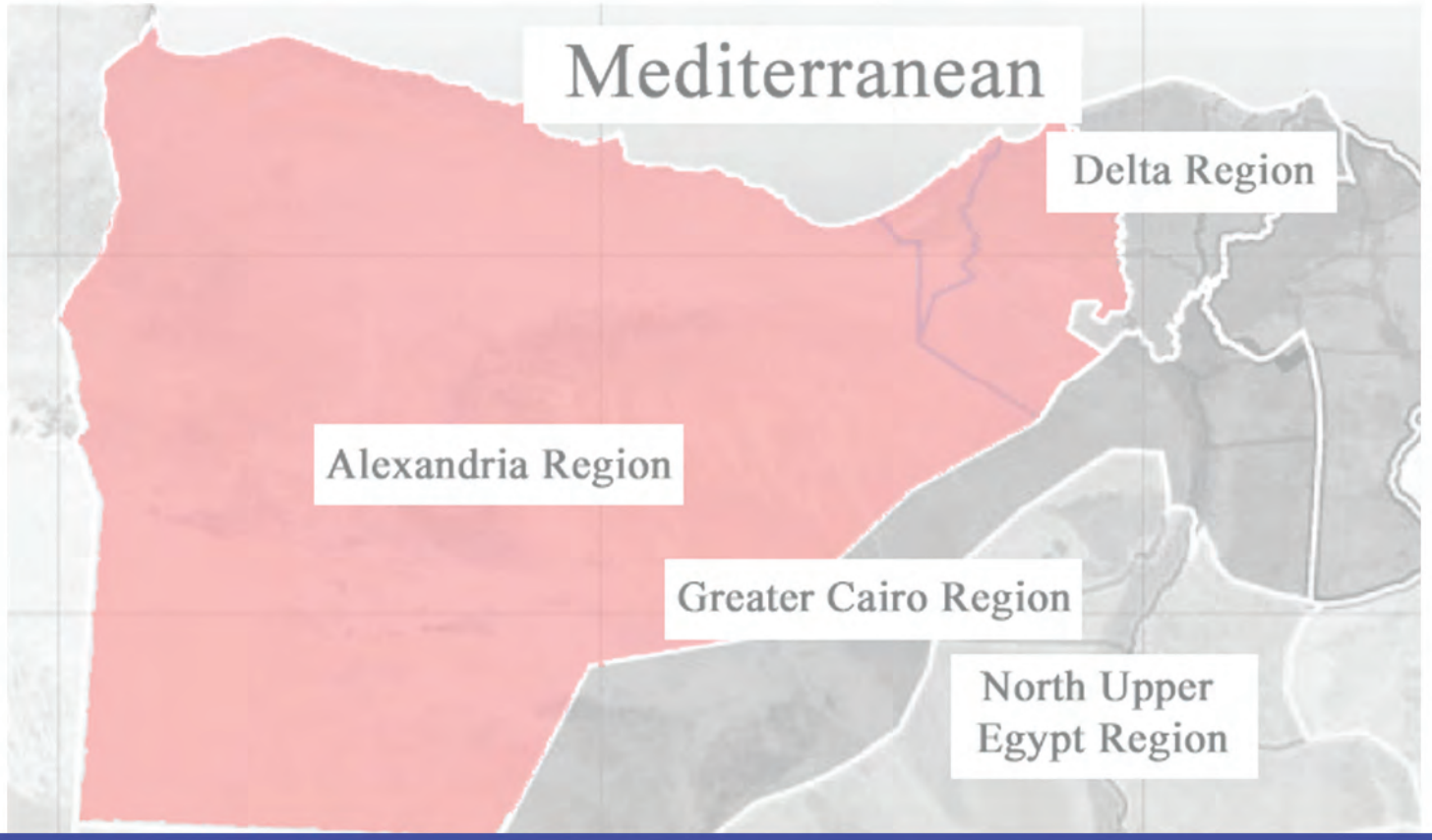
In this task, the development perspective of the region is written, including the basic features of the region, the future vision, the general and subsidiary objectives, and finally the strategic plan of the region.

3.3.6 Conclusion

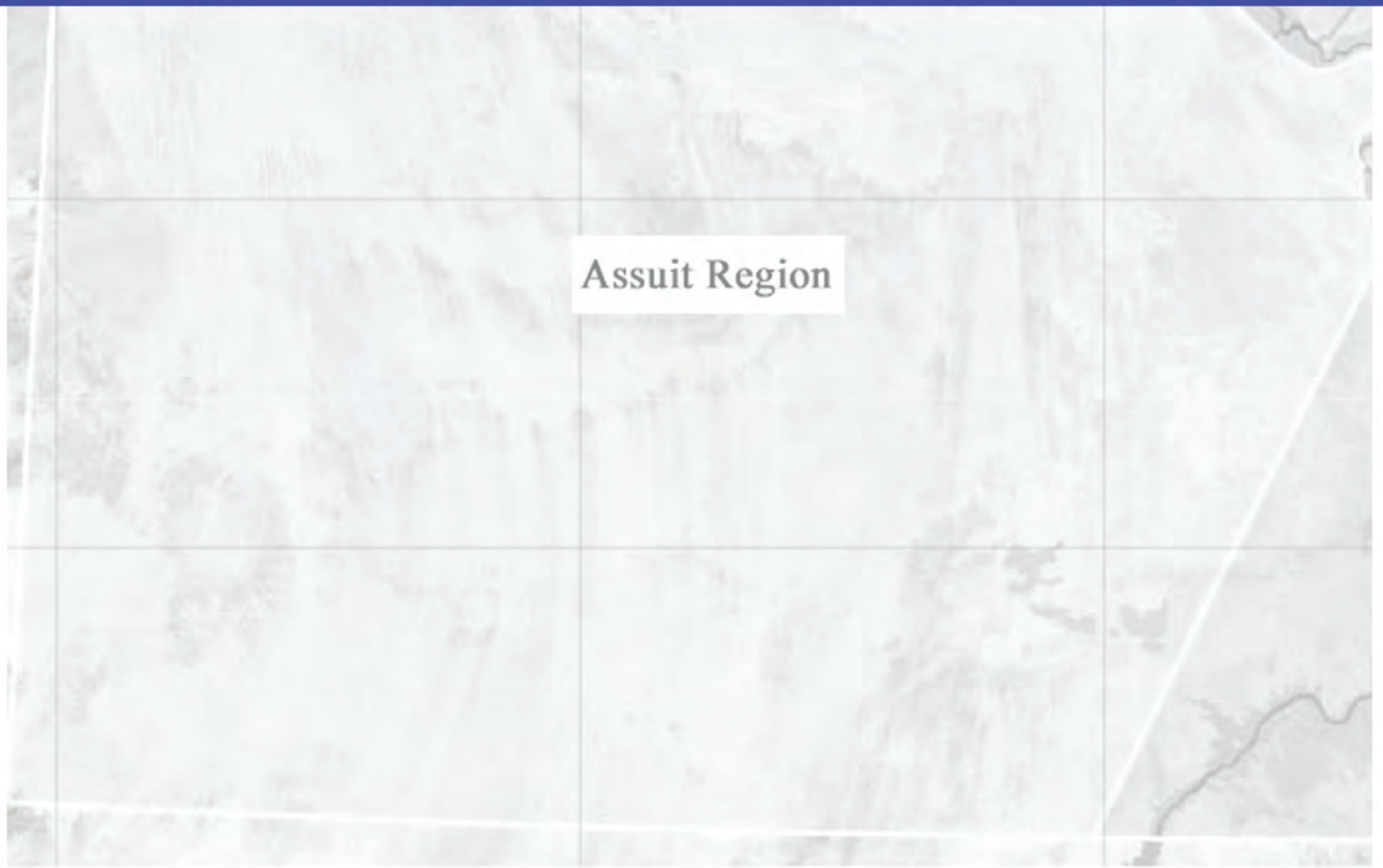
Form this chapter we conclude that an urban regional planning strategy has to cover several aspects in order to obtain a successful methodology, Which has to face five main problems that delay any urban regional plan which are:

1) Economic Growth: in which the thsisi tried to over come it by finding new ways to Stimulate Economic Developemnt.
2) Social Development: one way raech this development is by Directing Urban Growth trends at the regional level.
3) Environmental Quality: which could be found in the infrastructure developemnt of the region in addition to the upgrade of the different services of the region based on the new Environemntal Standards to improve the quality of natral environment.
4) Urban Finance: which could be obtained through some public resources inaddition to the participation of the private sector, that's way it is always considered as a majour problem.
5) Governance: that problem is by all means the hardest problem to be solved in Egypt due to the incursion of the administartative problems and challenges all the way from the local level till the highest planning rank. This happened as a step of failure of the local democracy, urban management approches & mechanisms.

So by following those five problems & solving them we could easily obtain a successful urban regional methodology which could be applied on any model.



CONCLUSION & RECOMMENDATIONS



Conclusion and Recommendations

- According to the previous study of the planning process in the Arab Republic of Egypt, we conclude that it suffers from confusion and misperception that can be cleared through identifying some recommendations on three levels:
First: At the authorities and decision-making organizations Level:

A. The Ministry of Housing, Utilities and Urban Development.
B. Governors and Urban Planning Department of the governorate.

Second - at the level of specialists such as planners, consultants and universities

First: At the authorities and decision-making organizations Level
The following recommendations seek to balance between the future visions and the current potentials in all decision-making authorities and stakeholders. Accordingly, we refer to the recommendations to the Ministry of Housing, Utilities and Urban Development, the Governors and the Department of Urban Planning of each governorate by the following:

A- The Ministry of Housing, Utilities and Urban Development:
- The Ministry is considered one of the most important ministries in the country for It takes care of urban development through two very important organizations: The General organization for physical Planning (existing communities), the New Urban Communities organization (the new urban communities) and the Ministry of Housing is a sovereign decision-making organization that can achieve many of the following recommendations:
1- Updating and restructuring the regional administration of the General organization of Physical Planning through the selection of specialized engineers with experience and effective leadership in this department.
2 - These administrations is supported by the latest data such as maps, reports and photos, which helps to increase the effectiveness of cooperation between the regional administration and executive administrations & Authorities located in the vicinity of the region.
3 - Upgrading the cooperation between the regional administration of the Ministry of Housing and advisory offices and engineering centers located in the vicinity of the region to produce more realistic results and work to push the planning process.
4- Increasing cooperation between the regional administration of the Housing Ministry and the educational universities to benefit from the studies and research carried out by the faculty members and the recommendations that are stated in the master's and doctoral dissertations.
5 - seriousness of mutual interaction between the regional administration of the Housing Ministry and the Urban Planning Department of the governorate, and the need to hold meetings between the Planning Department for all the governorates of the region to coordinate between them and the regional administration representative of the Housing Ministry.

B - at the level of the governors and the Department of Urban Planning of the governorate
1 - The need for coordination between the Governors in the region in the form of periodic meetings with the presence of urban planning departments directors of all governorates in the region to clarify the interrelated urban needs between the governorates.
2. Each urban planning department in each governorate shall develop its vision and future vision

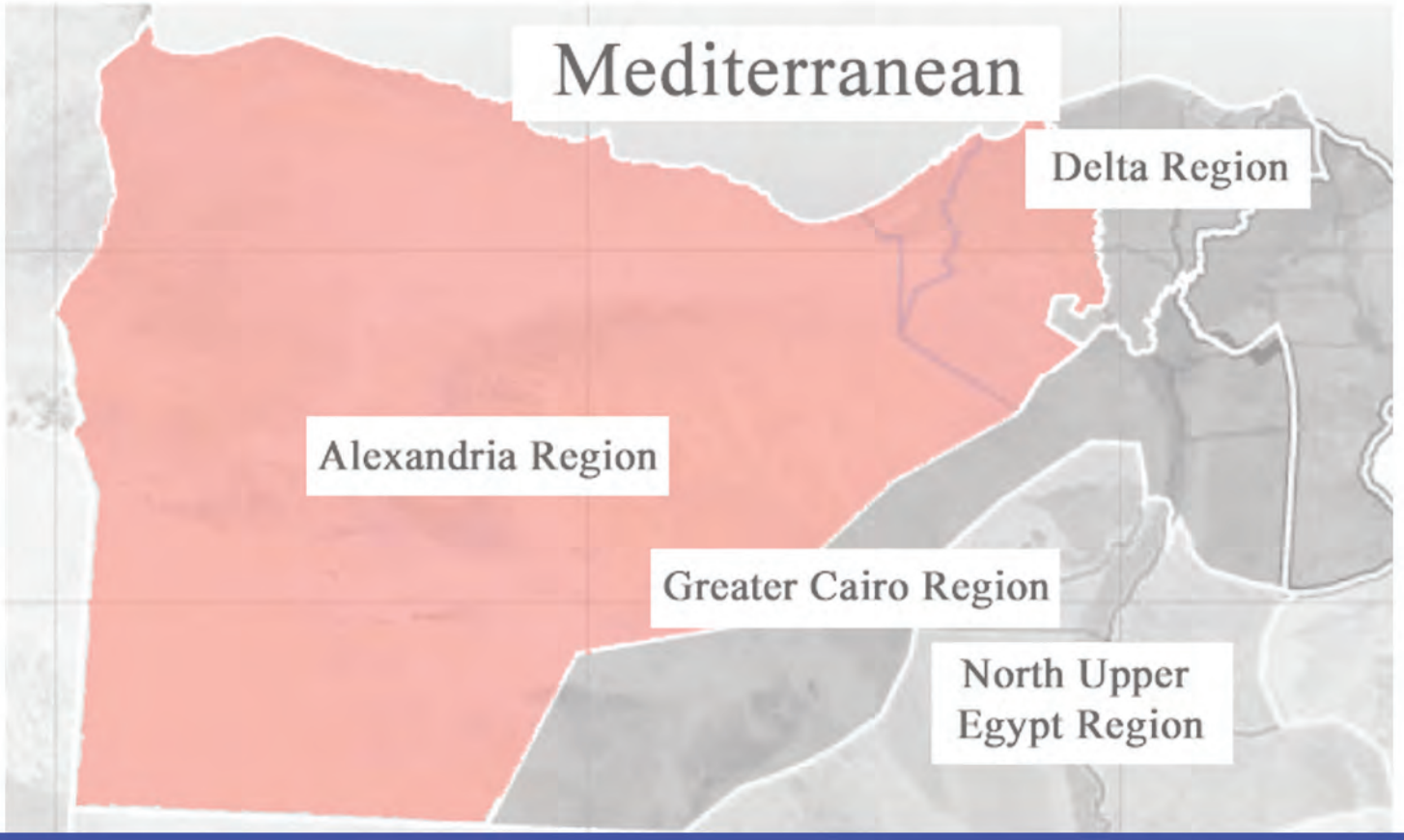
within the governorate in order to be presented at the periodic meetings with the regional administration of the Housing Ministry, Utilities and Regional Development
3 - Strengthening the Department of Urban Planning to maintain the young specialized staff to acquire the necessary expertise and consistency with the realities of the current situation in preparation to register and present them to decision makers at the local level.
4 - Cooperation of the Department of Urban Planning of the governorate and Governors with specialized advisory offices and those experienced in the planning process to develop a future vision at the level of the governorate, the city or village.
5 - The need to benefit from scientific research, master's and doctoral dissertations to select the good for implementation to be submitted to the regional administration of the Housing Ministry.

Second - at the level of specialists from planners, consultants and universities

1 - The need to strengthen scientific research at the level of architecture department in faculties of engineering in universities located within the region and interest in the studies of regional strategic plans, cities and villages represented in the planning projects to develop future visions of cities, villages and the governorates based on the current situation with its real data.

2- Supporting the scientific research represented by the master's and doctoral dissertations, also carrying out specialized and detailed studies that help to push the urban growth step forward and support the role of universities in contributing scientific capabilities in its various faculties

3 - The use of consulting offices and specialists in the field of planning at the local and regional levels to benefit from their expertise and the possibility of using them in cooperation with the Governors or the Department of Urban Planning in each governorate, the regional administrations of the Housing, Utilities and Urban Development Ministry.



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النمو في الاقتصاد المصري وتأثيره على إعادة رسم خريطة استخدام الأراضي لمنطقة قناة السويس (المنهجية)، ومن ثم تحليل أربعة سيناريوهات لتحديد المعايير الأساسية لاستراتيجية تنمية قناة السويس.

في حين يستعرض الفصل الثالث "ممر التنمية الغربية للنمو المستدام في مصر (توشكا / العلمين)" الذي يتم فيه عرض تجربة ممر التنمية، ومراجعة الموقع الجغرافي لمحور التنمية والتعمير في غرب النيل، ممرات التنمية بالصحراء الغربية، فوائد المشروع، وطريقة تنفيذه، والرد على النقاد. أما في الفصل الرابع "دراسة تحليلية لتطوير منطقة المثلث الذهبي في صعيد مصر" حيث تسلط بعض الضوء على منطقة تعدين المثلث الذهبي في مصر التي تقدم فكرة إنشاء مثلث للتعدين وأهداف المشروع والوضع الحالي وخطة التنمية المكانية المقترحة لمشروع المثلث الذهبي وآخيرا اقتراح لآليات لتنفيذ مشروع المثلث الذهبي.

الباب الثالث:

دراسة حالة (Case Study). أما عن الباب الثالث والأخير والمكون من 3 فصول فهو يستعرض "التنمية الحضرية للإسكندرية 2050" ومنهجية التخطيط "التخطيط الاستراتيجي" ، ففي الفصل الأول "نبذة تاريخية عن الرؤى السابقة المستقبلية لمنطقة الإسكندرية" حيث نستعرض استراتيجية التنمية لمحافظات الجمهورية (إقليم الإسكندرية 2008)، منظور استراتيجية التنمية العمرانية على مستوى الجمهورية (إقليم الإسكندرية 2010)، والخطط السابقة المتعلقة بالإقليم في المخططات القومية.

أما في الفصل الثاني "الحالة الراهنة لإقليم الإسكندرية" الذي يحلل التوزيع الطبيعي والجغرافي لمحافظات إقليم الإسكندرية، والهيكل الإداري للإقليم، والسمات الحضرية والديموغرافية لإقليم الإسكندرية، والخصائص الاقتصادية للإقليم والبنية التحتية والخدمات.

أما فيما يتعلق بالفصل الثالث "الرؤية المستقبلية للتنمية الحضرية في إقليم الإسكندرية" والذي يوضح أولا اتجاهات النمو الحضري على المستوى الإقليمي، وسبل تحفيز التنمية الاقتصادية، وتطوير البنية التحتية على المستوى الإقليمي، وتعزيز دور الخدمات المختلف على المستوى الإقليمي ، آليات لتنفيذ آفاق تطوير إقليم الإسكندرية، يتم اتخاذ جميع هذه الخطوات والعقبات للوصول إلى الحلول المثلى من أجل تحسين المجتمع بأسره.

الخاتمة:

تحتوي على مخلص عام في نهاية الرسالة واستعراض النتائج والتوصيات التي تنوه بأهمية المخططات الاستراتيجية على المستوى الإقليمي.

ملخص البحث

يهتم هذا البحث بعرض وتحليل:

- العملية التخطيطية والمخططات الاستراتيجية على مستوي الاقليم حيث تم استعراض التجارب العالمية للدول الاوروبية والأميركتين والدول العربية من خلال تجاربهم في وضع الخطط الاستراتيجية التي تسهم في تنمية الإقليم وبالتالي المحافظات والمدن والقري الريفية.
- يتناول البحث عدة محاور ذات اهمية كبري في تحديد ملامح الخطط الاســـتراتيجية حيث يعتبر المأوي و الاســكان و العشــوائيات هي مفردات المحور الأول بينما التنمية الاقتصـــادية بأنواعها المختلفة المتمثلة في التنمية الزراعية و الصـناعية و السياحية و التجارية هي المحور الثاني للتنمية اما تطوير و الارتقاء و تواجد شـبكات البنية الاسـاسـية من شـبكات الطرق و المرور و النقل و شـبكات مياه الشـرب و الصـرف الصـحي و الصــناعي و شــبكات الكهرباء و الطاقة و الاتصــالات هي المحور الثالث بينما توافر الخدمات بأنواعها من خدمات تعليمية و علاجية و رياضـــية و ثقافية و ترفيهية و تموينية و تجارية و ادارية و أمنية و كذلك توفير الاحتياج المستقبلي لها هو رابع المحاور من حيث الاهمية في عملية التنمية العمرانية للإقليم.

<u>الباب الأول:</u>

"الدراسة النظرية للخطط الاستراتيجية الإقليمية" ويستعرض ذلك الباب 4 فصول، الأول عن مقدمة الرسالة حيث يتناول المدخل التمهيدي، مشكلة البحث وأبعادها، هدف البحث، أهمية موضوع البحث، تعريف منطقة الدراسة وأخيرا منهجية البحث.

ويتناول الفصل الثاني عن الدراسة التحليلية لأنواع الخطط الاستراتيجية المختلفة من خلال استعراض مفهوم "التخطيط"، " مستويات التخطيط" وفى نهاية الفصل الثاني نصل إلى التأكد من أن هناك العديد من النظريات الخاصة بالتخطيط ومستوياته والتي يجب وضعها بالاعتبار عند بدء أي استراتيجية.

أما عن الفصل الثالث فيتناول العوامل والمحددات المؤثرة على التنمية العمرانية على مستوى التخطيط الإقليمي، مثل العوامل الجغرافية، العوامل الاقتصادية وتوزيعها على الإقليم، إقامة الشبكات السطحية والبنية الأساسية على المستوي الإقليمي، توزيع الخدمات جغرافياً وتأثيره على التنمية الحضرية إقليمياً.

في حين يوضح لنا الفصل الرابع الأمثلة المختلفة من حول العالم للتعرف على التخطيط الإقليمي عالمياً بمختلف بقاع الأرض.

<u>الباب الثاني:</u>

الامثلة المشابهة (Examples) " دراسة تحليلية لمحاور التنمية الإقليمية في مصر " و يتناول هذا الباب أربعة فصول يوضح في الفصل الأول "تطور التقسيم الإداري الإقليمي في مصر "حيث يتناول الخلفية التاريخية لتقسيم مصر الإداري، والجهود السابقة لتقسيم الجمهورية إلى أقاليم ، والوضع الحالي والرؤية المستقبلية لذلك (توزيع ثروة عادلة)، أما الفصل الثاني فيتناول "دراسة تفصيلية لتطوير المحور الإقليمي لقناة السويس" حيث يتم استعراض تأثير قناة السويس على التنمية الحضرية في المنطقة، ثم استراتيجية التنمية لمحافظات منطقة القناة، والوضع الحالي، وتصنيف إقليم قناة السويس للمناطق حسب الخصائص الطبيعية والأمنية التي تؤثر على تنمية إقليم قناة السويس، والجهود المستمرة للتنبؤ بمسار

جامعة الإسكندرية
كلية الهندسة

التنمية الحضرية المستدامة للتخطيط الإقليمي
دراسة حالة (إقليم الإسكندرية 2050)

رسالة مقدمة لقسم الهندسة المعمارية
جامعة الإسكندرية

لاستكمال متطلبات نيل درجة دكتوراه الفلسفة في الهندسة

إعداد

م/ مها على السيد عبد الوهاب

تحت إشراف:

أ.د/ يسرى عبد القادر عزام

أستاذ العمارة والتخطيط بقسم العمارة
كلية الهندسة – جامعة الإسكندرية

و

أ.د/ طارق عبد الحميد فرغلي

رئيس قسم العمارة
كلية الهندسة – جامعة الإسكندرية

تاريخ التسجيل: يناير 2013
تاريخ التقديم: ديسمبر 2017