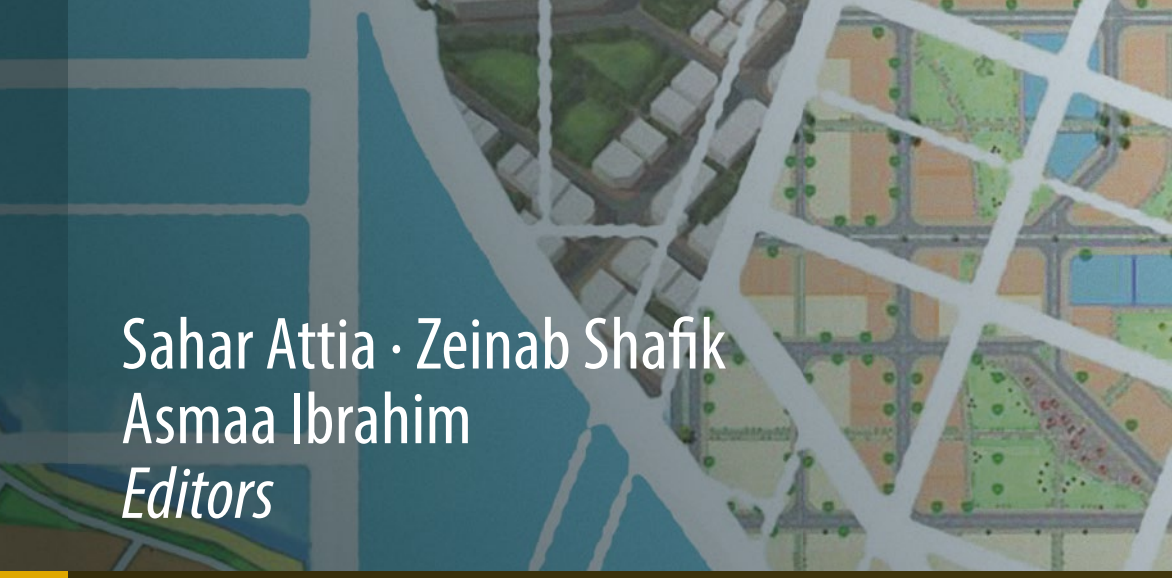

Sahar Attia · Zeinab Shafik
Asmaa Ibrahim
Editors

New Cities and Community Extensions in Egypt and the Middle East

Visions and Challenges

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Foreword

The Department of Architecture at the Faculty of Engineering in Cairo University organized its Seventh International Conference in March, 2017. Scholars, researchers, practitioners, ministers, and governmental and non-governmental organizations from 6 different countries came together to discuss and debate the different prospects of new cities. The aim was to revisit major issues that were frequently addressed theoretically, as well as, in practice, concerning new cities and new extensions to existing communities, and their relation to already existing forms of urbanization.

This book addresses the key manifestation of "responsible innovation" in the human activity of "dwelling" and "urbanization." The aim is to develop a twofold approach: One fold reads into the future by daring to imagine a different form of life and by pushing the boundaries of innovation and creativity in pursuit of a new vision for responsible cities that integrates productivity, effectiveness, and attractiveness. The other fold claims an ability to anticipate and preempt the various risks and uncertainties of such development and expansions.

Together the editors embarked on this project to select the best submitted contributions, aiming to push forward the boundaries of current practices and knowledge to embrace innovative solutions, novel approaches, and grounded technologies within realistic comprehension of economic risks and environmental implications in the new cities' context. The book investigates different scales and situations, various urban forms and morphologies, and various localities and totalities. It presents a platform of recent research, findings, answers to pressing issues, and posing even more questions to the concept of building new cities and expanding existing ones.

The Editors of this book are totally committed to the topics addressed; we believe in the importance of the issues and discussions stirred in the chapters of this book. Furthermore, we believe in the appropriateness of the timing to evoke such ideas and arguments particularly related to the Arab Region. Sharing these ideas with a larger audience brings even more value to the work produced.

Acknowledgments

In this publication, 26 esteemed authors innovatively contributed in producing 14 different chapters tackling the challenges of new cities' and community's extensions. The Editors would like to express their appreciation to the authors for their valuable contribution that mediated their insights about various issues and aspects of new cities in different countries of the Arab World. Our sincere gratitude goes to the Springer publishing team, with special thanks to Margret Deignan and Alexander James for their rigorous and prompt follow-up that contributed to the successful completion of this book.

Introduction

At the time of transformation, people continue to influence their habitat and beyond. While facing the compelling challenges of the present, innovative development poses itself as an inevitable response to future demands. In socioeconomic disparities and environmental crises, innovation necessitates a mode of action to responsibly address issues in an unconventional manner. The production of space becomes the responsibility towards the development of human resources, promoting needs, challenging capacities, and advancing a decent quality of life.

In Egypt, the concept of new cities was initiated in the 1970s, and developed into an actual planning phase in 1975, where three generations of new cities and new settlements were planned and designed. The execution of these new cities began effectively in 1977. Until the late 1990s, although many housing units were built and the infrastructure was implemented, the new cities failed to attract the expected population and eventually did not achieve their declared targets. Nevertheless, large-scale industrial zones were implemented in the new cities of Tenth of Ramadan, Sixth of October, Borg El Arab, and Sadat City.

The first generation of new cities was generally characterized by imbalance in growth, dispersion of planning, and delays in implementation schedules. This generation of cities was challenged by the need for transportation networks, absence of marketing policies for housing units, and lack of organization and integration of responsible management. At the same time, informal areas rapidly developed and expanded over agricultural, as well as desert land.

The failure of the first generation of new cities to meet their population targets led to changes in Egypt's urban development policies in future plans. The early 1990s witnessed a new era characterized by a shift towards the participation of the private sector in development, expanding the range of target population/user groups, upgrading the road network, and the inclusion of real estate funding in the new cities' policies.

Presently, the current situation of new cities' policies reveals more challenges, among which is the absence of an overall regional vision, and a comprehensive master plan that regulates and coordinates the development of all emerging new cities, to emphasize the unique characteristics and identity of each of them. Currently,

most new cities suffer from similar problems exemplified in low densities, which do not represent minimum threshold for services to survive. The upgraded master plans enlarge new city boundaries in response to private developers' profitability without specific planning targets. The expansion policy resulted in excess gated communities coupled with an imbalance in distribution of residential zones and absence of broad vision together with bad organization between developmental projects, for maximizing private profitability. Insufficiency in public transportation networks, in addition to local transportation projects funded by the private sector, led to traffic congestions at the entry points and connections of GCR. Conclusively, new cities presently suffer from dispersion, random distributions, and bad connectivity. In the last decade, an initiative was carried out by the Egyptian government to brand the new cities and revisit their development model. The projections of Egypt 2030 conceived the fourth generation of new cities which are now under construction, with the aim of avoiding the mistakes of the past.

Many countries in the Arab Region are taking the initiative of building new cities with the objectives of economic development, social change, mobilization of the younger generations, and the creation of sustainable energy efficient new settlements of the future. Masdar city in Dubai, NEOM city in the Saudi Kingdom, and many examples of new cities in Morocco are branded as the cities for the future. Similarly, in Egypt, the New Capital of Egypt, New Al-Alamein, East Port Said, and other cities are offering schemes of sustainable development and smart city management.

Conclusively, establishing new cities is a multifaceted complex process that begins with initiating a vision of the future that incorporates new cities with existing ones in a comprehensive national/regional plan. In order to succeed, the new city vision should exploit available new technologies, scientific developments, and creative inventions that represent the state of the art worldwide. The significance of this book is attained from focusing on the potentials and challenges that face the new cities' vision. Within its chapters, the book presents ideas and concepts, and a wide range of experiences and case studies distributed worldwide and in the Arab Region to benefit planners, architects, and decision makers while drawing a map for the future generation of new cities.

The wide range of ideas and the variety of precedents and experience led the editors to distribute the issues addressed in the book into separate chapters; while some chapters present harmonized examples and discussions, others argue for evocative approaches and processes. In an attempt to maintain the richness of the discussions presented, the individual chapters posed itself as the suitable strategy to be adopted.

This book accordingly presents a wide range of experiences and case studies to be considered while thinking new cities in the region. Related topics include concepts of branding new cities and their role in reforming national economy. Additionally, several chapters debate issues of urban governance and the impact of their bad and good utilization as a significant tool in achieving social and economic goals within formal and informal settings. The later chapters discuss challenges of small-scale aspects including design of urban spaces and building typologies and

how they should adapt to the different community requirements. Following are quick reviews of the chapters.

The book presents a variety of concepts and challenging debates that reflect the relevance of the issue of new cities to the Arab Region, particularly at the present time. We chose to start the book with the Visions of New Cities which is the core concept that instigates the dream, challenges reality, and dares to imagine a different future. The vision of the new city is sometimes described as "Branding the New City"; it places a new benchmark as a guide to proceed into the future. The Branding theme dominates the first three chapters of this book.

Chapters 1 and 2 sequentially present New Alamein City in Egypt as a significant branding experience that is proposed to set a new benchmark for the new generation of cities in Egypt. Chapter 1 presents an in-depth analysis to the main vision of the New Alamein City and elements of its master plan. This chapter encompasses the first authentic published material about the new city. Chapter 2 discusses an innovative planning approach of the new city, as a tool to establish the interrelationship between spatial planning and the productivity of the city, with a focus on New Alamein City.

Chapter 3 pursues an alternative vision in NEOM city in the Saudi Kingdom, where the vision for this new city is regarded as a vehicle for social reform. NEOM city is a demarcation of a paradigm shift not only in physical planning but also in the social realm. The city is designed on the basis of sustainability, energy efficiency, and intelligent architecture. Its residents are recruited and intended to be liberal intelligent productive men and women, who have the capacities to proceed side by side to build a balanced compatible future. Chapter 4 then presents King Abdullah Economic City, and highlights its future capability to become one of the largest sustainable cities in the Middle East.

Achieving the benchmark retrieves the obstacles, risks, and challenges that should be faced and the lessons of the past need to be considered. Details of operational aspects, governance aspects, economic issues, land value, and marketing issues emerge as the most urgent challenges to be addressed while attempting to plan a new city. The following two chapters present a profound description to the comprehensive operation of new cities. Special focus is given to economic aspects that are closely related to capturing the increase in land values and to control the real estate market that are addressed as key challenges due to their impact on the established economic structure of the new cities. Chapter 5 presents an approach for maximizing benefits from land values resulting from the connectivity between new and existing settlements through public transit development, through applying the land value capture method on Borg El-Arab new city. Chapter 6 discusses the challenge of the real estate bubble created as a result of the run-up of real estate process based on demand of citizens or small investors, to invest their savings in correspondance to the decrease of the purchasing power of the Egyptian pound, causing a fake demand in real estate, with an application on New Cairo City.

The book then builds on the discussion of integrative elements to establish sustainable and inclusive cities. Urban governance is presented as an effective tool to guarantee the cooperation between stakeholders to achieve successful sustainable

urbanism. Consequently, Chaps. 7, 8, and 9 analyze the role of good and bad urban governance and its impacts on successful upgrading policies. Chapter 7 thus studies the Egyptian ecotourism development to highlight its deficiencies, based on a critical documentary review of specific case studies, and semi-structured interviews with 56 ecotourism experts, and stakeholders. Chapters 8 and 9 tackle this aspect from the perspective of growing informalities through unplanned expansions to pinpoint the necessity of adapting to upgrading policies of city expansions to accommodate the true needs of all target groups of communities and consider them as a hidden potential, within a cooperative participatory process.

Creating a unique character to new cities through branding, with special consideration to their economic and operational aspects on a comprehensive scale, also necessitates zooming in to explore the vitality of urban spaces in the new cities by addressing the livability and safety of the new human settlements. Chapters 10 and 11 tackle issues that threaten the vitality of urban space. Chapter 10 handles the challenge of reusing lost urban spaces that are leftover, together with landscapes within the urban fabric to examine the potential of developing deteriorating pockets. The chapter discusses strategies of revitalization based on three case studies with varying scale: “Al Azhar Park in Egypt”; “High Line Park in USA”; “Samir Kassir Square in Lebanon.” The strategic preplanning of in-between structures within the urban fabric of new cities can avoid the emergence of deteriorating pockets in the very near future of these cities. Chapter 11 conducts an empirical research in one of the middle-income communities in New Cairo City, to deduce a new operational framework model for safety existence in urban space.

The final section of the book focuses on specific building types that through their responsive design approaches can act as catalysts for development in the new cities. Chapter 12 analyzes the role of mega malls in branding new cities through their massive population of user groups, and with the appropriate integration with the urban fabric of new cities, the mega malls can act as magnets for vitalizing new cities. The chapter presents an analysis to Cairo Festival City and Mall of Arabia as cases studies, to end up with recommendations for the new cities of Egypt. Whereas Chapter 13 deduces the relation between community or campus-scale planning and space-scale urban setting as a tool to reconstruct the relationship between campus and the new city. Finally, Chap. 14 addresses the design of healing environments in health care facilities to create a vision for applying responsive architecture in children cancer hospitals.

The chapters presented in this book seek to fill in some gaps in knowledge in the field of establishing new cities. The book highlights key aspects to be considered in the future by decision makers in an attempt to ameliorate quality living with all its facets in the new settlements and their extensions.

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Her research interests include participatory approaches in urban development, urban regeneration, sustainable urbanism, and upgrading the informal areas. She is the co-editor of "Dynamics and Resilience of Informal Areas: International Perspectives" published by Springer, 2016.

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Chapter 1
Al Alamein New City, a Sustainability Battle to Win

Sahar Attia

Abstract Al Alamein New City (ANC) is located in a site named after a battle that took place during the Second World War (WWII 1942).The Egyptian Government selected a prestigious site on the north western coast to host the new city, which is expected to set a new benchmark, and a model for the new generation of sustainable cities in Egypt. In fact, the site is rich with its natural, and historical resources; however, achieving sustainable development in Egypt implies overcoming multiple challenges. The most pressing challenges are institutional, financial, and managerial. The site has a waterfront on the Mediterranean that extends 14 km. It includes the WWII cemeteries' historical site. The desert expands to host the new city, and its activities, and a possible agricultural hinterland.

Although new cities have had long history in Egypt, yet the challenges to build a successful, sustainable, and an attractive new city are debatable. The author stresses on good governance being the most relevant challenge to achieve sustainability. Hence, governance will join the three well known sustainability pillars: Social, economic, and environmental aspects. The author will tackle major issues that will constitute the elements of branding New AL-Alamein City.

This chapter is the first authentic published material describing the city master plan. It is structured in three main parts. The first part consists of the vision development derived from the regional context. The second part deals with the strategy of sustainable development in the city, its pathways, its pillars, and the major guidelines to achieve sustainability. This part ends with the development drivers, that serves as the base for the forthcoming part. The last, and third part visualizes the planning concept, and its relevancy to achieve sustainability, in addition to the master plan, the design concept, and related details including the use of attractive public spaces, strong public realm landmarks, effective connectivity between public buildings, and vibrant neighborhoods. Moreover, the chapter pinpoints key aspects in the master plan related to how to create a unique identity in new cities, while providing a better life quality for Egyptian citizens, together with establishing an international attractive venue for cultural, and leisure tourism.

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Keywords Al-Alamein · Integrated master plan · Sustainable urbanism · Public space · Inclusive design

1.1 Introduction

Since decades, new cities in Egypt have been continuously subject to discussions, and debates. In fact, some cities (the first generation) that have been built since the early 80s, had not reached their population target even after more than 35 years.[1] Hence, there should be a new logic to build new cities today. In 2009, the Higher Council for Urban Development in Egypt began to consider the crucial need to formulate a comprehensive national vision for Egypt that would enable the best use of resources, and conquer the challenges obstructing the sustainable urban growth. In 2010, areas of extensions, and development were identified, the two priority potential development areas were Suez Canal zone, and the North Western Coast, which lies from Alexandria to El Saloom. The North Western Coast had its good share of studies, and master-plans, even before 2009 (GOPP 2007); however, all documents remained on shelves, and the coast was developing incrementally formally and informally to host resorts and real estate projects, focusing on providing summer houses, mostly in gated communities, and few facilities functioning seasonally. Bedouins speculated the land, and for decades, the model of urban growth in the North Coast was not subject to a specific vision. The city of Borg El Arab, a new city from the first generation, did not achieve its role in boosting the development in the North Coast. In 2011, the General Organization for Physical Planning (GOPP) through the national vision 2052, announced the necessity to develop a new city to represent the main core; fostering the development of the North Coast, and attracting migrants searching not only for a job opportunity, but for an integrated development where services, affordable housing, public transportation, and public spaces would offer a better quality of life, considering that it will be the only city that will have public accessibility to the water front, and public beaches (GOPP 2011).

The first initiative to design, and conceive AL Alamein New City (ANC) was carried by UN Habitat within the ASUD program (Achieving Sustainable Urban Development). The program was launched in 2013, aiming at integrating three elements: Good design, applicable legislations, and finance to build sustainable communities (Attia and Ibrahim 2017). Accordingly, the conceptual design was developed within the agreement between the Ministry of Housing, Utilities, and Urban Communities (MHUUC) in Egypt, and the UN Habitat Regional Office for Arab States (ROAS). The review and supervision were handled to GOPP, and UN Habitat Egypt office, with the assistance of the urban planning unit in Nairobi. The

[1] The idea of building **new cities** in Egypt started in 1868, with Port Said during the colonial period, followed by other new communities around Cairo, Helwan, Heliopolis, Madinet Nasr, all became suburbs, now they are merged with Greater Cairo Region. In the late 70s started the te first generation of the new cities.

conceptual plan aimed essentially at positioning the city within its context, and setting the planning general concept taking into consideration the national, and regional needs, together with the stakeholders' aspirations that were identified in a workshop carried earlier, ending with clear outcomes, summarized as follows: Create a sustainable city, achieve economic viability, and social inclusiveness, create investment opportunities, promote good governance, and consider regional strategies. In March 2015, the conceptual plan was presented in the Economic Urban Forum in Sharm El Sheikh, and a presidential decree was issued to approve the location, position, and the conceptual plan of the new city.

1.2 ANC Vision Within Its Regional Context

The vision of Egypt 2052 has a special focus on the North Western Coast Development. Many proposals identified this region as a potential development zone, it reaches a depth of about 40 km from the shore line, and is supposed to include agriculture (reclamation, and cultivation depending on rain, and underground water), agro – industries, tourism, and urban settlements (creating new communities, and service centers to attract population to settle in the North Coast, such as: The new city of Al-Alamein). The current, and ongoing infrastructure projects will serve as catalyzer for development, such as: The establishment of airports, including: Al-Alamein Airport, Borg Al Arab Airport, and Matruh Airport, in addition to the coastal regional road connecting Alexandria to the touristic resorts – spread all along the coast – reaching Matrouh, the expansion in constructing power plants, water and sanitation, desalination plants, and El-Hammam Canal project, and its extensions to be carried out by the Ministry of Agriculture and Irrigation.

The North western area is under the administration of Matrouh Governorate, which is located at the North Western corner of Egypt, and extends 61 kms west of the Governorate of Alexandria, 450 kms along the coast up to the Egyptian Libyan borders, and 400 kms to the South North of the Siwa Oasis. Bordering the Matruh Governorate to the East, is the Governorate of Alexandria, to the Southern East is the Beheira Governorate, and to the East is the New Wadi Governorate. The total area of Matruh Governorate is about 167,000 km^2, which represents 17% of the total area of Egypt (GOPP 2015). AL Alamein New City is located in one of the eight administrative units called "Marakez": Markaz Al Alamein, thus belongs to Matrouh Governorate. Nevertheless, all new cities, and new communities belong administratively to the New Urban Communities Authority (NUCA). There are few staggered small villages spread in the area surrounding the existing city of Al Alamein; an old low density Bedouin core with a unique urban pattern that should be preserved while developing ANC. Figure 1.1 shows the hierarchy, and the administrative regional context for the cities, and their contextual region.

The strategic plan for Matrouh Governorate conducted recently by GOPP reveals also important expectations related to the role of ANC in developing the region, and

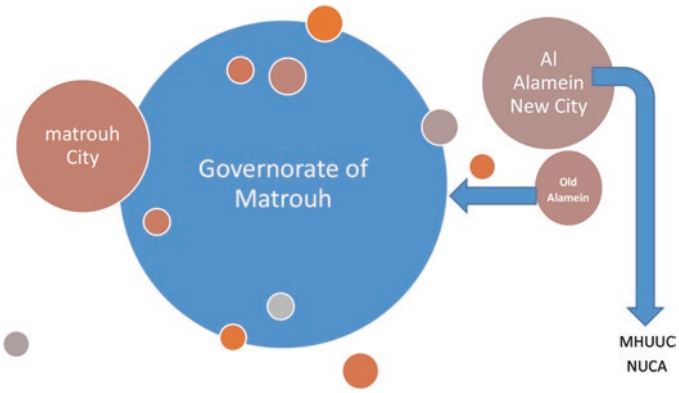

Fig. 1.1 Administrative regional context of ANC (Author)

in creating investment opportunities. Hence, a vision statement for the city was developed: ***ANC is a flexible, resilient and sustainable city that leads integrated economic development in the North West Coast region, within ecological boundaries*** (Associated Consultants 2017). The following key words interpret the vision:

Flexibility: AL Alamein New City has the capacity to absorb future impacts resulting from natural or human actions on the local environment especially those resulting from climate change, as well as social, and economic changes.

Resilient and Sustainable: Climate change, and ground water, are the most important future challenges facing ANC, which require a resilient city to have the capacity to absorb the future.

Integrated Economic Development: The development that integrates environmental, and social concerns, together with objectives in a supportive and complementary manner, where all economic activities are linked ensuring the best use of available resources.

Ecological Boundaries: Represent the limit to the amount of resources, productive land, and sea areas required to support economic, and municipal activities, and to assimilate generated waste, that the city cannot exceed (Fig. 1.2).

1.3 Sustainable Development Strategy (SDS) in ANC

Considering the global, national, regional, and local challenges facing cities today, and particularly facing the implementation of sustainable development, conceiving a sustainable city expanding from the Mediterranean to the desert, requires considering all relevant dimensions to ensure that future populations enjoy an adequate quality of life, with the available resources. Ensuring the co-existence with the

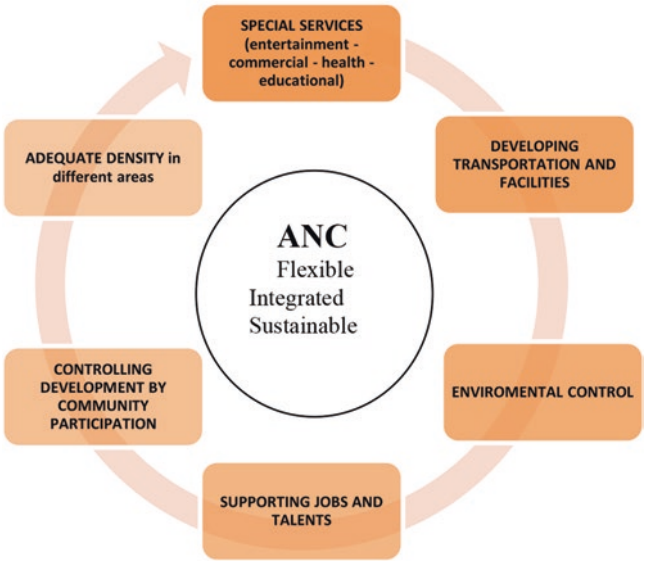

Fig. 1.2 ANC vision, and objectives (Author)

natural environment is another major challenge to consider. The author suggests three steps to achieve the SDS:

- Defining the pathways that would lead the sustainable development;
- Defining the main pillars that would support the sustainable development, and;
- Defining the guiding principles that should be adopted while designing, building, and managing the city.

Each of these steps should consider the challenges at the four levels previously mentioned.

(a) **Pathways that would Lead the Sustainable Development:**

Five pathways are defined (Associated Consultants 2015):

- **Achieving Social Sustainability:** Social sustainability is the key to attract residents, a city should be diverse, with equal opportunities for all residents. ANC should offer an adequate quality of life, publically accessible urban spaces, equity in the distribution of services, and amenities, and providing urban safety for all residents including women, children, and elderly people, with a special focus on people with disabilities. ANC should promote social cohesion through the integration of the local community with the new incoming inhabitants;
- **Achieving Environmental Sustainability:** A sustainable city, in harmony with nature, together with enabling environment friendly actions, recycling oriented urban development, and reducing pollution, waste pollution, and solid waste;
- **Achieving Economic Sustainability:** A city that attracts people and investors, where culture and technology meet through innovative approaches, eco-tourism,

green industries, agricultural hinterland, education, and research oriented economic base that will drive the other economic activities;
- **Achieving Sustainable Urban Planning & Design:** Planning and designing a vital, and connected city with strong identity. ANC is targeting to create a model of sustainable livable neighborhoods, adequate space for streets & an efficient street network, balanced densities, mixed land-use, social mix, together with green urbanism, and;
- **Enabling Good Governance, and Enforce Laws, and Regulations:** ANC should be an autonomous self-managed city, to be able to maintain its sustainability, manage public, and private finance, ensure an innovative management system, create an institutional set up responsible for the efficient management, and operation of the city in a transparent, and an accountable manner, together with efficient monitoring, and continuous enhancement for the administrative bodies.

(b) **Pillars of Sustainability in ANC:**

The site of ANC offers great opportunities, representing pillars to achieve a sustainable development. Aside from the natural, and physical resources, the political will to achieve sustainability can be considered the major pillar that would support developers, local government, and other stakeholders to efficiently manage the natural resources as a prime objective. The following are the set of pillars:

- **Branding the City:** Formulate, and adopt a holistic branding strategy, and apply this to all development planning aspects;
- **The Location:** Accessible from Cairo, Alexandria, and Matrouh, availability of two airports, railway (to be upgraded and connected with other new cities), and regional roads;
- **Tourism Potentialities:** Sandy beach, historical site, desert for safari, and natural lakes;
- **Possible Diversity of Economic Base:** The resources allow a wide diversity of activities, offering job opportunities at all levels;
- **Potential of Solar energy /Renewable energy**;
- **Potential for Water Provision:** Desalination plants are foreseen;
- **Food Security:** Can be provided through the reclamation of cultivable land, and;
- **Nuclear Plant:** Government of Egypt has approved the construction of the nuclear plant to provide power, to be located in El Dabaa.

(c) **Guiding Principles**

The guiding principles were discussed with relevant consultants during workshops. They included infrastructure works, planning & design, and management:

First: Infrastructure Guidelines (Associated Consultants (AC) 2015):

- Efficient transportation and connectivity: Implement world-class public transportation systems, capable of supporting future growth;

- Measures should be taken to optimize the use of underground water, by ensuring a sustained operation, allowing the discharge of the underground water aquifer, and avoiding its depletion;
- Introduce a water collection system that captures/collects rain water, and uses it for irrigation purposes;
- Proper maintenance of water storage tanks, and constructing new water storage facilities;
- Replace current rudimentary sewage disposal practices causing contamination of underground water, and successively the food chain by introducing adequate sanitary connections, wastewater disposal, and treatment facilities;
- Prevent overgrazing to avoid land degradation, and deterioration of green, and vegetation areas by maintaining the size of livestock, and the carrying capacity of land, and;
- Increase vegetation cover in order to reduce land, and soil erosion, particularly in windy, and stormy areas.

Second: Planning and Institutional Guidelines

- Establishing strong connections with old Alamein city, through the physical integration of this existing settlement with new city first development. Figure 1.3 shows the boundaries of ANC, and the spatial intimacy with the existing Alamein city;
- Planning buildings, residences, shops, and services to be closer together to motivate daily walking, and thus enabling a more efficient use of services and resources;
- Providing affordable, sufficient, and livable housing;
- Promoting mixed-use within each of neighborhoods, blocks, and buildings, to promote more diversity of individuals, and activities;
- Designing more green areas to provide sports' field, children's play areas, and quiet semi- public parks. The green areas within neighborhoods act as connecting elements, not as green belts to create a more convenient, and enjoyable place to live;
- Creating neighborhoods that are connected, integrated, and compact;
- Considering public transportation as a priority;
- Adopting, and enforcing integrated development planning approach as a vital process for all aspects;
- Adopting one-stop-shop concept for development planning, together with development control, and;
- Thinking of innovative ideas to create incentives for people to move to ANC.

Fig. 1.3 The boundaries of ANC, showing the relationship with the Mediterranean, and the existing Alamein city (AC 2015)

1.4 Development Drivers for ANC

AL Alamein's economic development framework involves integrated key sectors which are interlinked through development drivers. Seven sectors constitute the economic base of ANC. This is considered to be a paradigm shift in ideological planning concepts of all precedent new cities in Egypt, where a strong mono driver development was planned, including: 10th of Ramadan, and Borg El Arab, depending on industry as the main economic base, in addition to 6th of October, that

Table 1.1 The expected employment and population in ANC in 2052

Description	Total in 2052
Basic employment	18,369 job opportunities
Supporting employment	26,120 employments
Service sector	135,747 employments
Total employment	58,235 employments
Population (dependency rate 3.2)	1,882,353 inhabitants
85% settlement rate	1,600,000 inhabitants

Source: AC (2017)

has started with industry as an economic base, but due to its close location to Cairo, it gained other two drivers: services, and housing (real estate). El Salheya, on the other hand, depends on agriculture…etc. ANC is expected to have a multi-sector economic base depending on the following seven sectors:

- Tourism Sector: It is the fundamental sector in ANC's existing structure, therefore it is likely the most attractive sector for investors, and developers;
- Education, Research and Technology sector: Research and technology is the future of cities. It will drive the implementation of sustainability, and encourage different social levels to move to the city. (currently, three sites are allocated for campuses)
- Service Sector: There is a demand for services in the region to cover the gaps, and avoid failures in most of the three precedent generations of new cities;
- Commercial and Financial Sector: Currently this sector has very limited contribution in the Northern Coast. In the future, this sector could contribute significantly to the growth of the city, depending on the demand of commercial services (financial, banking, …etc.);
- Industrial Sector: The industrial sector is essential for job creation, investments, and achieving the national vision. Normally, the industrial sector is the leading sector in the city that drives investments, and the development of other sectors;
- Housing and Transportation sector: Urban/housing sector is mainly driven by demand for housing led by the increase in local population (depending on jobs' creation, and settlement rate). Sub-sectors include housing, roads, together with public transportation, and;
- Agricultural sector: Agriculture is essential to drive the industrial activity. Egypt should strongly capitalize on agricultural/manufacturing trends, and hinterlands to provide better opportunities to secure food supply.

The construction sector will be booming along with the city development, and growth. The total employment opportunities that these sectors offer are calculated to be with a dependency rate of 3.2, and a settlement rate of 85%, the expected population in ANC accounts to 1.600.000 inhabitants in the target year 2052. Table 1.1 shows the expected employment, and population in 2052.

1.5 The Master Plan

(a) **The planning concept:**

Three main factors shape the city concept, which are: The natural setting, the existing infrastructure, and the historic site of WWII Cemeteries. The planning team looked at the existing elements of nature: the sea, and the desert, to envision how they should be connected, while taking into consideration the main other four dominant elements of existing infrastructure in the site, that should be dealt with: the regional road (Alexandria-Matrouh), the railway, El Gueish road and El Hammam canal. They form four horizontal axis, splitting the site into four distinct zones: zone one from the shore line till the regional road, the second zone from the regional road till the railway, the third from the railway till El Gueish road, and finally the fourth from El Gueish road till el Hammam canal.

Figure 1.4 shows the main infrastructure existing features, and how they are forming the horizontal zones. It also shows the planning concept, and the transition from nature (sea) to nature (desert), throughout the city using the green corridors, and the main roads' network. Green corridors help in preserving the biodiversity, and drainage pathes, while the main roads serve in connecting the north (water front) to the south (desert borders) to allow the best flow of air circulation. Accordingly, the master plan considers the following criteria:

- The insightful consideration of the horizontal constraints, and replanning of the location of the railway.

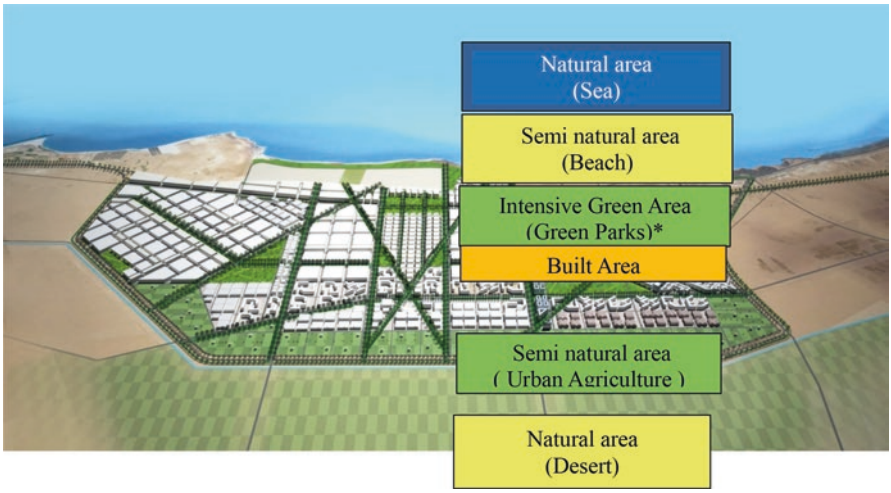

Fig. 1.4 Planning concept of AL Alamein New City, and the main infrastructure existing features (AC 2015)

- The distribution of major land uses, and horizontality zoning concept, so that all vertical phases created shall include all natural resources, and ensure a better financial plan for investing the land.
- The horizontal lines formed by the natural, and physical elements, along with the vertical connectivity, sea/desert implies using the grid iron as the main city road network. Additionally, diagonal avenues will be connecting main squares/main buildings/ or main parks, and act as transitional grid.

(b) **ANC Plan and Design**

It has been recognized that if cities are well planned and designed, they can contribute effectively in addressing sustainability concerns. But what is well planned? A successful plan is only judged in its context. A successful design in Al Alamein, cannot be the optimum for another city in another setting.

In this chapter well planned means, integrated plan, connected, flexible, and balanced with its land use distribution, together with achieving inclusiveness, and walkability. In addition, it refers to being vibrant with activities, accommodating large green areas and parks, promoting democratic services' distribution, landmarks, and entertainment diverse public leisure areas, to enjoy public art, and thus helps in creating its visual regional and architectural identity/character, with acceptance and support of all integrated stakeholders.

Another concern that hits the "well planned" issue, is the size of the planning unit: Should we keep the path of the conventional planning in Egypt? The first generation of cities in Egypt considered the size of population of the neighborhood to be 5000 inhabitants, relying on the calculations of students' percentage to be enrolled in primary schools, following the conventional neighborhood concept of the 60s. Later, and due to changes in the educational system, the percentage of students enrolled in "Essential" education, (7–15 years old) have raised the size of population for the neighborhood to reach 7–10,000 inhabitants. The patterns of relationship between housing, and schooling in Egypt is only valid within low, and low middle class. In higher social classes (middle and upper middle) many families prefer the private education to ensure a better learning for their kids. School buses, or private transportation is used for distant schools. ADL & AC issued an unpublished report entitled the Strategic Master Plan for 10th of Ramadan submitted to the Ministry of Housing, Utilities and Urban Communities in 2011(ADL and AC 2010). One of the major findings was that the size of neighborhoods in new cities has to be reviewed, and other criteria should be investigated (GOPP 2011). Accordingly, a new approach has been proposed, and approved, which considered the social strata of the residents, the densities' issue, the purchasing power, and the services' coverage: the optimum size deduced was 20,000 inhabitants, that would respond effectively to the provision of primary and commercial services, to ensure a convenient level of densities, achieving the required compactness.

The modular city will consist of cells with an approximate area of 138 acres. Figure 1.5 show the spatial neighborhood concept, that would create a sustainable environment for 20,000 inhabitants, while Fig. 1.6 shows the spatial connection between neighborhoods.

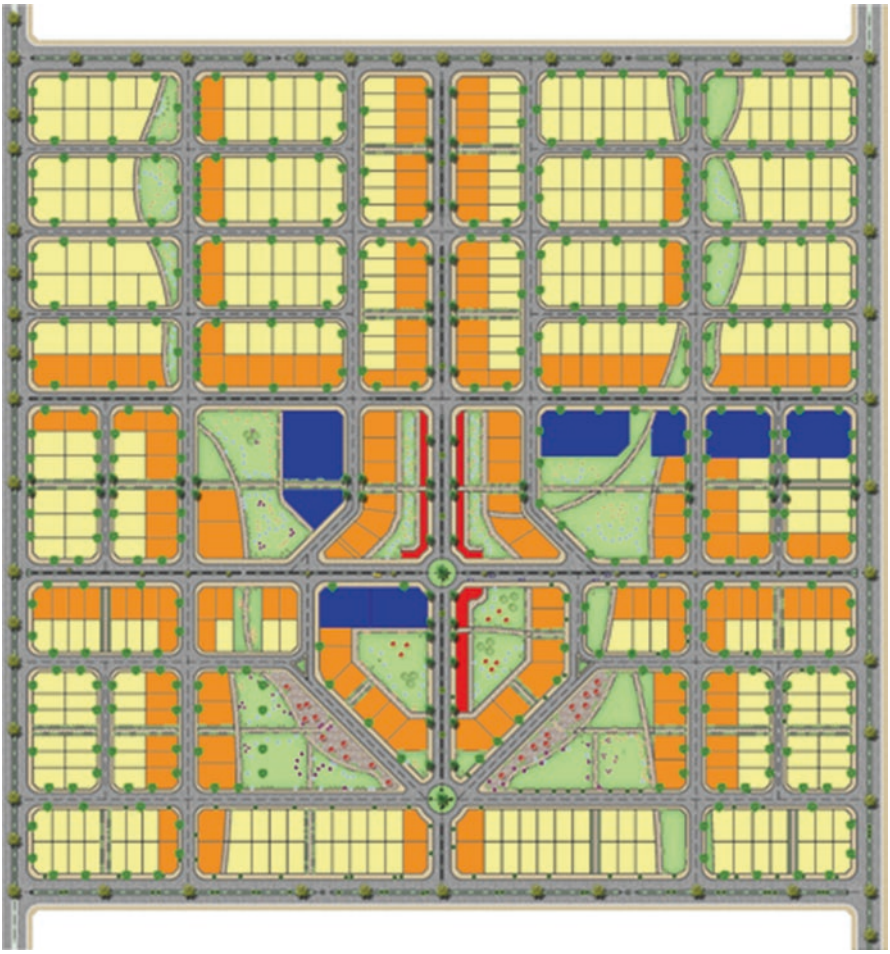

Fig. 1.5 Sustainable neighborhood theoretical concept (Author)

Sustainability at the level of the neighborhood is achieved by using blocks that motivate walkability. A grey water system, green park, solar energy, solid waste collection system will be put in place. The residential typology offers dwellings in mixed use areas, or in residential use only, thus ensuring diversity. Moreover, all green areas will be connecting the different neighborhoods, and mixed uses will be available in all modules, without jeopardizing the quiet residential areas if needed for some residents. Rules and regulations will shape the urban form, and ensure that the city has a strong identity. Each neighborhood will have enough public areas, and children's amenities.

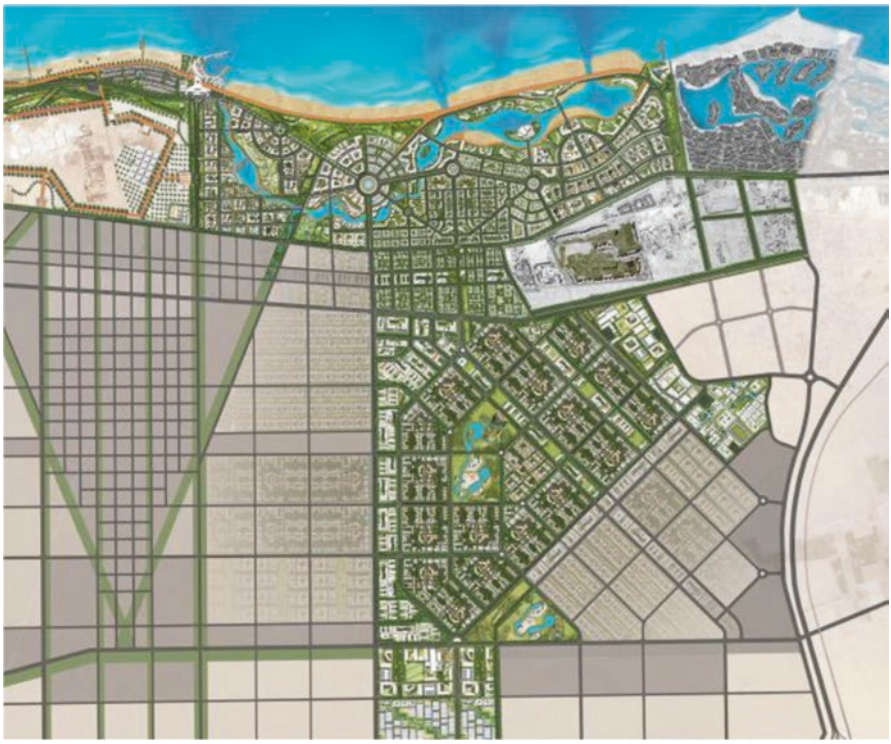

Fig. 1.6 The grid and the module (AC 2017)

On the city level, the master plan in Fig. 1.7, reveals the various land uses, and the overall grid, highlighting the following:

- The city is designed using a module (750 m × 750 m), whereas each zone of activity is interlocking with the other, allowing the expansion, or reduction of modules to allow flexibility of having different ranges of zones' area at each stage. The zones are layered starting with the touristic zone on the north, located between the shore line (14 kms long) and the regional road. It includes major tourism attractions, and the WWII Cemeteries on the western side. On the eastern side, lies the uptown, with mixed – use housing, together with commercial, and other services that offer a vibrant zone. The Northern zone also includes quiet districts overlooking the lake. The layers extend to the south to reach the technological parks, and scientific research areas serving the industries, logistic areas, and agriculture lying in the extreme south of the city below the railway. The city is surrounded by a ring road to ease the accessibility of all sectors, and zones;
- All service centers are connected and integrated, and similarly all public spaces are connected to the green corridors (Fig. 1.8);

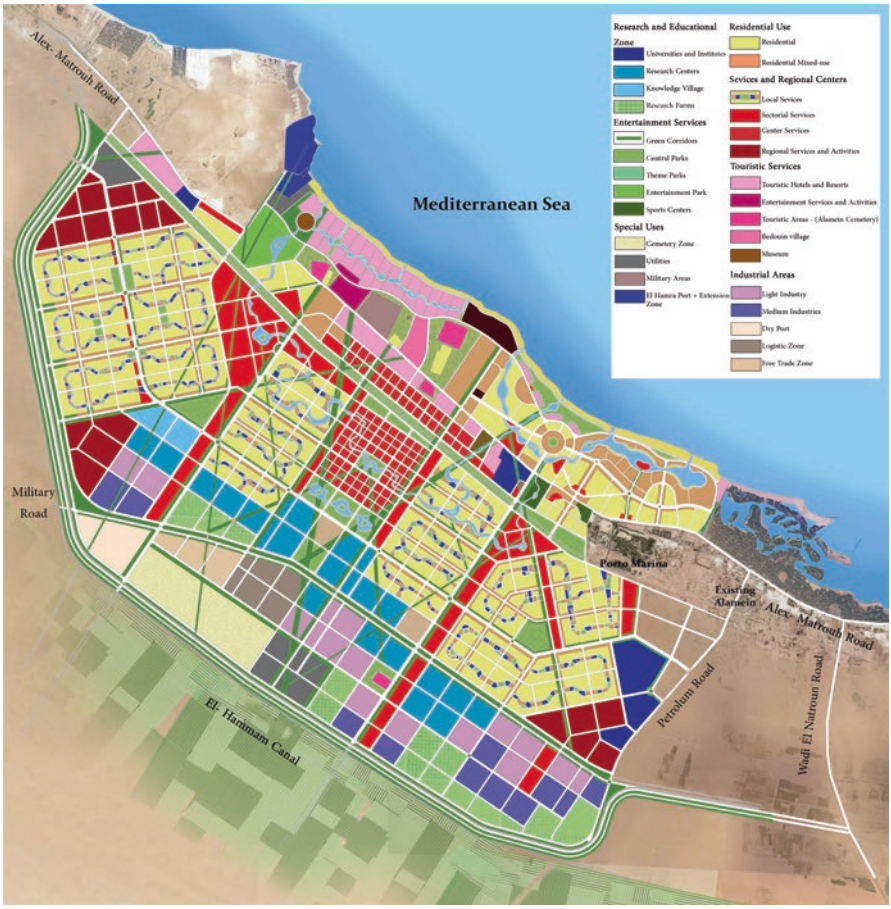

Fig. 1.7 The master plan (AC 2017)

- The regional services that the city provides to accommodate the north coast communities, are spread to ensure accessibility from the east, west, and south. They are connected to the regional network, or to the railway;
- The public realm strategy depends on the waterfront. It is designed to include a large promenade, with fitness trails, restaurants, cafes, kiosks, children playgrounds, sports and beach facilities;
- The city is divided into groups of neighborhoods, each group constitute a district. the city can accommodate 18 districts, each district has an average of six residential neighborhoods, and;
- The city will have more than one center; they are spatially distributed to ensure that each stage is accessible to the center.

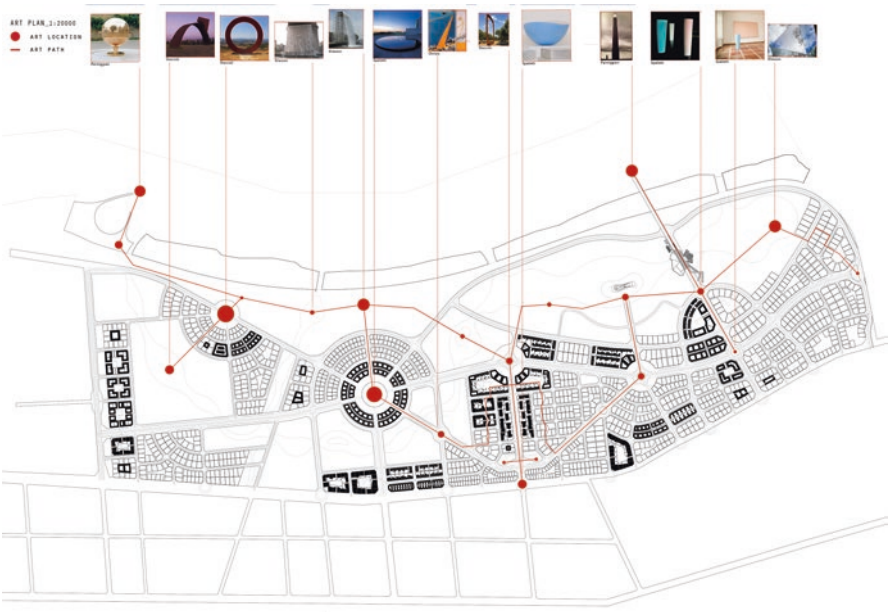

Fig. 1.8 The connectivity of public spaces in the northern part of the city (AC 2017)

1.6 Role of Public Spaces in Achieving Sustainability

Most of the Egyptian cities are suffering from a clear absence of public spaces which has weakened sustainability, and produceds a strong social gap among its citizens. It also caused spatial segregation, and immense social inequality, which negatively affected the civil society's regional identity in those cities (Attia 2012). Hence, the design of ANC gives special concern to public spaces, which emphasize the city's identity and its districts. Figure 1.8 shows the connectivity of the main squares, and places.

The city master plan includes three main types of public, and open spaces: public parks/gardens, the waterfront space and promenade, and the green corridors, in addition to the neighborhood and community gardens. Together with the green areas in the squares, and streets all these green spaces they are all achieve diversity in the public space network.

Public spaces are conceived, and usually placed to serve a public building, or in proximity to a landmark, or where a large flow of population is expected, such as the main railway station. Each space should have its own design, using environment – friendly materials, and furnished with adequate street furniture.

The distribution of green areas depends on the creation of green, transverse, and national parks, within the different districts, and blocks. It is worth mentioning that the majority of Egyptian cities do not satisfy the global standards of green areas. The global average area of green public spaces designed in a city per capita is approximately 13 m^2 as a whole. Meanwhile, the World Health Organization (WHO)

Fig. 1.9 The monumental approach for the WWII Cemeteries (AC 2017)

has set that every city should have a minimum of 9 m^2 of green space per person. This rate has been extensively satisfied, as the public spaces' areas designed in ANC reach 15 m^2 per person. This represents about 13% from the total area of the city. It will alleviate the CO^2 impacts, and reduce air pollution.

Cultural public spaces are designed to constitute unique approaches for major attractions, monuments, museums, libraries, and other public buildings (see Fig. 1.9). Moreover, public spaces can also provide leisure, and entertainment for residents. This includes the beach promenade, shown in Fig. 1.10, as they play an important role in the perception of visitors.

Public spaces are the tool to make cities more inclusive, as they contribute in achieving social sustainability. The city authority should maintain the spaces as public, and ensure they are safe, and accessible without fencing gardens or spaces as is the situation in current cities.

Managing those spaces, and controlling their functions, together with activities is a governance issue. Moreover, the patterns of ownership, construction, and service provision, are required to be planned within an innovative, efficient, and secure framework.

Accordingly, NUCA has to conceive a new system for managing the city, and ensure that the local authority has qualified personnel, who can deal with sustainability requirements, including controlling and monitoring. The city council should include representatives from all types of stakeholders.

Fig. 1.10 The beach promenade (AC 2017)

1.7 Conclusion

Al-Alamein New City represents a new city model in Egypt, as it valorizes several planning aspects of sustainable design, city identity, and economic prosperity. The Egyptian Government is aware that all cities, including the existing ones, should be sustainable. Accordingly, it has adopted a paradigm shift in planning new cities, with special consideration to sustainability as a main pillar not as a secondary objective. It also anticipates the essential actions needed to achieve this goal, but within an insightful framework, in coherence with the comprehensive national sustainable development goals formulated in Egypt 2030 vision, that has been issued by the Ministry of Planning, by the end of 2017.

To achieve sustainability, all related ministries, and cities' authorities should work together in harmony. Policies should be formulated to be supportive and integrative, within a coherent operationalized system. It is well comprehended that achieving sustainability, especially environmental sustainability, can be branded, and used not only to market the city, but also to foster its economic development; however, it can also cause conflicts with large scale development projects, if national contexts are not well considered.

New cities in Egypt offer new opportunities for a better quality of life for Egyptian citizens, who represent the main stakeholders. In ANC, the establishment of the city depends on green economy, an approach that requires having insightful local authority, capable of controlling and monitoring all related aspects. The real challenge that faces the success of new cities in general and ANC in particular, is building capacities of all stakeholders. Moreover, the local authorities should consider the importance of public awareness to achieve sustainability, and be more interactive with the practitioners, academics and researchers.

It is worth mentioning that all nations' governments – including Egypt- have been committed to the New Urban Agenda issued in Quito in 2016 by UN-Habitat. This global agenda is to be implemented, hence, new cities can contribute in enhancing the measurements of the sustainable development goals (SDGs) indicators. To conclude this chapter, few questions will always remain bouncing about the construction of new cities, and ANC particularly, until the first phase is completed. However, the debate about new cities in Egypt will continue, until those questions are fully answered: Would Al Alamein New City succeed to be a model for sustainable, and resilient cities? Will the city serve as catalyst for the North Western Coast? Will it attract population, and investments? Will the local government be able to change patterns of consumptions to ensure a resource efficient city? Will implementation, functioning and monitoring follow the international standards, while responding to the demands and aspirations of residents? All answers to these questions are debatable. The years to come will reveal whether the sustainability in ANC has been achieved, and whether it really represents a new era of paradigm shift in the planning of new cities in Egypt.

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Chapter 2
Productive Urban Development: Linking Planning and Economy in Al-Alamein New City, Egypt

Bassem Fahmy and Marco Kamiya

Abstract As rapid urbanization continues to transform the landscape of the cities around the world, subnational governments are under great pressure to address negative externalities associated with poorly-designed and informal expansion. The global trend persists as the rate of growth in unplanned or poorly-planned expansion outpaces that of the planned expansion. The lack of coordination between spatial planning and economic development planning widely observed in subnational governments aggravates the current unsustainable urban expansion. This chapter proposes an innovative approach to urban development planning which harnesses transformative force into an inclusive, equitable, productive and sustainable form of urban development. By integrating spatial analysis with value/supply chain analysis, it assesses the importance of mobility, connectivity, and inclusivity for industries. Upon the analysis, the methodology highlights a strong interrelation between urban layouts and productivity of cities and presents itself as an alternative approach to planning cities. The chapter introduces the case of Al-Alamein, a new city under consideration for development in Egypt, to showcase the government's systematic approach to meet new challenges arising from rapid urbanization and presents a model for future new city development for Egypt as well as for countries around the world, utilizing comprehensive approach to sustainable urban development.

Keywords AL-Alamein · Productive cities · Spatial planning · Urban layouts · Comprehensive design

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2.1 Introduction

Cities have always been at the center of socio-economic development and transformation throughout history. Studies indicate that almost all countries demonstrate the minimum of 50% urbanization rate prior to achieving middle-income country status and every high-income country have reached 70–80% of urbanization rate. High population density facilitates social interactions which catalyzes knowledge spillover, investments, innovation, job creation, and industrialization. Meanwhile, a set of negative externalities such as traffic congestion, slum formation, unemployment, and environmental degradation brought about by unplanned rapid urban expansion looms over city sustainability. Sustainability of city heavily hinges on city capacity to foster positive externalities derived from the economies of agglomeration while mitigating such challenges. Subnational governments, especially in developing countries such as Egypt, where most of the projected global urbanization is expected to occur, are under an immense pressure to accommodate population and land expansion in a sustainable manner.

In response to the imbalanced urbanization, Egyptian government has designated Al-Alamein as one of the New Urban Communities (NUC) program in promoting urban equilibrium by building new cities around densely populated areas. The integrative approach to urban planning will be tested in designing Al-Alamein with an objective of making the new city socially-inclusive and a productive hub for business and job opportunities. The findings of this research will have significant implications not only for Egypt, but also for other governments around the world as a robust case study in building new cities that are spatially, socially, and economically sustainable.

2.2 Productive and Spatial Analysis in NUC

2.2.1 Theoretical/Practical Background for Sustainability

Sustainable urbanization implies a process that is economically productive, socially inclusive, and environmentally sound for both present and future generations (UN-Habitat 2017). With the world population residing in urban areas growing to the unprecedented level, urban sustainability and the quality of life has become a pressing issue around the world. Widely observed trend of rapid migration to urban areas, especially in developing countries, heightens the competition over limited resources among residents and undermines government's capacity to provide basic services. Egypt is not an exception to this trend. Around 43% of the population resides in cities today, of which the majority is concentrated in the Greater Cairo Region (GCR) and Alexandria. Although the share of urban population is not high by global standards, the growth of urban land use is outpacing that of population in many Egyptian cities, endangering sustainability (New York University et al. 2016).

2.2.2 Linkage to Comprehensive Development Methodology

Due to the rapid expansion of cities, governments around the world proclaimed, under the unified voice of Sustainable Development Goal 11 and with the New Urban Agenda (HABITAT III 2016), their quest for building cities more inclusive, resilient, and sustainable for people to live in. In October 2016, governments, civil society, academia, and private sector convened in Ecuador to renew their commitments for the New Urban Agenda for sustainable urbanization.

Sustainability of cities seldom occurs by chance, they occur by political will and concerted effort from wide spectrum of stakeholders. Cities which aim to achieve sustained urbanization while curbing informality are more likely to preserve fertile rural lands and environment, promote socio-economic development and inclusion, and decrease commuting distance and time which, in turn, reduce carbon footprint. And it all begins with holistic planning. Growing interest and awareness calls for a comprehensive development methodology which supports cities to grow in an economically, spatially, and environmentally efficient and sustainable manner.

2.2.3 Urban Economy, Productive and Spatial Analysis in NUC

Cities are the main platform for production, innovation, and trade, while industries are the engines of economic growth and employment creation. As cities facilitate capital mobilization and labor matching, business opportunities arise and enterprises are becoming more productive. Currently, cities account for over 80% of global GDP. The share of city contribution to the national GDP is more pronounced in developing countries. The resulting industrialization and economic agglomeration have and continue to increase productivity while transforming the demographics and landscape of cities.

Productivity is, in simple terms, the ratio of the value of the output to the input consumed in producing the output Total Factor Productivity (TFP) is the share of output not explained by the amount of inputs used in production. It is defined and determined by how efficiently the inputs are utilized in production.). The higher the productivity the more efficiently one can provide a good or service to consumers. Naturally, productivity is closely related to labor skills. Higher skilled labors are less likely to produce defected products, more likely to specialize in a more complex and value-added end of the production spectrum, earn higher wages, and likely to utilize capital in an optimal level. On the other hand, poor countries or cities with limited labor capacity tend to demonstrate high dependency on primary productions and struggle to engage in value-adding activities (Kremer 1993). For a country or a city to promote economic growth and higher standard of living while bridging the widening economic gap, taking steps to enhance its productivity is imperative.

The productivity 'of a city' can be measured by the weighted average productivity of all its industries. The industry productivity is derived from the average productivity of sectors, which, in turn, is that of enterprises. When one enterprise becomes more efficient in delivering a similar product or service due to increased labor capacity or newly discovered technology, it will either gradually drive out the less competitive enterprises or force them to become more productive; consequently, driving up the productivity of the entire sector and industry (Lewis 2004). When an industry sector becomes more productive, it expands and consolidates both forward and backward linkages, generating employment opportunities across and beyond the sector. This lays a foundation for investments and policy interventions on occupational training, R&D, investment promotion etc. Moreover, unlike macro-level economic performance analysis where compounded variables are at play, sector level analysis is more proximate and allows us to draw more concrete causal links between interventions and economic performances. Therefore, it is the industry sector level that we set as a unit of evaluation as well as intervention in enhancing productivity of a city.

2.3 Value Chains and Supply Chains

The means by which industries and enterprises compete has evolved over the years. When Henry Ford designed its first moving assembly line in 1913 in Michigan, the strategy was to produce a simple designed automobile in the largest number, at the lowest cost. The competitiveness of this production model was founded upon the idea of economies of scale. Although the idea still finds its relevance in today's globalized market, various other factors which determine competitiveness have emerged over the years.

Under the premise that sector productivity enhancement begets competitiveness, this chapter sheds light on the analytical tools that are widely employed to enhance the following endogenous or Self-growth variables which shape the productivity of a sector: (1) efficiency in performing a specific value adding activity and (2) efficiency in delivering inputs and finished products, although value chain analysis and supply chain analysis overlap in scope and are often used interchangeably, there is a clear distinction between efficiency in producing and efficiency in delivering.

2.3.1 Market Demand and Value Chains

The first variable that affects the level of productivity could be assessed through a value chain lens. Value chain is an idea which views a manufacturing or service organization as a system consisting of various segments, which ranges from input providers, producers, and to final consumers. As each segment adds value as the product and services move along the chain, costs and profitability are heavily

influenced by the efficiency of each participant along the value chain (Porter 1985) Analyzing value chains is one of the most powerful and utilized tools for assessing productivity of a sector as well as a way of creating an enabling business environment. Value Chain Analysis (VCA) is an accounting tool which deconstructs and analyzes how much cost and value is added from the raw materials stage until a product reaches end consumers. It allows us to measure the productivity and cost efficiency of each of the stages along the value chain (Intangible endogenous variables such as organizational capital is also embedded in the scope of productivity and efficiency). By comparing the findings with international standard or a competitor, one can highlight specific bottlenecks to sector competitiveness. Furthermore, VCA is an effective tool in identifying distortions caused by anti-competitive policies or regulations, and market and human resources that hinder industries from becoming more competitive.

In addition, value chain is also a medium through which enterprises understand rapidly changing market demand. From the market standpoint, value is created or defined by customers' perception or an interpretation of a product or services (Flint 2008). Fostering a cohesive and integrated value chain allows the participants to become more competitive by having a better assessment on costumers' value placement.

2.3.2 Spatial Dimension and Supply Chains

While VCA helps us to understand the cost efficiency at each value-adding segment along a production system, Supply Chains Analysis (SCA) is a highly effective tool in assessing the efficiency of the flow of goods and services. Supply chains is a conduit through which products, services, information, and capital move from one segment of the chain to another until they reach the end consumers (Cooper et al. 1997). For example, a supply chain mapping exercise captures the flow, economic distance (Economic distance reflects the time and cost of transporting goods between a point of departure to destination), and efficiency of an agricultural crop from farm gate to the final consumer. In addition to efficiency, which is generally measured by cost and time, reliability and predictability in service delivery are also key determinants of a well-functioning supply chain. Supply chains are often fragmented, especially in developing countries. Fragmentation results in, among other things, waste, income loss, increased product price, and lack of product availability in the market. SCA provides insights into specific logistics constraints hindering competitiveness, and helps identify both policy- and market-based interventions to improve efficiency and competitiveness. As it captures the movement of goods and services, supply chain efficiency is bound by both physical and trade logistics infrastructure, which are often defined by urban planning.

The importance of supply chain management and logistics efficiency is becoming even more pronounced with continuous growth in competition and market demand for greater product diversification. With greater number of enterprises pro-

viding similar goods and services, increasingly weaker brand loyalty is observed in the market. The current market trend of gradual shift from mass production to more customized and personalized products and services is creating complexity for a traditional supply chain model (Sheffi 2012) Combined with increasing consumer awareness, available product information, and shortening product cycle, enterprises are forced to operate a more effective and efficient supply chain striving to meet consumers' demand and maintain high level of productivity, while minimizing inventory and cost of logistics. Specialized supply chain and logistics models have become an essential part of competitiveness in today's globalized economy and enterprises invest substantial amount of resources to gain competitive edge over each other. Increasing number of regional logistics hub, colocations, and cluster developments are the testaments to such trend.

2.3.3 Economic Efficiency and Planning

As demonstrated above, the efficiency in flow of production factors and information along the value and supply chain holds a great implication not only to sector productivity, but also to urban economic development. Conversely, efficient mobility of production factors and information is vastly affected by public policy and urban planning. Both hard and soft infrastructure that cuts across industries is often defined by public investments. The urban landscape is also influenced by government's zoning regulations and building permits (Sheffi 2012). While government support does not guarantee productive development, behind every success in achieving urban economic efficiency around the world, there is a prominent role played by the governments.

2.4 Urban Layout and Productivity

Despite a commonly held conception of interdependence between urban planning and productivity, urban development projects seldom undertake approach integrating economics with urban planning. In practice, often, government economic and urban planning sub-functions are carried out in silos. Economic development projects tend to ignore the spatial dimension, while the economic perspective is consistently left out in many urban planning processes. Such trend has limited many cities from fulfilling its potential to the optimum.

2.4.1 Interpretation of Urban Layout and Productivity

Productivity and economic prospect of a city is closely related to the physical and spatial layout of its environment. Factors that compose urban layout such as the number of intersections, size of a block, or a share of built-up area occupied collectively define the degree of urban mobility. Transport infrastructure such as road and port is the conduit through which goods, services, and labor travel and, consequentially, the quality of such infrastructure greatly affects urban productivity. Under the current global context of expanding urban population and built-up urban area, there is a growing need for better spatial allocation of services and infrastructure to enable cities to become livable and sustainable economic powerhouses. An extensive time-series analysis asserts that the growth rate of informally planned or unplanned land expansion is outpacing that of planned expansion across the world (New York University et al. 2016). As unplanned expansion has a propensity to generate urban sprawl and informal settlements outside of the government purview, it is detrimental to intra-city mobility and connectivity. For instance, an urbanization review conducted in Nairobi, Kenya concluded that less than 20% of formal employment opportunities are accessible to average Nairobi households within 1 h by walking or using public transportation system (World Bank 2016). Such low level of intra-city mobility directly contracts the size of labor market and severely stunts the city's capacity to fulfill its productivity potential. In the case of Egypt, urban expansion is often observed around key public services such as schools and hospitals in urban fringes (UN-Habitat 2016). Such development aggravates residents' access to public services and economic opportunities in other parts of the city. In countries such as Kenya and Egypt where high population concentration in working age is one of the key competitive advantages, poor connectivity and mobility could weaken the potential to take advantage of demographic dividend.

2.4.2 Connectivity and Main Components of the City

In broader economic terms, connectivity of a city is generally defined by how central a city is to global markets and transportation and logistics network. The higher the level of connectivity, the more conducive for cities to trade and plug oneself into the global value chain at a lower cost. A study highlighted a robust correlation between air connectivity and share of exports composed of parts and components (World Bank 2014). In this regard, connectivity has become one of the most powerful indicators for projecting a city's development potential.

While connectivity is often defined by geographic location, it is not the sole determinant. Tangible variables such as transport and logistics infrastructure as well as intangible variables such as customs and freight forwarding system, legal and financial institution, human resources, ICT, and business climate collectively influence the level of connectivity to global market. The more connected a city is,

the higher the propensity to attract new ideas, creative class, technologies, innovations. These are the very factors which underpin the competitiveness of value and supply chain for any industry sector.

A comprehensive methodology integrating value/supply chain with spatial analysis presents an alternative approach to urban development. The spatial element promotes an urban layout that is compact, integrated, inclusive, and connected. In tandem with the productivity enhancing tools, it visualizes the functional aspect of the value/supply chain and to explore ways to harness the expansion of urban population and urban land consumption to be the optimum use to industries and economy. Furthermore, compact and dense urban layout renders the infrastructure and public services provision more economically efficient. This allows the limited municipal budget to be earmarked for other services and activities which will contribute to further urban development.

2.5 Egypt Case Background NUC Development

The Egyptian New Urban Communities (NUC) development experience started in the mid-1970s, as part of the national strategy to tackle the challenges facing Egypt urbanization. It is well known that the urban population in Egypt is not evenly distributed among the 219 cities, 96% of the republic's total population lives on 4% of the total national area (The Guardian 2015), while the remaining percentage spread on 96% of the total area. This lead to more imbalances where 68% of the republic's total population are living in three regions: the GCR, Alexandria and Delta; representing 1.8% of Egypt's total area while 77 cities comprise 4% of the urban population. Furthermore, existing villages and cities mostly surrounded by valuable agricultural land threatened by rapid and unplanned urban growth. This interne can be seen as over 16 million urban inhabitants live today in informal and squatter settlements around urban areas. New Urban Communities in the desert vicinity were thought as an alternative solution to the problems.

New Egyptian cities were an opportunity to enhance the economic growth and major economic interfaces that are able to attract direct foreign and Arab investments to recover Egyptian economy as one of the most important roles in causing urban equilibrium and development outside the inhabited area. Such initiative has found the economic and political framework represented in economic openness and open-door policy implemented since 1975. Consequently, the Egyptian program of establishing new cities around the Cairo, Alexandria and densely populated areas in Delta started in 1974.

2.5.1 The Three Generations of New Egyptian Cities

The Egyptian initiative building new towns back to 1868, when the Khedive of Egypt establish the New cities of Port Said and Ismailia that took place among the establishment period of the Suez Canal, since then number of new settlements were established such as Heliopolis and Masr El Guedida in the 1930, considered as one of the first private investment in urban development all-over the world as well as Nasr City in the 1956 as suburb neighborhood at the fringing of Cairo city. Nevertheless, the actual start of the New Egyptian Cities (NUC) programme was taking place in the 1977 till now throughout three generations of cities that shaped 22 new cities.

It is worth mentioning that the NUC programme was launched without clear national urban policy (Hai 1981), or even a national program to establish and build NUC. Later number of justifications were specified as redistribution of population along the whole national geographic space, instead of being centered in 5% of Egypt's total area as well as limiting the urban dominance of Cairo and Alexandria, through establishing counter magnetic poles and redirecting rural immigration to major cities, to new planned destinations in addition to limiting the random growth and encroachment on agricultural land and limiting the housing problem in general, especially in major cities, etc. Subsequently, the original plan for the 22 cities was revisited due to synchronizing of the market and updating with development on the ground and therefore the targeted year and the number of inhabitants.

The first generation of the Egyptian NUC that last to 1982 produced seven Cities. Apart from the El Salheya that was agricultural-based economic this version produced mostly industrial-based economic cities and regional services, which aimed at further attracting industry investments. The first generation's cities such as 10th of Ramadan, 6th of October, Borg El Arab...etc. possess around 48% from the total new cities inhabitants in the 22 cities. However, the second generation that has taken place in 1982 and lasted for 18 years produced 8 Cities, was mainly targeting to absorb the high concentration in the Greater Cairo Region (GCR). Therefore 50% of the second-generation cities were around GCR as satellite and residential cities such as New Cairo, Sheikh Zayed, Badr, El Shorouk, etc. succeeded to attract around 50% from the total new cities inhabitants in the 22 cities. Furthermore, the third generation created 7 Cities with regional Services, light and basic industries, which trends of building NUC near existing cities. This version failed to attract population of nearby dense Cities.

2.5.2 Economic and Urban Role of New Cities

The NUC development programme economic and urban role exceeds the city and it region. The effect of these roles goes beyond the influence of geographical boundaries of the city regions and result significantly at the development and the

urbanization of Egypt. Since those cities were supposed to serve as a development locomotive to upgrade the local economy of the Egyptian governorates. The authors therefore analyze in depth these effects to highlight the economic and urban role of NUCs comparing proposed strategic plans, local and regional economic role, designated population with the actual development, economic population, provided job opportunities.

The total planned areas in 22 NUCs are approximately 1733 km^2 that approximately equal 31% of the current total urban areas in Egypt. The original plans for the NUC were predetermined to produce 630 km^2 for residential uses that equal 36% from the total NUCs area, 248 km^2 for industrial uses (14%) and 651 km^2 (37%) for other uses particularly for amenity, education, medical and other regional service uses (UN-Habitat 2016). Statistics show that the lands allocated for non-residential or industrial activities such as trade, service, tourism and recreational activities in these cities are approximately 136 km^2 (8%); 31 km^2 have been allocated so far. The number of productive and operational factories in new cities is approximately 7630 out of 40,000 factories nationwide, at the rate of 19.1%. The amount of capitals invested in the construction of these factories is approximately 91 billion L.E., providing 533,000 new industrial job opportunities. Factories under construction are approximately 3887 factories, providing approximately 92,000 new and additional job opportunities according to 2014 statistics (UN-Habitat 2016).

2.5.3 NUC Impact on Urban Development

The Egyptian NUCs therefore are expected to play a regional role as polycentric service and hubs of business and job opportunities. The NUC influences rationally designed to go further than the city region, as for major regional commercial centers, medical service middles, academic and research centers, business development areas, regional entertainment facilities, etc. NUCs have partially succeeded at attracting private investment in comparison to huge direct government official investments. As during the past 20 years around 91 billion L.E has been implemented by the private sector particularly in industrial investments (UN-Habitat 2014); whereas, the total amount of implemented government investments exceeds the 65 billion L.E distributed to residential investment (14.4 billion), service investments (4.9 billion) and utilities investments (46.8 billion). It is important to notes that currently the total amount of population in new cities is 4.211 million people, at the rate of 10% of the total urban population. The new cities are expected to accommodate approximately 22 million people by the year 2032 (UN-Habitat 2016), representing 17.2% of Egypt total population (128.5 million people). Nevertheless, during this period the share of Egypt's total infrastructure investment budget that was directed to the NUCs was approximately 22%, whereas today, only 4% of Egypt's population lives in these desert New Towns.

2.6 Al-Alamein Urban Development and Planning

Although, NUCs should act as regional development hubs absorbing the population increase and economic growth as recommended by the National Urban Policy Study (NUPS) (PADCO 1981); the regional plans in the eighties for the Northwest Coast and Alexandria urban region lacks critical determination for linkages between NUCs and existing/proposed economic activities tourism, agricultural or industrial. Nevertheless, the development triangle plan "Alexandria – El-Alamein – Wadi Al-Natrun" in 1999 (GOPP 1999) secures new regional development zones with formulation of the regional role of the NUCs axis. Subsequently, in 2007, El-Alamein New City (ANC) was proposed – as a millennium city under the framework of the national project to resettle five million people in the Northwest Coast from Al-Hammam city to Salloum – to be the main development center at the Northwest Coast East sector level. Since then all strategic plans i.e. Northern Coast Development Plan, Egypt 2052 Urban Development Plan, etc. consider that (i) Interdependent regional economic hub for investment and international trade gate to Africa and Southern Europe States by supported free zones and export ports activities and (ii) Enhancing the productive capacity of Region increasing and the integration between the various activities in the Region as the main roles and objectives for ANC development.

2.6.1 Integration with City Region

ANC as one of the main four growth NUCs proposed (New Marsa Matrouh/New Borg El Arab/New Sidi Barany) for the development of the north-west coast region, is expected to accommodate the urban population increase as well as founding for critical regional development that could shift the gravity center of Alexandria urban region – at the same time it is a coastal city that has the role to link the region with the Mediterranean basin.

Subsequently, on the one hand the development of ANC that will act as attraction centers for activities, population and to accommodate around million people must be critically integrated with the city region. The development size, regional services, market forces, etc. will affect the nature of connections between the region and other regions. The ANC witnesses completions of the International Coastal Road and linking it to West Delta and Sinai, and the investment in the new Borg El Arab and El-Alamein airports and Marsa Matrouh, which will dramatically affect the city form and rationalizing new investments directed to production and service sectors that will serve the regional and national objectives.

On the other hand, it is important to note that the ANC development risk rates due to issues hinder development. The regional leakage of proposed ANC economy for the benefit of the emerging adjacent areas, such as residential, commercial and negligible activities is expected, if the integration of regional development policy

remains absent. Furthermore, the regional competition between the functional roles of ANC and the role of regional sister cities might weaken opportunities of success and the feasibility of economic activities based in region's cities. Determination of tools for promoting and enhance productive investment dedication towards the ANC and other new urban communities in the region domain, as well as strengthen the central service role of the old urban communities.

2.6.2 Spatial Dimension and Supply Chains

The term value-chains captures a sequence of related and dependent activities that are needed to bring a product or service from conception, through the different phases of production, to delivery to final consumers and after sales services, and finally to disposal or recycling (UNIDO 2014). Thus, value-chains are complex entities where production is only one of several value-added links in the chain, where logistics, combination with other products, combined solution offerings, logistics, and etcetera are other links. They may include a range of related and dependent activities within each link of a chain, and between different chains. Intermediary producers in one value-chain may feed into several other value-chains. Value-chains can span enterprises of a local economy, a sub-national regional economy, the entire domestic economy, a supra-national regional economy, and the global economy.

In NUC development and in particular the ANC the need for analyzing the value and supply chains becomes essential due to the fact that it secures proper figures that reflect complex environment. The value-chain analysis for the ANC becomes an increasingly useful approach to gain a comprehensive view of the various interlocking stages involved from taking a good or service from the surrounding economic region of the city as raw material to production and then to the consumer. To establish a strong and sustainable ANC's economy with such ambition, the city cannot achieve succession on an individual enterprise basis, but rather, requires a systemic view that applies methodologies based upon approaches such as value-chain analysis and encouragement of industry clusters at the city region level (UN-Habitat 2016).

Therefore, the creation of ANC competitive environment will play important role to secure sustainable development. Nevertheless, it is essential to know (i) what works in the regional level beyond the city region territory including "strategic bets" on new regional industries, (ii) what works for the ANC "locally" in efforts to improve the performance of the city region's existing industries, including issues of infrastructure provision, access to financing, and ways of establishing effective PPPs, and (iii) how to create coalitions to enable ANC to make a real breakthrough in regional trade.

Subsequently, the ANC examined the costs and benefits carefully to avoid being locked into low productivity value chains and therefore into low-level development trajectories. Success will require an innovative and far-sighted approach on the part

of policymakers, development partners and the private sector to take full advantage of ANC resources. First, most countries in the MENA region have historically experienced more investments in infrastructure and in manufacturing capacities in several sectors also had a degree of industrial infrastructure especially in light manufacturing. Second, North Africa has a geographical advantage particularly due to its proximity to one of the largest markets in the world, the EU market. This gives North Africa an important advantage in its trade relations with the EU. Third, many countries in the region enjoy preferential market access to key markets particularly the European Union through association and free trade agreements and also the United States in the cases of some of the countries in the region. Fourth, countries of the region have accumulated a degree of managerial and organizational capacities that enable these countries to meet needed requirements; however, the region, overall, has not exploited these advantages to the full potential.

Consequently, some areas in Egypt, Morocco, and Tunisia have benefitted from the integration in the Global Value-Chains (GVC) to expand employment and improve social conditions as for Al Alamein, being on the Mediterranean coast, to quickly become a member and network in transnational organizations, such as the Barcelona based Association of the Mediterranean Chambers of Commerce and Industry (ASCAME) becomes significant potential. It makes sense to network directly with European cities, rather than to go the chain up through national levels, where anyway usually only megacities are visible.

2.6.3 Development and Economic Engines

The economic development and economic engines of Al-Alamein New City should take place in the context of the macro-economic Egyptian economy, neighboring and integrating with the current and future MENA region economic activities, integrating with local clusters, in a continent and a world of increasingly globalized value-chains and hyper competition between business firms in progressively more open economies. To achieve a successful new city policymaking, as well as business, academic and civil society leaders must work together across-ministries, across sector and across geography to explore and ensure ignition of the robust economic growth that will support more-inclusive economies.

Economic and social agendas must go hand in hand and focus on institutional support for the prioritized business clusters, which will render the economic activities more productive and open up new and better job opportunities for all segments of the regional population and national immigrants. Better assigning available resources to productive activities is crucial and requires well-functioning markets. In fact, analysis shows that ANC possesses the potential to add at least 17,000 feddans (a unit of area in Egypt) needed for industrial areas out of 43,250 new feddans industrial expansions requested at the Alexandria schematic region level. It is proposed in the rest of the existing industrial cities and the projected new ones in the schematic region. Furthermore, it is expected that the ANC will secure

the regional industrial service center for the new proposed land reclamation projects in South, East and West of the city; these lands amount to 230,000 new agricultural feddans (GOPP 1999) – which are expected to be functionally allocated to produce fruits and vegetables export agricultural crops and industrial crops like beets, sesame and oil crops. Moreover, the new city location gives exceptional positioning for the city to play the role of the region's tourism service center for the tourist hinterland of the Northwest Coast which receives both beach and non-beach tourist patterns, especially conferences, safari and shopping tourism, in addition to its role as a destination for tourist resorts and vacation and weekend tourism patterns and expected Mediterranean tourists. Subsequently, it is highly recommended that the economic underpinnings and the economic engines will be but not limited to the following:

Industrial development: Exploiting the urban sprawl in West Delta, Northwest Coast and Matrouh in the establishment of new industrial areas and communities as well as knowledge-based industrial activity and encouraging industrial orientation of the activities that are integrated with other economic sectors with expansion for industrial zones and the development and updating of existing ones, etc.

Agricultural development: Utilizing the geographical location to increase the exports of some of the food commodities with comparative advantage and utilizing the region infrastructure to achieve the agro-industrial integration, thus contributing in increasing the value-added of the Agriculture sector to support agro-industrial activities and to contribute to the reduction of the food gap in some agricultural products that are available in the Region.

Tourism development: Achieve comprehensive development of coastal tourism development areas and exploiting the many and varied tourism potentials in providing new tourism patterns and diversify the tourism product in the Region, as well as encourage day use and quick trips thus enhancing the tourism role of the city as a tourist destination for residential resorts tourism and holiday and weekend tourism style.

2.7 Conclusion

The ANC is a major development pole in the West regional development area, within the Alexandria metropolitan urban region framework and its western expansion. Moreover, in the light of the Strategic Planning of Matrouh Governorate vision for the northwest coast development 2032 findings shows the region's most important resources that rangeland vegetation cover, including fodder, aromatic, and medicinal plants; oil and natural gas; some mineral and mining deposits; summer resorts, desert landscape; and the historical and cultural heritage. Subsequently, the various development proposals and the opportunities of developing ANC roles could be concluded as (GOPP 2010) (i) ANCs' urban development pole has potential to integrate to Alexandria urban region within the trends to develop the urban region, (ii) the city has huge opportunity as a major

development and manufacturing service center for land reclamation sector in West Delta region along Al-Hammam canal and Baheeg (GOPP and UN-HABITAT 2014), (iii) the ANC possesses real possibility to play integral role as a tourist service center for the development of direct tourism hinterland for coastal communities located on the Northwest Coast (New El-Alamein development within the framework of the Northwest Coast development plans) and finally, (iv) the city possesses also the opportunity as a portal and a main gate at the national level (as targeted in the 2052 national plan) and the West Delta sector in the frameworks of its association with El-Alamein international airport – new international port – International Costal Road- railway – Wadi El-Natrun/El-Alamein Road.

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Chapter 3
The Story of NEOM City: Opportunities and Challenges

Alshimaa Aboelmakarem Farag

Abstract The story of NEOM city starts when the Crown Prince Mohammed bin Salman announced the launch of NEOM, the futuristic megacity, on the conference "Future Investment Initiative" in Riyadh, Saudi Arabia, at 24 October 2017.

The Project's promoters aspire to brand a new land where a plethora of unique development opportunities that could contribute to make NEOM a global hub for trade, innovation, and knowledge. The creative class around the world has been invited to participate in creating NEOM, with promises of a new life in a beautiful nature free place, and an independent economic zone with its own laws, taxes, regulations, and no restrictions. Future technology in transportation, growing and processing food, healthcare, internet of things, and digital air all should contribute to providing NEOM's residents a unique lifestyle.

The project that starts with a fanfare might face a number of challenges, whether at the present or in the future such as the abstention of investor's participation in such a current economic situation in KSA after the decline of world oil price, resistance of conservatives, the neighbors countries' supporting, in addition to the time challenge. There is also a fear of repeating the failed experiments as Saudi kingdom will not be able to bear its costs.

The shortage of literature and references has been a big challenge when to write this article in such time, four months after the formal announcement of launching NEOM. However, this article raises several questions and inquires that help to predict future challenges that might face the decision makers and can be addressed if recognized early.

Keywords NEOM · Saudi Arabia · Futuristic city · Branding cities · New cities

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3.1 The Start

The story of NEOM city starts to be narrated by experts, journalists, and even by the regular people when the Crown Prince Mohammed bin Salman announced the launch of NEOM, on the sidelines of a three-day conference named "Future Investment Initiative", that took place in Riyadh, Saudi Arabia, on Tuesday, 24 October 2017. The Saudi Crown Prince Mohammed bin Salman, Deputy Prime Minister and Chairman of the Public Investment Fund (PIF) announced the launch of NEOM to be "in his vision" a short gateway to the future, or in other words, a destination for dreamers of the future. Such future the Prince dreams is like nothing on earth, at where the new way of life, strategic trading location, picturesque nature and beautiful weather, innovation, technology, and livability are at its core. Saudis are branding NEOM city as a place for dreamers, confirming that it is not for conventional people or conventional companies, but it is designated for those who want to create a new place in the world.

"I tell people those who cannot dream should not negotiate with us or come to NEOM. Welcome to the dreamers who can come to the new world." with those words the prince ended his speech in the conference.

NEOM's name is constructed from two parts: the first part has three letters from the Greek prefix neo meaning "new", the second part is the letter M that represents the word "Mostaqbal" an Arabic word meaning "future".

There are great ambitions for the future of NEOM, and aspirations to transform a new land into a new way of life. The Project's promoters are aspiring to attract the creative class and talented minds, and empower them with technology and a perfect place to work and live in, to create a new city inspired by imagination. The aim is to attract 500 billion dollars of investment from local and international banks, to create the city that is most efficient, happiest, safest, and healthiest place to work and live in, and to lead the world to the future.

NEOM has been described according to the formal website "Discover NEOM" as *"the world's most ambitious project, a city of unprecedented scale, in Saudi Arabia, made of many cities operating as an independent economic zone built by robots, done friendly and with traffic regulated by smart cars, unlimited resources, a Mecca of engineers and dreamers in robotics and solar power. A global hub for trade, innovation, and knowledge, but especially supportive of all religions and determined to eliminate extremists"* (NEOM Official Web Site 2017).

3.2 The New Land

In the northwestern region of Saudi Arabia, a huge area of vacant land was selected for the birth of the new city. The special zone where NEOM will exist is made of mountains, long beaches, desert, and amazing nature.

There are many dreams by the Saudi leadership; that are planned to be established in NEOM. Everything in this city is supposed to start from scratch, to avoid repeating the conventional city features. The concept of the crown prince is that; it would be impossible to build an entity like NEOM except by eliminating the vision of existing cities; and working on establishing a new location, fresh investment, young people, and businesses supported by new technology and artificial intelligence; in addition to new regulations.

3.2.1 NEOM Location

A strategic location has been selected for NEOM city, along the country's Red Sea coastline, adjacent to the beautiful views of the Gulf of Aqaba, and near the Suez Canal where maritime trade routes exist. The reason for the location selection is its plethora of unique development potentials which would contribute to making NEOM a global hub for trade, innovation, and knowledge. The geographic location with its topography and climatic characteristics have contributed for selecting the new land for establishing NEOM, with pristine nature, dramatic mountain backdrops which are covered with snow during winter, uninterrupted coastline with untouched beaches and coral reefs, several spectacular islands, peaceful desert, mild temperatures, Red Sea breezes, and above all of these are the beautiful views across the Gulf of Aqaba and the Red Sea.

Klaus Kleinfeld, the former chairman, CEO of Arconic Alcoa Inc., and Siemens AG., and one of the pioneering investors in NEOM, praised the new city's location in the broadcasted conference for lunching NEOM. His words revealed the unique features of the selected location comprised of 26,500 km^2 vacant land with 500 km of beachfront where sand, coral reefs, and the very touching and beautiful mountains that go up to 2500 m are surrounded by much-steeped drops, and enjoys a nice climate where winds blow all the time.

The new land is sited in a worldwide central economic location. It can be reached by an eight-hour flight by 70% of the people, besides the transit road through Suez Canal, and the telecom road, all of which contribute to the project's success.

What actually makes NEOM in a special economic zone is its command of a unique location in the northwestern region of Saudi Arabia that is set to include territory within the Egyptian and Jordanian borders, on one of the world's most prominent economic arteries, where 10% of the world's trade flows through the Red Sea.

3.2.2 Neighboring Countries

NEOM is planned to be a futuristic megacity spanning across three countries; Egypt, Jordon, and Saudi Arabia. This location is expected to facilitate the zone's rapid emergence as a global hub that connects Asia, Europe, and Africa. It will also

serve as a gateway by building the King Salman Bridge that will span the Red Sea and link Egypt and Africa with Saudi Arabia.

It is worth mentioning that the Egyptian and Jordanian media did not disclose the future plans for NEOM, which raised a question if the neighboring countries are willing to cooperate in building the futuristic city. The two countries are close allies of Saudi Arabia (Mail online 2017).

3.2.3 Natural Recourses in the Site

The Kingdom of Saudi has been blessed by the richness of natural resources, and NEOM is considered one of the best locations in the Middle East, that is rich in the mineral resources, as well as in gas and oil, where two hundred thousands of barrels of oil could be extracted from this location in addition to the gas deposits.

In addition to the *new oil and gas* in the words of Mr. Masayoshi Son. -the chairman and CEO of the SoftBank Group Corp. of Japan and an investor in NEOM- he pointed to the natural resources the kingdom has been gifted. The perennial solar resources (20 MJ/m^2) and the wind speed (an average of 10.3 m/s), will allow NEOM to be powered solely by regenerative energy and to develop renewable energy projects. In addition, the use of natural and renewable resources will live up to the sustainability standards in NEOM city. The silicon will be extracted from the wide extended Saudi desert's sand to use it in manufacturing the solar panel to generate electricity. From the sand and sunshine, which were difficulties in the past, all will be made of NEOM partners are thinking of a great opportunity to create a new place that is fully generated by net zero carbon.

3.2.4 Stakeholders

This project starts with the credibility of its supporters. In October 2017, five of the richest men in the world met in Riyadh, the capital of Saudi Arabia to announce their big dream. One of them was Stephen A. Schwartzman who used the word "muscles" to refer to the power of the supporters who give credibility to NEOM (The Economist 2017).

1. The Crown Prince Mohammed bin Salman; who is the chair of the special Authority to oversee NEOM.
2. Masayoshi Son, chairman and CEO of the SoftBank Group Corp. of Japan; the Japanese head of a $100bn "Vision Fund"
3. Stephen A. Schwartzman, chairman, and co-founder of the Blackstone Group; the private-equity giant.
4. Marc Raibert, CEO of Boston Dynamics;

5. Klaus Kleinfeld, former chairman and CEO of Arconic Alcoa Inc., and Siemens AG.; NEOM's chief executive who was appointed to lead the project development.

In addition to the business giants, world large firms' cooperate managers and senior Saudi officials who attended the conference.

The project will be owned by the Public Investment Fund. In addition, the Saudi government and global technology firms will help to build NEOM, and it is being funded by the kingdom's sovereign wealth fund. It is worth mentioning also that the SoftBank Group and Vision Fund have signed an agreement to buy a significant percentage in the Saudi Electricity company that will provide energy for the city (Mail online 2017). All of these financial and economic measures are supporting the successful launching of the new mega city.

3.2.5 NEOM Community

The community of NEOM is a topic that intersects with several issues, Saudi traditions and religion, 2030 Saudi vision, Saudi young generation, women's rights, and the expected new citizens: the Robots, the creative population, and the investors, all together will shape the social features of NEOM community.

3.2.5.1 Saudi's Community

Referring to the past with its complex history and evolution is essential to better understand the forces that shaped the Arabian Peninsula's cities and communities. The people of the Kingdom have experienced several dramatic changes in terms of cultural, political, economic, and social aspects, and chronological moments distinct the pre- and post-oil eras.

In the 1970s, prior to the oil discovery, King Mohammed Ibn Saud, and Mohammed Ibn Abd al-Wahhab established the National Saudi State. History refers to both of them as the establishers of many of the conservative values that are governing the kingdom to this day, such as prioritizing men's education, woman's dependence on a man to then become eligible for an educational scholarship or travel. Until the reign of King Abdullah- who passed away on January 23, 2015- permitted the women to apply for a scholarship with accompanying of her husband, father, or brother and allowing them for leading positions in the Saudi government and to represent in the Kingdom Alshura council (Al-Ban 2016).

The Saudi economy longley depended on religious tourism, until the oil discovery in 1938s, which identified Saudi Arabia as the largest source of petroleum in the world. The Kingdom of Saudi Arabia's global economic importance has increased in the field of oil products trading since the 1960s (Holden et al. 1982).

The Saudi government depended mainly on the oil income, and the Saudi citizens heavily depended on the government subsidies. It has been clear that both religion and oil are the main influences of shaping Saudi Arabia's community (Al-Ban 2016).

Recently, political decisions accompanied the launch of NEOM such as allowing women to drive, the Crown Prince assured that the Saudis want the moderate Islam before the Whabbism, and to want to open up to the whole world.

The project promoters are betting on the new generations that have a different view of the future. The prince believes in the young Saudis have great passion on the personal and national level and possess the accuracy, professionalism, and intelligence that will enable them to achieve what was impossible.

On behalf of the young generation, which constitutes 70% of the population, the Crown Prince called for replacing the extreme conservative ideas by moderate religion and customs that will enable the society to live a moderate life.

3.2.5.2 Robotics and Future Technologies

Sophia, the first humanoid robot in the history that has officially the Saudi nationality and is recognized as a Saudi citizen. This event was accompanied by a media frenzy that reflects Saudi Arabia's interest in and adoption of technological developments.

The Saudi leadership's vision is to make NEOM, a city of robots to be the first city that has more robots than the human population. This is a kind of city branding of NEOM in the image of the futuristic city that has been watched several times in the science fiction movies, where robots are serving people and carrying out all required tasks with the utmost precision, sincerity, cleanliness, and order. Masayoshi Son in the conference of NEOM explained that the use of robots would make people's lives better and happier when they have time for what really matters, and above all of that will give Saudi Arabia the leadership in the future.

Marc Raibert – the investor and CEO of Boston Dynamics- who is proud that robotic is his speciality explained how robots would be utilized to build the city, populate it and perform a wide variety of services. NEOM in his words will be a different kind of place to live where robots are helping in security, delivering things to home, etc.

3.2.5.3 Creative Population

The demand on the creative population has become a force to be reckoned with (Pfefferkorn 2005).

The "Creative Citizen or Group" term is used to refer to the people whose economic value is to innovate new ideas, technology or creative content in a specific domain. This group has an important role in city branding (Florida 2014).

A world-scale project like NEOM will help to develop robotic technology, that will have a big impact on both the population of NEOM and all mankind. This will have a big impact on both the population of NEOM and all of the humankind. The investment in robots will be an essential pivot in developing NEOM, as well as the call for robots' engineers to come, implement their technology and create the next-generation robots.

Mohammed Bin Salman recognizes the challenge of making a reality out of a dream. In addition to the fact that attracting investors from around the world and companies to create NEOM will take a long time, and investors do not have the patience to wait for a long time, For that purpose, Mohammed Bin Salman has announced that NEOM will operate as an independent economic zone with its own laws, taxes, and regulations in addition to clearing all the restrictions (NEOM Official Web Site 2017).

The regulations will be formed in the way that encourages the business and will be designed for the first time by the business people according to the Crown Prince.

3.2.5.4 NEOM Lifestyle

NEOM has been aspired to be the safest, most efficient, most future-oriented, and the best place to work and live in (NEOM Official Web Site 2017). This is how NEOM is branded in the visual and social media.

Branding the city is the process that aims to communicate the city's image and values to the world in a creative way (Helmy 2008).

In case of NEOM, there is no existing city, rather there is an imaginary vision for a futuristic city, and livable place for humans, where people can enjoy a new way of life that is healthier, happier, free from stress, and where people can have more time for the things that matter for life.

Moreover, NEOM image has been branded as a place where a person can live with pioneers and thinkers who have committed themselves to the responsibility of changing the conventional way of life to another that is more modern, liberal and civilized (NEOM Official Web Site 2017).

3.2.5.5 New Technology

The future technology employed in transportation, growing and processing food, healthcare, internet and digital air all should contribute to creating a unique lifestyle in NEOM. Transportation will depend on multiple mobilities from automated driving to passenger drones, in addition to the city's streets design that encourages walking and bicycling. Digital air is a free wireless high-speed internet that will be available all the time. In addition to the net-zero carbon houses, world-class continuous online education, the use of renewable energy, robots, etc. All of these facets reveal the leadership's vision in technology and artificial intelligence. *The city will*

be built on the newest technology of today, the opportunity is unimaginable. The Crown Prince said.

On the other hand, the project has been heavily criticized by analysts worldwide. The Italian journal "easyviaggio" mentioned that the purpose of NEOM is the advertisement, just as Qatar did with PSG, or Abu Dhabi did with the opening of the new Louvre. The goal is simply to show the world a reliable and positive image, but nothing promised will be realized by 2030 (Murgia 2017).

Marc Raibert, CEO of Boston Dynamics; think that the biggest risk is to convert what Saudi Arabia is today to a place where all world technologies come through.

In this context, Klaus Kleinfeld, former chairman and CEO of Arconic Alcoa Inc., and Siemens AG. said that the world is in a period of drastic change, comparing today with the transformations of the past, makes the future unpredictable; but there is a chance to create this future in NEOM.

New jobs and positions will be requested in the future to fit the new technology, as Klaus Kleinfeld, added that the risk is not going through only structure or technology, but also human structure.

3.3 NEOM Image Branding

Branding is the term that is used to identify how much the sold items, goods, or service is different and able to compete with others. Branding aims to create an emotional attachment, a feeling of involvement, and high-quality physical features. When it comes to a city branding, it is defined as a shaping an urban imaginary for a place that represents feelings and perceptions about urban image and life (Helmy 2008).

The city branding became mandatory to survive in a global that has been imposed by economic competition.

Rochester and Berlin failed in branding as they were struggling with economic problems. On the other hand, few cities like New York City, Toronto, Edinburgh and Hong Kong succeeded to brand themselves by a holistic approach that combined the functional practices with the careful plans and studies and values that strengthened the place identity and profile.

A city function must consider the different requirements of employment, industry, housing, public transportation and recreational attractions, in addition to the values like people's experience of the city and its appearance.

Each city can succeed in branding itself when it focuses on its comparative advantage either in history, attractions, lifestyle, place quality, tourism, economics or demographics, etc. (Pfefferkorn 2005).

This may be a serious indicator for the Saudi Kingdom to deliberate on the decision of establishing NEOM, putting strategic studies on plan, based on economic, social and political current situation.

As Helmy, 2008 confirmed the importance is for making a real attractive place as well as marketing it. Branding is not about advertising, it is just a tool, instead, it

should extend more to enrich the urban experience for the interest of investors, politicians, real estate and construction entrepreneurs, planners, architects and other groups that stand to profit from enhancing the role of their cities. It goes beyond the visual image, to the multi-integrated associations between places, business, people and urban experiences, etc.

Branding NEOM is an essential step in, and it probably aimed to attract investors and creative class in the initial phase of this huge project. Since the city has not been built yet, there is no room to talk about tourism now, but it is an inevitable step forward.

The promotional video of NEOM includes an urban imaginary for the ambitious project represented by a collection of distinctive places. The most famous and well-known is Singapore's Garden by the Bay which used to give an urban image about what NEOM may look like. Singapore is one of the most successful examples of sustainable smart cities, in how to design and build an efficient urban environment (Kansara and Ridley 2012).

However, the investors need more than images, they need bold evidence to conceive.

Saudi Arabia has succeeded to brand its cities before, as they had struggled for decades to change the unchangeable image of the Arabian city for decades about camels in the desert, beside some primitive tents and unlimited petroleum production facilities. Since 1970, Saudi Arabia has had the opportunity to brand its cities in a good way that keeps recording progress in economic growth and urban development, in addition to the gradual changes in the cultural and political domains. The Saudi cities have become among the wealthiest regions in the world in a short time, architecture and urbanism experienced clearly visible changes introducing what is known as "oil urbanization". In addition to the dramatic change in the demographic structure due to the strong attraction of foreign labour because of the availability of jobs with lucrative salaries. The urban branding at this time has been enforced by a strong economy, and national projects to draw an image of progress and welfare, all of that worked together to increase the attractiveness of the city region as a place to live, visit or do business for the international tourists, investors, and entrepreneurs (Helmy 2008).

As a result of all of the above, an inevitable inquiry is strongly raised among interested people asking about the current social and economic situation of Saudi Arabia and its ability to brand NEOM as a global economic hub in the twenty-first century.

3.4 Economic Situation

There are urgent questions about the priorities of Saudi leadership in such economic situation after the decline in prices of petroleum products. Is NEOM the best choice for the investment of KSA financial resources in such time? Is it more reasonable to develop the existing cities and its infrastructure rather than building new cities,

especially when you know about the current state of Jeddah and Mecca; whose residents still suffer from the inefficiencies in the drainage system which relies on primitive processes? (Magram 2009).

The Saudi leadership seeks to diversify its economy in the long-term by enhancing and developing the Saudi existing cities' infrastructure side by side to building new communities. Moreover, there is an indirect purpose for building NEOM, which is to minimize GDP leakage by inviting Saudi and non-Saudi people who are living in Saudi Arabia to invest locally rather than investing outside and cause GDP to exodus, because of limited local investment opportunities. New investments will be encouraged, as well as, the investments that rely on the natural resources, such as wind, sand and solar energy (NEOM Official Web Site 2017). This was mentioned clearly in the formal website of NEOM.

Despite the promise of this ambitious vision, there are other opinions that are more fearful and less certain of the validity of NEOM project. Steffen Hertog, a leading scholar appointed to assess the risk of the project said that NEOM will not succeed to attract private investors who do not know enough and they need to know much more details than what are published (Nakhoul and Kalin 2017).

Monica Malik, chief economist of Abu Dhabi Commercial bank confirmed that investors are ultimately looking for details, their decisions and plans are relying on progress and initial investment.

Another point of view about the investors' willing to invest in NEOM confirms that investors are cautious about investing in Saudi Arabia because of the bureaucracy that has slowed many development plans, and because of the uncertain legal environment.

In addition to international warnings from the project credibility and Saudi Arabia's economic situation, the Saudi government and people are still struggling and trying to overcome the crisis of the decline in oil prices (The World Bank 2017).

Prince Mohammed believes that Saudi Kingdom can over across the energy crisis. He confirmed in NEOM conference, that the demand of energy will increase between 20 and 24% in the future. He added that the conventional source of energy before oil is coal and looking at the index of demand of oil or coal; both are still at the highest peak, the use of solar energy does not affect oil, whenever there is development, there will be a request for energy sources.

Economic analysts believe that this is an ambitious trial from Prince Mohammed to rescue the economic situation and the volume of money leaking out of Saudi Arabia and diversify the revenue streams and resources away from dependency on oil exports. However, it will need unlimited financial and technical resources to build NEOM, especially a megacity on this scale (Mail online 2017).

NEOM project is launched in a time that needs a proof of the possibility to isolate the entire project from the critical economic situation in the kingdom, a comment of James Dorsey, a Middle East specialist at Singapore's Nanyang Technological University (Carey et al. 2017).

Turki Al Rasheed, a Saudi businessman, commented on the kingdom's continuing dependency on oil that fails to achieve sustainable development as the real

threat. However, he does not believe that Vision 2030 is going to work, pointing to the similar past attempts that have ended up in failure (Shahine et al. 2017b).

An objective look at what the Kingdom has been doing since the economic crisis of 2014, reveals and confirms the government's vigilance and desire for reform. To rescue the economic situation in Saudi Arabia from an inevitable a catastrophic rundown on savings, the Saudi government preceded economic reforms such as cancelling the unnecessary projects and cutting costly subsidies. Several businessmen agreed on the importance and necessity of Saudi Vision 2030, despite thinking that it was rushed and relied on quick reform rather than gradual change (Shahine et al. 2017b). Prince Mohammed bin Salman acknowledged the risk to achieve the dream; however, he intended to push ahead.

In terms of time, the formal website of NEOM announced the real commencement of the project by establishing a wide communication network with investors and partners. The construction of the infrastructure has started and the plan is to complete NEOM the first phase by 2025. (NEOM Official Web Site 2017).

On the other hand, there are several analysts, who have stressed the impossibility of carrying out such imaginary project in such a short period. For example, Marc Lavergne, director of the CNRS research centre and specialist in the Middle-orient, stressed that from the financial point of view, with even less technology, it will not be possible to create such a project in such a short time (Murgia 2017).

The tourism industry has been added to the project plan to get benefits of branding and building NEOM. Despite that Saudi economy has already relied on the religious tourism but the opportunity in NEOM is to make the new city attract people from around the world. Talking about tourism and attracting people took place in NEOM conference. It took the enthusiasm of the Japanese man "Masayoshi Son" who talked about the opportunity to create two more Mecca the matter that caused the laugh and astonishment of Muslim audiences in NEOM conference. Mecca city has a scared position among Muslim people, it is a God house, and millions of Muslims visit each year for Hajj or Umrah, a place that is not comparable to any existing city. A fast comment of the prince in order to handle the embarrassing situation, directing his speech to the attendees, that do not misunderstand it as Mecca is an example of convergence to attract people. The media does not miss this commenting that those people around the prince do not know about Saudi Arabia. Some Saudis have rejected the entire plan, as a fatal project that relies too heavily on foreign consultants with little knowledge of the social and political context in the Saudi Kingdom (Shahine et al. 2017b).

3.5 The Power of Religion

The promotional video of NEOM, featuring a lifestyle so far unavailable in today's Saudi cities, showing a woman who is free to jog in leotards in public areas, grabbed the attention of social scientists. Another woman wearing a pink scarf to cover her head demonstrated an unusual scene in Saudi Arabia, as most Saudi women are

covered in a black dress. The promotional video featured a lifestyle that has women working alongside men, also considered an unusual scene.

Two years ago, the Crown Prince Mohammed released radical social reforms that went through a series of successive consultations over the years, such as allowing women in the KSA to drive that was very difficult, the matter that makes Saudi Arabia after such reform to merge with the liberal world.

Actually, the process of liberalization has started under King Abdullah even if slow and limiting such as curtailing the powers of the "Committee for Promotion of Virtue and Prevention of Vice". He also lifted a ban on women driving, permitted music concerts and is expected to re-open cinemas shuttered for 40 years while they were completely forbidden before.

In addition, the Saudi government established a recreational facility in which concerts, social and sports are held.

The public image for Saudi cities has shifted in a few years since young people started to experience life differently from their parents. The young who are passionate about everything that is forbidden are dancing on music in Riyadh and Jeddah public areas at the National Day, and women dare to uncover their heads wearing colourful dresses. The Young generation that constitutes 70% of the Saudi population, is keen to regain the right of thinking, move away from rigid, Wahhabi control, and catch up with the liberated world.

However, accelerating changes triggered social resistance from conservative clerics and political activists, the matter that needs more time beside a religiously based education system (Nakhoul and Kalin 2017).

Social change needs time, but what is going in Saudi Arabia is so fast, starting new city like NEOM with the most modern lifestyle and technology will have many benefits for different persons and one way or another the change in the kingdom will happen.

The world grows, if you do not engage and understand it, different things that are going to affect your life and the big danger is not knowing nor adapting to the accelerating changes, the Prince Mohammed Ben Salman confirming the inevitability of change and adaptation.

3.6 The Role Models

NEOM promoters and supporters are very optimistic; they are expecting to cheer what they see as a bold engine to transform the Saudi Kingdom. Meanwhile, others still point to the past failures such as desert industrial cities to rebuild the Gulf and the Kingdom.

Establishing a separate area for foreigners with loose rules and a convenient lifestyle, to spur growth and economic diversification, is not entirely a new idea even for Saudi Kingdom. Saudi Aramco Compound in Dhahran is a famous compound designed as an American suburb. Another model is the campus of King Abdullah University of Science and Technology (KAUST), a special separate zone

and a gender-mixed community, where foreigners enjoy a lifestyle similar to their home countries where women drive and dress freely (Carey et al. 2017).

King Abdullah Economic City (KAEC), the mega project in Rabigh was branded as the world's next great economic city. The city targeted a population of two millions and reached much less, around five thousands of permanent residents, according to capital economics reports (Shahine et al. 2017b).

Another mega project (Office Park) in Riyadh City worth a10 billion dollars investment, remains largely unoccupied and unfinished (Carey et al. 2017).

Masdr is an example of the smart city, established near "Abu Dhabi" the UAE's capital city in 2006 (Madakm and Ramswamy 2016).

The construction process was completed in September 2010. Masdr was planned and built to be one of the world's pioneer sustainable cities Masdr city was branded to be a futuristic smart city similar to NEOM.

The need to establish the smart city "Masdr" came from a recommendation of the United Arab of Emirates' economic development vision to invest in renewable energy and sustainable technologies. The aim was to create a sustainable community and environmentally friendly lifestyle and to use the GIS application in every aspect of city planning, construction, operation, and monitoring. A net zero Carbon emissions zone, improved indoor and outdoor air quality, 80% energy consumption reduction are the main goals from building Masdr (Kansara and Ridley 2012).

An important concern is raised by sceptics, who see that NEOM is an attempt to imitate Masdr, the smart city in the United Arab Emirates that was launched with much fanfare and ended up by failing to achieve its targets (The Economist 2017).

An advantage of NEOM over Dubai is that it is closer to Europe. On the other hand, Steffen Hertog a professor at the London School of Economics criticized the attempts of coping NEOM as Dubai confirming that it has special factors that worked together to make its successful (Mail online 2017).

Herton said investors will want to see weather circumventing some of the slow mainline bureaucracy and general social restriction in Saudi Arabia in a special zone can work. If this is to be an international hub, it needs to offer something better than Dubai, which is a high bar to cross (Shahine et al. 2017a).

It took decades to develop Dubai into a tourist destination with 2.9 million residents, the world's tallest tower and regional headquarters for such international banks as Standard Chartered PLC (Carey et al. 2017).

3.7 Conclusive Remarks

NEOM is the most controversial project, since the launch of Saudi Vision 2030 on 25 April 2016, with far-reaching hopes and serious concerns. The land that will be free of visa, customs, and limitations in the system determined by businessmen. The official website of NEOM offers a promotional video of an angelic image of the vacant region. Expressive and promotional words for a complex project that has economic, political and social objectives.

The project's success faces a number of challenges, the first of which is economic, such as the low price of oil, which the kingdom is still trying to overcome, and the entire world is waiting for the kingdom to prove that it has the ability to solve its economic problems and embark on major projects that need years of work in light of economic prosperity. In order to attract investors, the Saudi government should afford them more details and more strong evidence that their investments can succeed. This could be possible by drastic reforms to facilitate the investment operations that do not grow in bureaucratic environments and hamper their success.

Some of the other challenges are political and lie within the borders of the project with Israel and the possibility of its intervention and utilization of the project and its participation in accordance with the peace treaty.

The success of this project depends on its sound vision and the availability of financial fluency that can be realized from two sources: the Saudi side which depends on its ability to provide financial liquidity and the possibility of attracting huge investment opportunities and a desirable lifestyle. This is in addition to popular support and support of friendly countries.

The Kingdom is facing challenges, both at the present and in the future, and if its leaders want to succeed, they have to follow scientific steps and studies, and to be careful and credible in addressing the future threats and weaknesses.

Finally, and as says an Italian quote: "Whoever wants to be happy, there is no certainty of tomorrow."

3.8 Research Limitations

The shortage in resources and references has been a big challenge, and the official website of the project and a film about the conference announcing NEOM are the two reliable sources that are mainly used to understand the nature of the project and its objectives.

This investigation raises many questions and inquiries that help to predict future challenges that might face decision makers and should be addressed at the commencement of the project.

With regard to the challenges that might face launching and implementation of the project, the international journals that have been interested and observed the world's urban experts, economists' reviews and analysists have been a good source for insightful understanding and analysis.

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Chapter 4
King Abdullah Economic City: The Growth of New Sustainable City in Saudi Arabia

Rasha A. Moussa

Abstract The Kingdom of Saudi Arabia (KSA) is one of the strategic countries in the Islamic worlds, and one of the top oil producers. KSA has formulated its 2030 vision, that expresses its long term goals, and expectations; reflecting the country's strengths, and capabilities. The vision aims to increase the investments in real estate and infrastructure projects, as they will help the Kingdom build a strong industrial base to sustain its economy in the future, when oil reserves shrink. One of the basic development concepts is to build new cities, in an attempt to shape a better urban future for all, by generating and scaling new interventions through events, research and urban innovation projects.

The Kingdom of Saudi Arabia has started on building four new economic cities, that resolve the housing and employment crisis, resulting from growing population, together with supporting economic diversification. King Abdullah Economic City (KAEC) is one of Saudi economic cities that is located in Rabigh. It is mainly established to represent an inclusive, connected, healthy, and vibrant city, that comprehensively satisfies all community needs, while sustaining good life quality standards.

In this Chapter, the author will present King Abdullah Economic City, and the main objectives, and principles of its development. In addition, there will be a brief about the challenges tackled, and methods of resolving them. Moreover, there will also be an elaboration on the opportunities offered by the KAEC for the community, while highlighting its future capability to become one of the largest sustainable cities in the Middle East.

Keywords Saudi vision 2030 · Sustainable urbanism · New cities' challenges · Vibrant society · Diversion of economy

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4.1 Introduction

The Kingdom of Saudi Arabia (KSA) is one of the strategic countries, in the heart of the Arab, and Islamic worlds. It is also the second largest city in Middle East. In addition, it is considered to be on top of the oil producers, with vast oil reserves. Accordingly, the government's resolute economic development plans provide robust support in moving ahead with its development projects.

The Kingdom of Saudi Arabia has formulated its new 2030 vision, that expresses its long term goals, and expectations; reflecting the country's strengths, and capabilities. In this vision, there is an emphasis on depending on multi- sector economic development rather than a uni-sector; represented by the oil as the main source for energy, and external income for the country. It thus aims to increase the investments in real estate, and infrastructure projects, to constitute a strong industrial base for the Kingdom, to sustain its economy in the future, when oil reserves shrink. The vision mainly advocates the establishment of three main pillars:

- **A vibrant society**, where all the society members are living, in accordance with the moderate Islamic principles, while sustaining a good life quality environment, supported by an empowering social and health care systems;
- **A thriving economy,** which aims to develop the investment tools, diversify Saudi economy, and create job opportunities;
- **An ambitious nation,** with competent employment, and responsible societies, where all stakeholders, including: Private, and and non-profit sectors, coherently coordinate, to maximize the benefits, and make the most efficient use of resources.

4.2 The Kingdom Plan for Creating a Solid Economic Foundation

Despite the global economic slowdown, and instability in the Middle East, and North Africa (MENA) region, the Kingdom of Saudi Arabia is planning to attract foreign trade, through its ambitious economic development program, by establishing four economic cities (ECs). This is considered a significant step towards the long-standing vision of positioning the Kingdom as a leading destination for both tourists, and investors on the world map.

The six new cities – four cities are still in the design phase, while the other two are already planned- are part of a regional plan for the whole country (see Fig. 4.1); they are independent, and each one has a different vocation; but all are linked to the same vision: Developing the technological capabilities of the country. They are all spread around KSA, and each of them has its own distinguished economic role.

The six cities are:

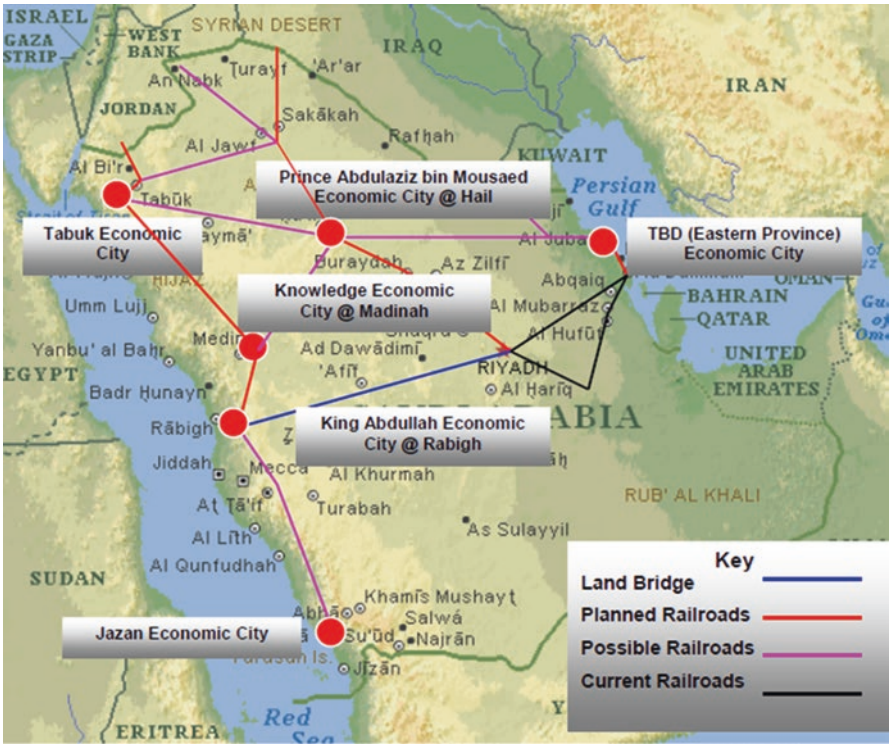

Fig. 4.1 A map showing the six new cities in KSA, and their spatial connection

Four in Design Phase:

1. Prince Abdulaziz bin Musaid Economic City in Hael (PAMEC);
2. Knowledge Economic City in Madinah (KEC);
3. King Abdullah Economic City in Rabigh (KAEC), and;
4. Jazan Economic City (JEC).

Two Planned Cities:

5. Tabouk Economic City (TEC), and;
6. TBD (Eastern Province) Economic City

Additionally, in October 2017, the Kingdom of Saudi Arabia has announced the launch of the new city named: "NEOM", representing an innovative generation for the new cities, and acting as a global trade center, while conveying technological creativity in the kingdom.

The objective of these economic cities is to develop the national economy, and raise the standard of living for Saudis, through fostering the competitiveness of the Saudi economy worldwide, and in the meanwhile diversifying job opportunities, and building capacities for the Saudis, depending on six main principles, which are:

1. Each city will be developed around at least one globally competitive economic sector, which will serve as the initial core development spine for the city, around which other businesses will locate;
2. The cities will utilize their greenfield opportunity to adopt state-of-the-art technology solutions to make them truly competitive;
3. Initial developments in each city will be established with the help of the private sector, including: Infrastructure, and real estate;
4. Core jobs will be created for basic employment sectors by private investors, and this will promote other supporting services jobs;
5. The cities will offer an attractive lifestyle, which will attract Saudis to relocate, and live there, and;
6. The cities will create a business center, which is competitive to other free zones globally.

The real estate sector in the KSA has great potential for development, as there is a growing demand for residential, commercial, housing, and institutional constructions, as the Saudi population is rising annually by 2.7%. These cities shall absorb the pressure on the large cities in KSA, such as: Riyadh, Jeddah, Makkah …… etc., which hosts almost 65% of the population, and 75% of the business sectors.

In addition, they will offer a wide range of opportunities for contractors to develop, and improve the residential, and commercial real estate sectors, while providing industrial infrastructure packages. Saudi Arabian General Investment Authority will regulate, and facilitate the process for the private sectors, as they will work as the capital provider, land owners and developers of these cities.

From Table 4.1, it's shown that King Abdullah Economic City (KAEC) is the largest city, and has the highest expected population, in addition to the several planned facilities, and activities. Consequently, this chapter will analyze the main planning concepts of King Abdullah Economic City (KAEC), located in Rabigh (about 100 km north of Jeddah on the coast of the Red Sea).

4.3 King Abdullah Economic City: Saudi Arabia's New Mega City

King Abdullah Economic City (KAEC) was launched in 2006, and located on the Red Sea coast in the Western region of the Kingdom of Saudi Arabia, away by 100 km from North Jeddah. The City is governed by a single regulator – the Economic Cities Authority (ECA), and is planned to constitute a mixed-use development, including six zones, which are (see Fig. 4.2):

1. A modern world-class seaport;
2. Industrial district;
3. Financial Island (Central Business Zone);
4. Educational zone;

Table. 4.1 Summary about the four new cities in KSA

Description	KAEC	PABMEC	KEC	JEC
Master developer	Emaar the Economic City	Al Mal Investment Company	Knowledge Economic City Company	Saudi Aramco
Area	168sqkm	156sqkm	4.8sqkm	113sqkm
Timeline	2006–2029	2009–2025	2006–2020	2007–2037
Expected population (million)	2	0.3	0.15	0.3
Employment (persons)	1,000,000	55,000	20,000	100,000
Investments (US$b)	93	8	7	27
Focus	Logistics	Transportation	Knowledge based	Heavy, secondary and labor-intensive
	Light & processing industry	Agriculture	Industries	Industries and energy
	Financial services	Minerals	Tourism	Agriculture
		Construction materials	Services	
Key components	Industrial district	Logistics and transportation center	Complex for technology and knowledge based economy	Power plant
	Seaport	Agro-industrial zone	Technological and administrative colleges	Water desalination plant
	Residential area	Knowledge center	Islamic civilization studies center	Industrial port
	Central business district	Petrochemical industries district	Campus for medical studies, and health services	Aluminum smelter
	Resorts	Residential area		Refinery
	Educational zone	Entertainment area	Business center transport and lifestyle	Iron ore complex
		Mining center	Commercial plaza	Ship building
			Residential areas	

Source: Author

5. Resorts, and;
6. Residential area (approximately 2,000,000 inhabitants).

The six zones are planned to be organized together to promote King Abdullah Economic City globally, and mark it as a distinctive area for the development of all industries, whether heavy or light, beside the services provided in various sectors, in order to attract a higher level of local, and regional level of investment, as well as

Fig. 4.2 The master plan for KAEC, and all its planning sectors (http://www.green-destinations.com/docs%5Csbasa.pdf, P. 15)

international foreign direct investment into the Kingdom, while creating more job opportunities for Saudi youth. This major new economic city will be supported by a substantial new port facility, a station on the Haramain high speed train line, with the presence of the King Abdullah University of Science, and Technology (KAUST). It will directly support rapid progress in Saudi Arabia's economic development, and international competitiveness.

KAEC will closely integrate itself into the Kingdom's on-going drive, to expand the economy, create employment opportunities for Saudi Youth (the city will offer 500,000 employment opportunities), and function as a catalyst to attract foreign investment, global trade, commerce and industry. All of these projects, that are in KAEC, will promote Saudi Arabia as an international investment destination, while pushing forward the Saudi economy into a new phase of adapting international standards.

4.4 King Abdullah Economic City Formation

King Abdullah Economic City is formed to be the greatest enabler of socio-economic development in the Kingdom of Saudi Arabia, by providing local, and international investors with unique business opportunities, in addition to working towards securing the future of Saudi youth by offering new job opportunities.

The city is formed in serial phases, starting with partial areas from city district, business park, besides the port, and the industrial area attached to it. In the second phase, the residential area is completed, and continue on finishing the three previous zones, while work on the finalizing the city facilities by the third phase (see Fig. 4.3).

In this part, the component of the city will be illustrated as they are the elements that form King Abdullah Economic City and promote it.

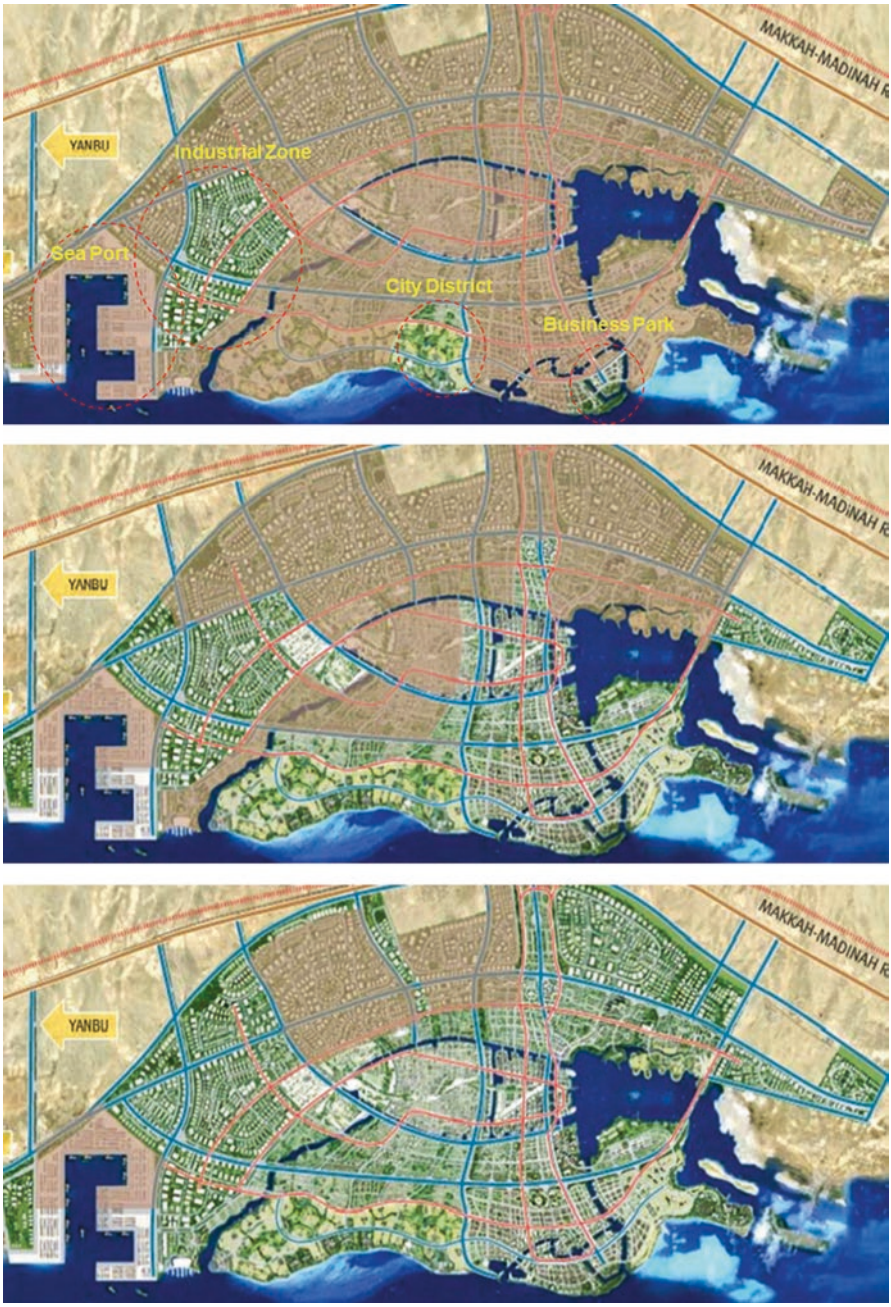

Fig. 4.3 The different phases of KAEC (http://www.green-destinations.com/docs%5Csbasa.pdf, P. 16–18)

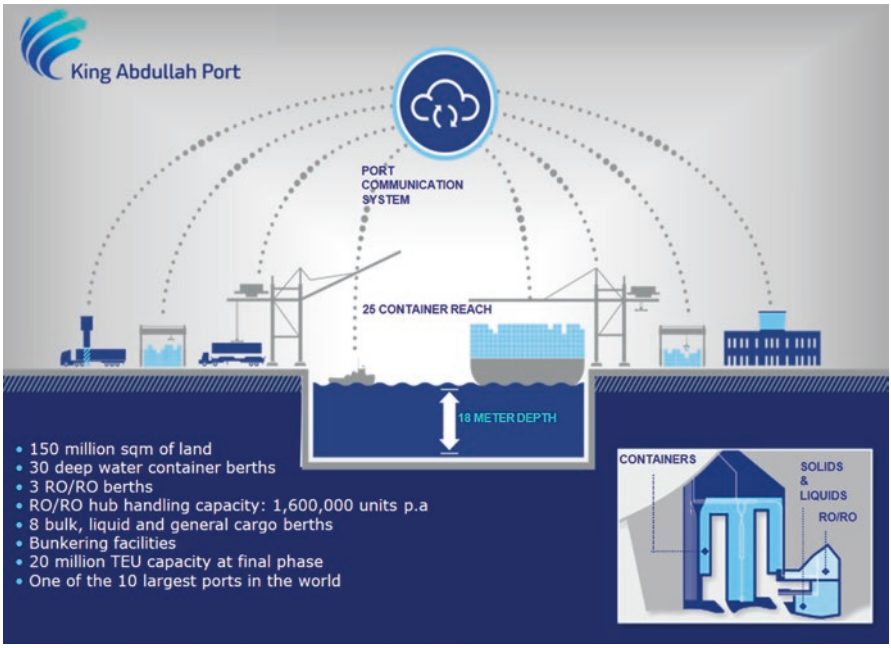

Fig. 4.4 Port operation (http://www.kaec.net/wp-content/uploads/2014/11/KAEC_CORPORATE_BROCHURE-FINAL.pdf, P. 15)

1. **The World-Class Seaport-King Abdullah Port (KAP):** The port will be the largest port on the west coast with area 2.6 million sq.m. This allows the world's largest super vessels to drop anchor, with a capacity of 20 millions TEU at completion. Furthermore, the strategic location of the port on the Red Sea, and the instant access to key cities within Saudi Arabia, help in adding a designated area for light industry, and logistics. These shall constitute a natural platform for onward movement of goods to Europe, Africa, Asia, and beyond. The port will have an integrated transport system with seamless high-speed transitions from sea to rail, road, and air, making the city the main gateway to the central, and eastern provinces, as well as the entire Kingdom (see Fig. 4.4).

Due to the near location of the port to the two Holy Cities of Makkah, and Madinah, KAP will also have a Hajj terminal, that can receive over 300,000 pilgrims every season. It will further be supported by adjoining hotels, medical centers, and other world-class amenities, that will provide the pilgrims with all their everyday needs.

KAP began partial operations in 2013 with the arrival of the first commercial ship on the 28th of September, and has effectively started import, and export operations on January, 2014. It is equipped to receive the new supersize container ships. The Saudi Coast Guard, Saudi Customs, Saudi Food, and Drug Administration with

Fig. 4.5 Some of the local, and global leaders in IV, and one of the companies (http://www.kaec.net/wp-content/uploads/2014/11/KAEC_CORPORATE_BROCHURE-FINAL.pdf, P. 18)

its labs, sampling facilities, and other relevant government agencies are all duly established inside the Port.

KAP is a key part of KAEC's integrated multi-model transportation system, that includes the planned Saudi Land Bridge rail project, the high speed Haramain railway, and highways.

2. **Industrial Valley (IV):** The industrial district covers an area of 55 millions sq.m., and is exclusive to the requirements of a small, medium, and large-scale industry, which will be around 2700 manufacturers, and logistic companies (Fig. 4.5). This area is connected to KAP, the Haramain High-Speed Rail network, and the planned Saudi Land Bridge, which all help in offering the first class infrastructure, and enable a more efficient logistics' framework, together with a distribution network to the largest market in the region, and beyond. They will represent sectors, such as downstream petrochemicals, pharmaceuticals, R&D activities, as well as a host of educational institutions, that will prepare young Saudis for the jobs, initiated by the city. In order to attract people to work, and develop the industrial area, there was a sizeable area set aside to develop accommodation for employees, and their families.

The Industrial Valley incorporates five industrial clusters: FMCG/foods, logistics, pharmaceuticals, plastics, and building materials. Additionally, it provides ready industrial lands connected to a state-of-the art infrastructure, with different shapes designed, based on client's requirements:

- ***Utilities:*** industrial lands are provided with electricity requirements, potable water, sewage treatment, and natural gas in selected locations.
- ***Telecommunications:*** the city is connected through fiber optic network, to meet the demanding needs of modern technologies, and swift data transfer requirements.

The IV has some advantages that attract large companies to invest there including its unique location, the single regulator, the broad connectivity, the diverse land solutions, and the integration with the whole city (see Fig. 4.6).

Fig. 4.6 The different phases of the industrial valley in KAEC (http://www.sbjbc.org/wp-content/uploads/2015/12/150630-IV-Presentation-2015.pdf, P. 13,14)

In addition, investors have the choice between freehold or leasehold schemes depending on their requirements. The Re-Export Zone is directly adjacent, and connected to the port, a dedicated area for specialized value-added manufacturing, and logistics operations, where tenants will benefit from a special custom regulatory framework.

One of the important approaches that is used to attract workers, and labors, was the Labor Village, that is located in the heart of the industrial zone, to enable easy access, and transportation for workers. It occupies 48,000 sq.m. of land with 5000 bed spaces. Furthermore, the Labor Village includes senior, junior together with regular labor buildings, sport courts, community buildings, and a mosque.

3. **Financial Island (Central Business Zone):** This zone will offer 500,000 sq.m. of class "A" offices for the leading international, and regional financial entities, business hotels (with up to 1200 rooms), a new exhibition, and convention center. Up to 60,000 professionals are expected to operate from the financial island on a daily basis. The financial island will be topped by two towers reaching up to 100 stories respectively, that offer compelling views of the surrounding city skyline. The Financial Island will benefit from having a state of the art communication, and IT infrastructure.
4. **Educational Zone:** It consist of schools for all educational levels, International universities for higher education, and fully equipped research centers, which will work closely with the R&D arms. The King Abdullah University of Science, and Technology began its construction back in 2009, and it is one of the best funded universities in the world, with an initial $20 billion endowment, given by the King himself, and is only surpassed by Harvard and Yale. It is also the first mixed-gender university in the country.
5. **Waterside Resort:** The resort will be established with area of approximately 4 millions sq.m., around a compelling mix of waterfront hotels, and boutique residences (75–150 rooms), mid-sized holiday retreats (350–400 rooms), and large resort hotels (500 to 600 rooms). All these facilities will provide people with the most refined levels of comfort, relaxation, and recreation. The master plan envisages 3500 well-appointed hotel, and residential bedrooms, and suites, premium

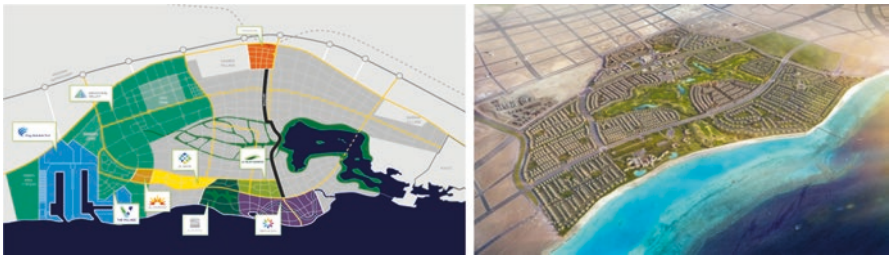

Fig. 4.7 The coastal communities in KAEC (http://www.kaec.net/wp-content/uploads/2014/11/KAEC_CORPORATE_BROCHURE-FINAL.pdf, P. 25)

villas, besides extensive retail elements, and an international-class signature 18-hole golf course, together with an equestrian club.

6. **Residential zone:** This area is known as "The Coastal Communities" and has a wide variety of housing, and living solutions to meet the price point, and lifestyle needs of a diverse residential population. Each zone has its own unique character, brought about by the prevailing use of land, built-up space and feature public amenities, such as mosques, souks, and recreational venues, that are designed to promote the health, and well-being for all residents. Furthermore, they offer lots of opportunities for business, and investments in property development, whether for residential, commercial or recreational purposes as these districts will host thousands of tourists, and transient traffic in a variety of residential properties from mid-rise buildings to secluded detached homes. In addition, it will be home to 1,000,000 permanent residents (see Fig. 4.7).

The Coastal Communities are divided into:

1. **Al Murooj – An Elite, Green Retreat by the Sea:** It is a new elite community, that consists of 2330 plots, and villas. It offers unique benefits to suit different lifestyle needs, and nestled alongside a world-class 18- hole golf course. This prestigious beach community represents an opportunity to live in a beautiful, fully-serviced environment, with unique access to the spectacular beaches along the shoreline of the Red Sea.
2. **Bay La Sun – Urban Living:** It is a mixed-use development, that consists of the residential towers (Beach and Marina Facing), business park, the marina canal promenade, with planned provisions for berthing facilities for yachts, and pleasure crafts, besides the hotel, and the retail promenade incorporating restaurants, and cafes. All of these luxurious facilities enjoy exquisite views across the Red Sea and the Marina.
3. **Al Talah Gardens – A Perfect Place to Grow:** It is young family-friendly living that spread over 3 million sqm and offers 7500 housing units and land plots with a unique landscape to offer an environment with recreational spaces for jogging, and other sporting activities
4. **Al Waha – Contemporary Living:** It's divided into districts that are designed to comprise several villages organized around open space corridors, roadways,

landscaping and activity centers with aesthetic treatments. It also offers dwelling units with a variety of choices between Apartments, Paired Home, Town Homes, & Villas. Each Village is distinguished with a neighborhood community center and several amenities such as mosques, parks, schools, offices and restaurants.

5. **Al Shurooq – New Beginnings:** it's a modern housing community of multifamily apartments set within easy reach of Industrial Valley, King Abdullah Port and the spectacular beaches of King Abdullah Economic City.

4.5 KAEC Key Challenges and Role of Stakeholder

Although King Abdullah Economic City could be considered as a great enabler of socio-economic development in the Kingdom of Saudi Arabia and the urban laboratories for testing new business models, technologies, and lifestyles of the future, it has faced myriad challenges that could affect the growth of the city, this part will indicate the most important challenges and how they overcome it.

4.5.1 Global Slowdown and Its Impact on the Formation of Economic Basis

The global financial crisis had affected the development of the new cities and the global economics which led to the delay of some projects. In KAEC, there was a partnership between the public and private sectors that was independently of oil revenue. The Saudi Arabian General Investment Authority (SAGIA) was established in 2000 and can be considered as a key milestone in the KSA's drive to build a world-class economy. SAGIA aims to promote, attract and retain quality local and foreign investments in untapped sectors by developing an optimal business environment. In March 2015, SAGIA invite foreign investors for some projects, with a combined value of nearly US$140b and the Oil revenue was directed into major social infrastructure projects, to attract foreign investment.

The construction of trade and logistics infrastructure was one of one of the essential parts that affects KAEC's economic model. KAEC operate which is considered the first in the region to be built entirely with private capital. The port now has the capacity to manage 3 million containers a year. This increases to 4.5 million in 2016 and is expected to reach 20 million by 2025.

Furthermore, more than 100 global and local companies are setting up operations in the city in non-oil industries, including pharmaceutical, automotive, logistics, and consumer goods, except one European oil company operates a blending plant for its lubricants business in the city, and by 2017, a bonded zone and sophisticated warehousing operations will be added.

Moreover, the idea of connecting King Abdullah port to the national road network facilitate the transportation process and attract companies that need improved access to the Saudi market. Having the Industrial Valley near by the port also allows companies to ship raw materials in to their manufacturing plants and ship product out, either to the Saudi market or the broader region.

All of the previous had helped in creating the economic infrastructure of the city, which offers a lot of opportunities for investment, and employment.

4.5.2 Creating Balance Between Public and Private Sector

Nowadays, public authorities in many cities developed a corporatized approach to government, creating government-owned entities (private sectors), with corporate structures to manage new cities services, and this verses what was in the past as public sectors led the cities. This does not mean that the role of public sector can be ignored, or that urban development project can overlook public authorities, but public sector engagement is essential should be involved from the initial stage. KAEC developed pro-business regulations through a single regulator – the Economic Cities Authority (ECA) with a wide and comprehensive spectrum of incentives for investors, and residents alike.

In the case of KAEC, it was essential to define the roles of both private, and public sector holders, even before the start of construction, and urban life, to strike balance between them especially in planning, and governance, including a discussion of issues, such as corporatizing city management, financing infrastructure versus public space, and fostering diversity, and affordability when building a city from scratch.

The role of the ECA is to supervise, serve, and regulate KAEC, and all the new cities. Accordingly, their main task is to:

1. Oversee developers to ensure value proposition of the Economic cities (ECs);
2. Support the Kingdom's socio-economic development objectives;
3. Monitor developers' projects' deadlines;
4. Develop, and enforce global reference regulations, and standards;
5. Provide world-class services through the 60 min an hour, 24 h a day and 7 days a week (60 × 24 × 7) concept;
6. Develop, and monitor public–private partnership (PPP) models, and;
7. Contribute to the promotion of ECs.

4.5.3 KAEC Remote Place and the Creation of Social Basis

One of the important issues that could affect the success of any new city is its ability to attract people to live, and work there, beside creating spaces for social interactions. Cities need to attract all categories of people. New city projects are as much responses to economic growth as they are to demographic growth, and changing societies. Whether they ultimately intend to incentivize the emergence of high-income workers, or a globalized class. New cities must also plan for the fundamental diversity, and inclusiveness that create opportunities for all. The goals of diversity, and inclusion should fall under the key objectives for any public stakeholder involved in a new city project. This includes, in particular, affordability in housing.

KAEC's residential communities are built to encourage interaction, incorporating green spaces, community centers, cycle paths, and ready access to the city's recreational facilities. KAEC adapt lot of events there to encourage people to go, and discover the city, besides there is the labor village adjusted to the industrial valley, and provided with several facilities.

Furthermore, KAEC will be one of four terminals on the 450 km Haramain High Speed Rail network that will reduce the travel time between cities to service the regions' 8.5 million people. The state of the art, high-speed rail network will link the city to Jeddah, Makkah and Medina, and will have an executive business, retail and residential area built around its station. This terminal will become a stopping point for millions of pilgrims annually, a natural destination for conferences, exhibitions, and home to malls, and outlets. Corporate headquarters, colleges, vocational places of learning and specialized medical centers will occupy this uniquely accessible area.

This is not the only way to create a social infrastructure, and achieve sustainability, but technology should be part of the design. The original master plan of KAEC has evolved to incorporate advanced fiber optics, smart-utility networks, and a wide array of sensors to manage city operations. Moreover, Residents can use technology through the report municipal issues directly to the city management via a dedicated application which help them to contact with the city administrators, in addition, this application helps in reducing time and cost consumed for providing essential community care services.

4.5.4 Water Demand Projections and Initial Water System Layout

The idea of supporting KAEC with water system supply, and distribution needs, was one of the challenges that face the developer Emaar Economic City (EEC), especially with hot, and arid environment of KAEC. EEC was supported with one of the famous offices Henningson, Durham and Richardson (HDR) that supported EEC by establishing water demand projections for KAEC over the planning period,

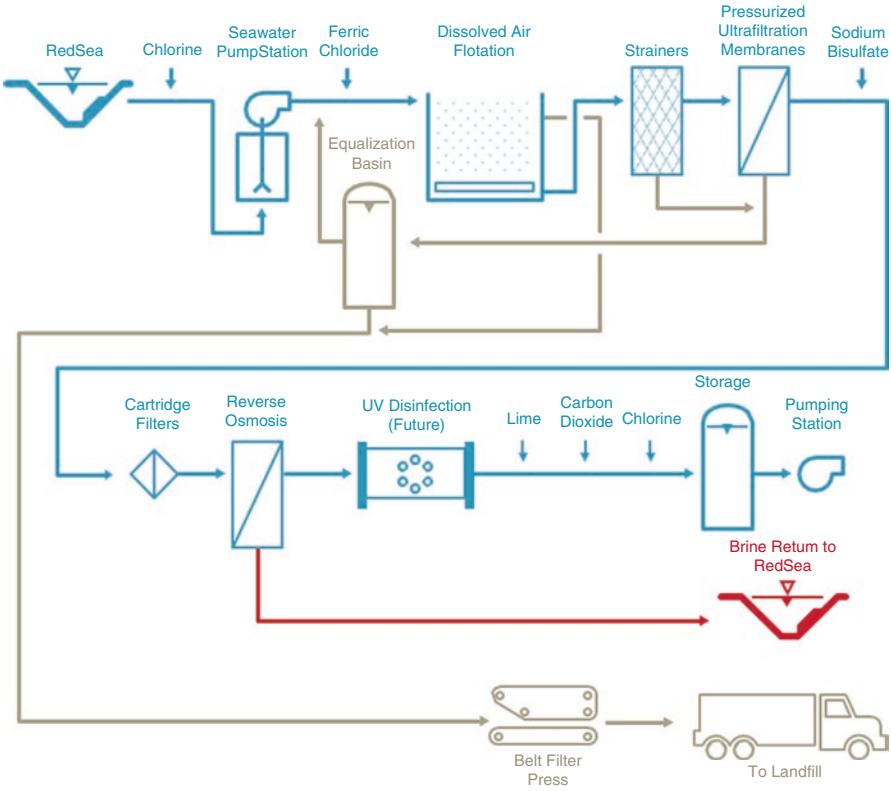

Fig. 4.8 Desalination treatment plant design in KAEC (https://www.hdrinc.com/sites/default/files/2017-05/hdr-seawater-desalination-kaec-experience.pdf)

taking into account local water demand patterns, future improved water conservation measures, and offsetting potable water use, while reusing water to the greatest possible extent. After the projections were identified, HDR team laid out the entire water supply, transmission, and distribution system, and phased its development to coordinate with the transportation, and power system extensions.

The basis of the plan called for the construction of two desalination plants:

(a) Desalination Plant-1 with an initial potable water production capacity of 60,000 m^3/day (16 mgd), planned to reach an ultimate capacity of 600,000 m^3/day (159 mgd) in 23 years, and to support utilities such as: road access, electricity, natural gas, and sanitary sewer.
(b) Desalination Plant-2, with an ultimate capacity of 640,000 m^3/day (169 mgd).

The treated water would then be stored in reservoirs, and pumped throughout the system using variable speed booster pump stations. Moreover, one key ancillary system, that is added to the project, is solar power (solar panels were added on all available buildings, and reservoir rooftops), that will further reduce electrical use at the plant (see Fig. 4.8).

4.6 KAEC: City of Investment

The Saudi Government has invested heavily in national infrastructure to attract investment. Foreign direct investment (FDI) is seen as one of the most effective ways to diversify the economy, and provide employment for younger generations.

The authorities welcome FDI for its ability to transfer technology, employ, and train the national workforce, foster economic development, and enhance local raw materials. The country's controlled inflation, and relatively stable exchange rates, and openness to foreign capital in upstream gas, as well as extensive privatization programs, are all among the advantages attracting the investors to the country. In addition, access to the world's largest oil reserves, very low energy costs, and a high standard of living, are all strategic decisive factors for foreign investors.

In order to attract investors, Kind Abdullah Economic City has simplified the procedures for business set ups, and offered a huge range of contracts. The authorities provided potential present contractors with more opportunities from port and industrial infrastructure packages to a full range of residential and commercial real estate developments. These benefits include:

- **Foreign Ownership:** 100% foreign ownership of projects, including property required to support the business activities, in addition to owning private residences, and employees' accommodation;
- **Employee Sponsorship:** No restrictions on sponsoring foreign employees;
- **Capital Requirement:** Minimum capital requirement, and no restrictions on repatriation of capital, with ability to carry forward losses indefinitely;
- **Ease of Doing Business:** Accelerated investment application, business registration, and setup process, with a guaranteed decision for foreign investment applications, within 30 days of submission to SAGIA;
- **Taxation:** No personal income tax, and a minimal 20% corporate tax for foreign companies;
- **Export/Import Duties, and Transaction Incentives:**
  - Exemption from import fees for selected raw materials, imported for manufacturing products;
  - No export duties within the 17 countries of the "Greater Arab Free Trade Area";
  - Few restrictions on currency conversion, exchanges, and transfers, and;
  - Duty drawback, customs refund for raw material imports that are processed; and exported as finished goods.
- **Industrial Incentives:**
- These incentives include:
  - Preferential treatment for national products in Saudi Government procurement;
  - Export credit, financing, guarantees, and insurance through the Saudi Export Program;

- Financial support for the training, and employment of Saudis from the Human Resources Development Fund;
- Low-cost loans from the Saudi Industrial Development Fund, and Public Investment Fund, and;
- Customs' duties exemption on imported machinery, equipment, raw materials, and spare parts, if they are for industrial use.

- **Leasing and Contract Terms:**
  - Net leasing rate/annum: SAR700/, service charge: SAR120/sq.m. (total service charge: SAR820/sq.m., to be paid annually in advance on a quarterly basis), and;
  - Contract term: minimum 2 years; no escalation during the first 2 years, year three onward, 5% per annum).

In the real state sector, there are some regulations that encourage investors and, offer an attractive lifestyle to grow beyond a mere industrial free zone. The cities enjoy a globally competitive, business – friendly regulatory environment. These regulations are effective as they offer the following:

1. **Land Ownership and Development:**
   - Saudi Arabian General Investment Authority's license allows the master developers to establish, and carry out investment projects;
   - Master Developer will enter into a master developer agreement with Saudi Arabian General Investment Authority (SAGIA);
   - Master Developer will establish a project company (PC) to undertake the development of KAEC, and;
   - The project company will be required to offer 30% of its issued share capital to retail investors.
2. **Rights of Property Ownership**
   - Non Gulf Cooperation Council (Non-GCC)/Saudi nationals are covered by the Foreign Investment Law, and the Law of Non-Saudis Proprietorship, and Investment of Real Estate, issued by the Royal Decree 15 dated 17/4/1421H (Foreign R/E Ownership Law), and;
   - GCC nationals are covered by the GCC Nationals Royal Decree No. 4 dated 12/7/1415/H, and Executive Rules (GCC R/E Ownership Law).
3. **Foreign Investment Restrictions**
   - Saudi Arabian General Investment Authority has issued a list of some business activities prohibited to foreign investment. These include manufacturing of military materials, equipment and explosives, oil exploration and production, services related to security, real estate brokerage, and land transportation services (excluding trains).

4. **Project Land Ownership**

   - For KAEC, the Maser Developer acquires land; and then transfer the title to the land that will then transfer to the Project Company (PC). The PC will transfer the land to investors under a long-term lease or develop the land for sale to third parties, or retain ownership of the land, and manage the developed property, or enter into strategic partnerships, alliances or joint.

5. **Opportunity**

   - 100% foreign land – ownership is allowed.

4.7 Conclusion and Recommendations

King Abdullah Economic City has the potential to inspire urban stakeholders for generations to come, and experience a new life style with good quality. It could become a good reference model that foster urban innovation around Middle East.

KAEC offers a multitude of opportunities to its inhabitants, as they have ICT infrastructure, ports, clean roads, and public transportation, that help them to move around seamlessly. In addition, they are connected to the nearby cities through one of the largest rail stations. KAEC needs to address the challenges of climate change, design flexible urban form and policy, create innovative environments, adjust priorities, and set targets according to its own local context.

In order to keep the level of life, owners in King Abdullah Economic City should take in considerations social aspects, related to the coherent integration between community members, and their city.

KAEC can leverage ICT to create more effective feedback loops between residents, and the city. It can innovate how they are governed by providing the right infrastructure for citizens to easily access municipal services -an infrastructure that is future-proofed, scalable, part of a master plan, and that matches citizen needs; develop new inhabitants' services that leverage existing ICT infrastructure, introduce connected technologies for citizens to access basic municipal services, and thus create integrated municipal management networks to maximize their efficiency.

The relation between the private, and public sectors in KAEC is immense, and is supported in all phases. They ensure that the vision is clearly laid out with its pioneering elements, and offer individuals the possibility to positively react and be an effective part in the project.

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Chapter 5
Land Value Capture as a New Sustainable Financing Mechanism for Public Transit Development in New Cities: Borg El-Arab New City as a Case Study

Mostafa El-Nagdy and Asmaa Ibrahim

Abstract The public transit financing methods in Egypt are mostly dependent on governmental entities, which increase national economic burdens, without any correspondent impact on the quality of service provided nor their provision. An alternative way of financing must be integrated without an increase in fares, and general budget, or dependence on foreign loans, and grants. This funding problem has further become a spectacular challenge, to link the new cities with existing ones. From another perspective, public transit eventually poses economic influences on land values surrounding their context that increase incrementally. Yet, this increment is commonly captured by landowners and private developers, and can be rationally used to cover the initial public transit costs if the construction phase which is preceded by a pre-planned framework to capture this increment in favor of the community through related governmental authorities and decision makers. This mechanism is referred to as "land value capture: LVC."

From this view, the objective of the study presented in this chapter is to generate a new sustainable funding mechanism for public transit development using land value capture methods in the Egyptian new cities. Accordingly, this will be achieved through the analysis and the review of several relevant international case studies in an attempt to deduce the LVC mechanism criteria and stakeholders' role that can successfully manage this framework. The deduced criteria will be used to test the applicability of using the land value capture mechanism in Borg El-Arab new city. The chapter results end up with highlighting how the 'LVC' methods could serve as a two faceted mechanism that meets the community and low-income groups' needs, while benefiting from the high-end landowners, and private developers without having the government as the main economic funder.

Keywords Public transit funding · Land value capture · New cities · Sustainable mobility

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5.1 Introduction

The public transit financing methods constitute a heavy economic burden on the national governments in Egypt, resulting in a correspondent deterioration in service quality and provision in general. This is attributed to the fact that only governmental authorities bear all costs, depending on five sources. First, general government budget funds are the main public transit funding method used in Egypt, depending on different types of taxes together with profits from the public sector companies like General Petroleum Company, Suez Canal Company, the Central Bank, and other mega companies that follow the public sector (Ministry of Finance 2015). Second: fares from common users, which are excessively lower than the global average fare, that is estimated to have an average fare of3 Egyptian pounds for the former compared to about 30–45 Egyptian pounds for the latter (Litman 2015a). Third, direct revenues from advertising on vehicles and inside stations; however, the revenues from advertising is considered very low. Accordingly, the collected revenues from fares are comparatively very low. Fourth, grants from other countries to help dispose off the traffic congestion. The last grant was in 2015 from the United Arab Emirates. It included 600 full-size public buses with costs of 550 million Egyptian pounds (Tamam et al. 2015). Finally, foreign loans from the World Bank, which are long term loans with low interests. The last one was in 2010 with an amount of 330 million dollars to develop the Egyptian national railways (Sustainable Development Department, Middle East and North Africa Region 2010).

These methods have proven to be ineffective in facing the rapidly growing transportation problem in Egypt. The current fare is very low, and it cannot reach the profitable range. Any increase will over burden the users of public transit especially the poor citizens, who already suffer enough. The revenues from advertising are relatively low to cover the expenses of any developmental strategies in such an expensive sector. The general budget suffers from severe deficit estimated by about 9% of GDP in 2015. Consequently, it is not wise to depend on any of these methods. Meanwhile, the foreign loans are going to be paid back someday with extra interests.

Accordingly, an alternative way of financing must be integrated without any increase in fares, and general budget, or dependence on foreign loans, and grants. This has been a crucial challenge, especially for linking the new cities with existing ones to promote the former. On the other hand, public transit has many benefits and economic impacts on land values surrounding their context that increase incrementally. Yet, the government does not capture a part of this increment from landowners and private developers that could cover the public transit costs. This mechanism is referred to as “land value capture: LVC.”

The study in this chapter aims at exploring the applicability of this concept in Egypt in three main parts. The first part introduces the economic impacts of public transit on land value and the evidence of land value increment due to public transit development, together with reviewing the land value capture mechanism definition, history, and methods. The second part analyzes, and compares two international

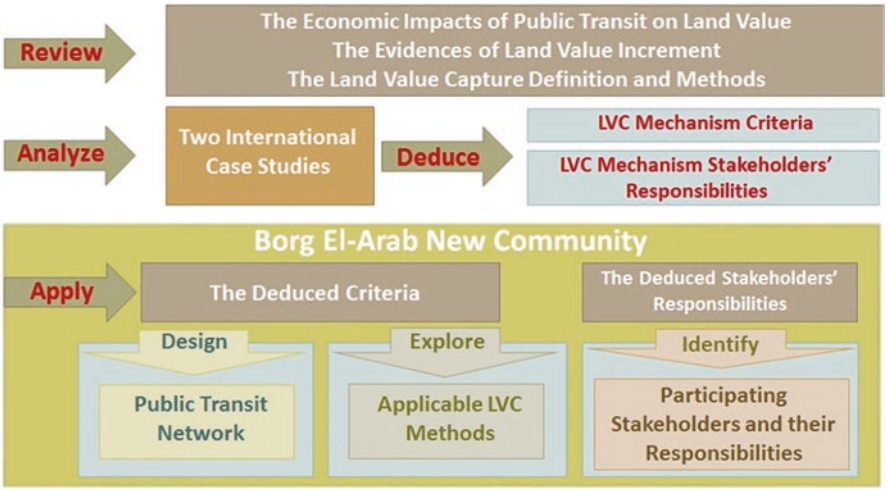

Fig. 5.1 Chapter structure (Authors)

case studies in an attempt to deduce the LVC mechanism standards, criteria, and the stakeholders' role. These pioneering international cases have successfully used different LVC mechanisms in funding their public transit projects in their new cities or in their existing cities' expansions. The deduced criteria will be used in the third part to test the feasibility and applicability of using the land value capture mechanism in Borg El-Arab new city in Egypt (see Fig. 5.1).

5.2 The Impact of Public Transit on Land Value

In 1826, an economist and a landowner called Johann Heinrich Von Thünen introduced the first location theory. He proved through his model that the accessibility factor to the market area can create a complete system of land uses. So, if lands are located far away from the market area, then the rent will get lower and the transportation costs will get higher. As a result, this will create a land use map for different types of crops, since crops with the highest prices will be located very near to the market like dairy products, fruits, veggies, and flowers. On the other hand, crops with less economic value will be located far from the market like cereal grains. (Bloug 1985; O'Kelly and Bryan 1996). Nevertheless, land values increase if they are connected with public transit and vice versa.

5.2.1 The Economic Impacts of Public Transit on Land Value

It can be noticed that the value of lands with high accessibility to public transit nodes and corridors has risen. This notion can be considered as an extension to the first location theory proposed by Johann Heinrich Von Thünen in the nineteenth century. In his research, the value of any property will be determined according to the number and the strength of the connections between this property and other ones with high interactive land uses.

Consequently, the investments in public transit will lead eventually to an increase in land values. This is attributed to several added advantages such as: saving time and money for local business, attracting new business to the region, creating high-density mixed uses' communities with better environment, providing more accessibility for new jobs, and reducing parking demands and congestion. (Robert and David 1998; Litman 2015b).

5.2.2 The Evidence of Land Value Increment

The different public transit systems do not have the same effect on lands' value. These systems must have specific fixed and separated tracks giving them superior performance and high acceleration in comparison with normal unsegregated public transit like regular buses and minibusses. In addition, they must have a high-frequency service to move the highest capacity of passengers. These systems are commuter rail, metro rail, light rail, and Rapid Bus Transit (RBT). Such modes offer effective options for improving mobility within urban areas and enhancing quality of life. Moreover, they provide competitive alternatives for transport other than private vehicles. The existence of such public transit modes results in re- shaping the city urban form, promoting high densities, mixed land uses, and accessibility. Each mode of these four modes has its benefits, costs, and implementation considerations. However, they all intended to be fast, comfortable, and effective (UN-Habitat 2014).

Over more than 150 recent published works have analyzed cases of land value increment due to public transit development covering many areas in different countries including USA, Canada, Europe, and Asia. A review of some of these cases is illustrated in Table 5.1 (Doherty 2004; Banister 2005).

5.3 Land Value Capture Mechanism

Public transit has huge economic impacts that lead to an increment in lands' value and properties adjacent to its lines and stations. This increment is obtained only by the landowner. The government should obtain a part of this increment to recover a

Table 5.1 The evidence of land value increment – selected examples

Location	Public transit	Land value increment
Chicago, USA	Commuter Rail	An increase of 20% of all properties' values within 400 m from stations.
New Jersey, USA	Commuter Rail	An increase of 3.8–10% of all properties' values within 400 m from stations.
London, England	Metro Rail	An increase in properties' rent values by 1–5% within 400 m around Victoria metro line stations.
Santiago, Chile	Metro Rail	An increase in properties' value by 4.2–7.9% within 1 km from stations.
Dubai, UAE	Metro Rail	An increase in residential properties' values by 13% within 900 m around the stations. Moreover, an increase in commercial properties' values by 76% within 900 m around the stations.
Portland, USA	Light Rail	An increase in properties' values by 10.6% within 450 m around the stations.
Missouri, USA	Light Rail	An increase of properties' values estimated by 32% within 300 m around St. Louis light rail stations.
Seoul, Korea	Rapid Bus Transit RBT	A 5–10% increase in residential lands and properties' values within 90 m from the stations. Moreover, a 5–10% increase in commercial lands and properties' values within 120 m from the stations.

Source: Authors, Based on Gruen (1997), National Association of Realtors (2014), Salon and Shewmake (2011), Wacher (1971), Al-Mosaind et al. (1993), Landis et al. (1995), and Mohammed et al. (2017)

portion of the funding used in construction and operation of this public transit system (UN-Habitat 2016).

In 1848, John Stuart Mill, an English philosopher, political economist and civil servant, stated that "Suppose that there is a kind of income which constantly tends to increase, without any exertion or sacrifice on the part of the owners: those owners constituting a class in the community, whom the natural course of things progressively enriches, consistently with complete passiveness on their own part. In such a case it would be no violation of the principles on which private property is grounded, if the state should appropriate this increase of wealth, or part of it, as it arises. This would not properly be taking anything from anybody; it would merely be applying an accession of wealth, created by circumstances, to the benefit of society, instead of allowing it to become an unearned appendage to the riches of a particular class." (Mill 1848).

Figure 5.2 illustrates the different portions of the land value increment, in accordance with the different kinds of developments that occur after the establishment of the transit system. The first portion of value increase is due to the development, that has been done by the land owner himself; this increment should be kept and obtained by the landowner. The second portion is due to the public services' development such as the cost of establishing public transit; this increment should be obtained by the government to cover a part of the initial paid capital (Suzuki and Murakami 2009).

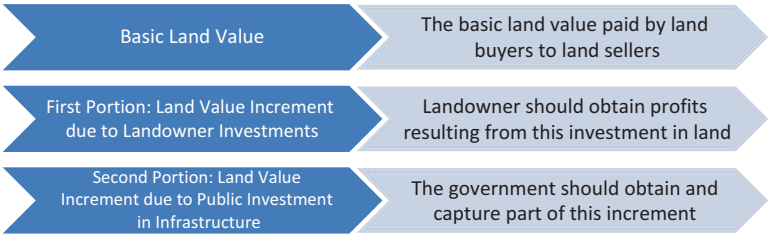

Fig. 5.2 Land value increment portions (Authors)

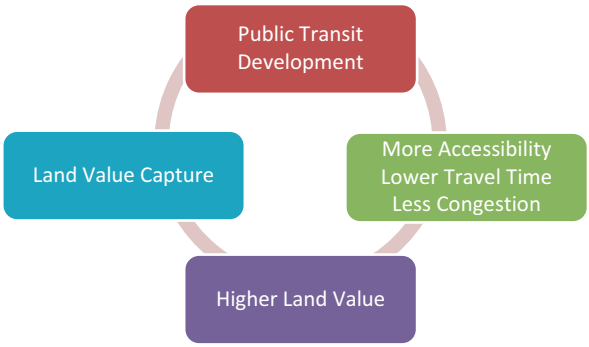

Fig. 5.3 Land value capture concept (Authors)

5.3.1 LVC Definition and History

Land value capture is a group of funding methods based on collecting and obtaining revenues from land/ properties' owners and developers, who are located adjacent and near to public transit lines and stations due to the increment in their land values, as an indirect result of the economic impacts of public transit development. (see Fig. 5.3) (Lari et al. 2009; Salon and Shewmake 2011; George Hazel Consultancy Ltd. 2013).

In Egypt, 'LVC' methods have been used to provide the required infrastructure in new communities by the New Urban Communities Authority 'NUCA'. The LVC method was transferring land ownership. By law, they are officially owned by the government that transferred the lands' ownership to 'NUCA'. The latter finance the provision of infrastructure systems, such as: water, sewage systems, and electricity. Afterwards, it starts to sell these lands at a public auction under the free power of the market or in the lottery. In 2004, parcels of lands with an area of 378,000 Sq. M. at New Cairo were sold for 625 LE per square meter, which has covered about 50% of the internal infrastructure costs. In 2007, several parcels of lands in new cities were sold for 3.12 billion dollars, which has covered all internal infrastructure costs and a part of the external infrastructure costs (George 2008).

5.3.2 LVC Mechanism Methods

The capturing of land value can be done through nine methods. They are land value taxes, tax increment finance, special assessment, transportation utility fees, development impact fees, negotiated exactions, joint development, air rights, and land sale. These methods are not fixed. Accordingly, each country can manipulate them to fit their economic system and potentials, and in accordance with the circumstances of each project (Lari et al. 2009; Walters 2013).

5.3.2.1 Land Value Tax (LVT)

Land value tax is a tax obtained from landowners to capture the value created by the provision of public transit networks. It's a kind of payment for benefits received. It could be an added tax to the original property taxes or it could be a replacement tax with higher rates than the original property one. It is a tax on land, not buildings.

5.3.2.2 Tax Increment Financing (TIF)

Tax increment financing is a normal property tax but when a property tax rates get increased from its normal base due to public infrastructure development, the additional collected tax is directed to fund the related public infrastructure projects in a specific district. This district may also be called "TIF districts". 'TIF' is commonly used by local governments to provide housing, public transit, and other development in a specific district. Studies showed that the collected TIF from the construction of public transit projects, such as railways in high density areas are huge.

5.3.2.3 Special Assessments (SA)

Special assessment is a special charge obtained from property owners near an improved or new public transit facilities, mainly based on how near they are or in some cases based on other measures of special benefits. Many measures are taken into account to determine which properties receive special benefits to determine the consequent charge amount. These measures include the distance from the public transit station, property area, and property age.

5.3.2.4 Transportation Utility Fees (TUF)

Transportation utility fees are derived from the idea that public transit service can be treated as other utilities, such as water and electricity, basically funded from monthly or yearly fees. To estimate the 'TUF', an analysis of public transit users

must take place to determine the prices' ranges in accordance with the different land uses. For example, commercial and industrial uses' landowners get more benefits than the residential ones.

5.3.2.5 Development Impact Fees (DIF)

Development impact fees are one-time fees that are collected by the local government from the developers and investors for funding the construction of new services and infrastructure such as public transit, schools, and highways. They are mainly charged with the new development in a specific district to help in recapturing a part of the public services growth costs.

5.3.2.6 Negotiated Exactions (NE)

Negotiated exactions are in the form of a corporation between landowners and the government. The land owners provide or donate a part of their land to the government in return for providing a public service such as the public transit. The main idea of negotiated exactions is that the value of the bigger lands in areas before the public transit construction will be less than smaller ones after the public transit construction. The land which the government gets can either be sold or be used as a service facility.

5.3.2.7 Joint Development (JD)

Joint development is a kind of public-private partnership. The private sector either builds some of the public transit facilities like a station or participates in financing it. In exchange the private sector gets bonuses like development rights and extra densities. The term joint refers to the partnership either in ownership of the public transit facility or in the timing of development.

5.3.2.8 Air Rights (AR)

Air rights are selling or leasing the development rights of spaces above or below public transit facilities to the private sector in return for their contribution in funding and upgrading the public transit facilities.

5.3.2.9 Land Sale (LS)

If land lots are owned by the government, then the government might provide infrastructure services like water, electricity, sewage systems, schools, hospitals, and public transit. As a result, the value of lands adjacent to these services will get higher. After that, the government starts to sell these land lots with much higher price.

5.4 Comparative Analysis of Case Studies

In this part, an analysis of two global examples in using land value capture mechanism in funding public transit projects will be presented. The selection of these global examples has been based on the fact that both of them have used 'LVC' mechanism in covering public transit projects, that serve new communities or new expansions. However, in order to determine the factors that affect positively or negatively the amount of collected revenues through the use of LVC mechanism and its effectiveness, each case study analysis included a review of the urban and demographics context, an overview of the whole rapid public transit system, the LVC mechanism used, and finally the learned lessons.

5.4.1 Hong Kong SAR China

The Hong Kong public transit system is considered to be one of the most pioneering examples of the public transit service in the whole world. Its success is derived from being very widespread. As in 2002, more than 2.8 million inhabitants lived within 0.5 km of a public transit station representing 41% of Hong Kong. In addition, about one of every five houses is located within a distance of 200 m of a public transit station (Cervero and Murakami 2008). Now, 75% of its population and about 83% of jobs are located within 1 km of a public transit station (UN-Habitat & Morphology Institute Paris 2017).

Due to its wide dispersion, its impact on time saving was enormous. In 2002, about half of all trips done by local residents lasted for half an hour or even less. (ARUP 2003). As Fig. 5.4 shows, only 5% of Hong Kong Gross Domestic Product GDP is consumed by motorized travel, that includes public and private transportation, which is considered one of the lowest rates among other metropolitan cities. This is a clear sign of the effectiveness of their transportation policies that depends mainly on rapid public transit modes.

Despite its low fare, the Hong Kong public transit system is one of the very few public transit projects that actually make a profit. Its operation costs do not depend on any governmental subsidies.

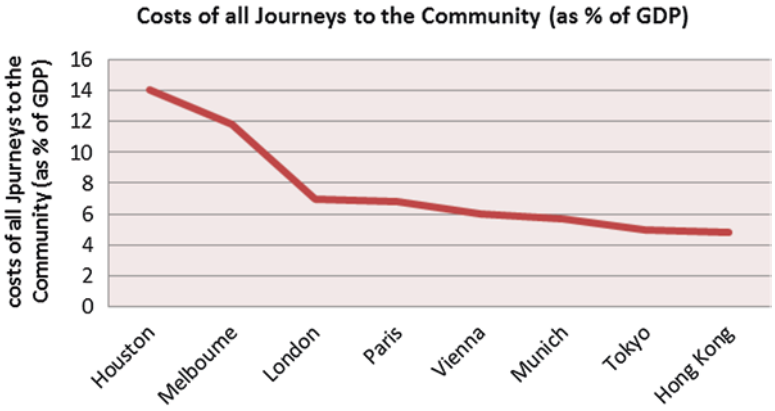

Fig. 5.4 Costs of all motorized trips as % of GDP in a number of cities (Authors, based on data obtained from Cervero and Murakami (2008))

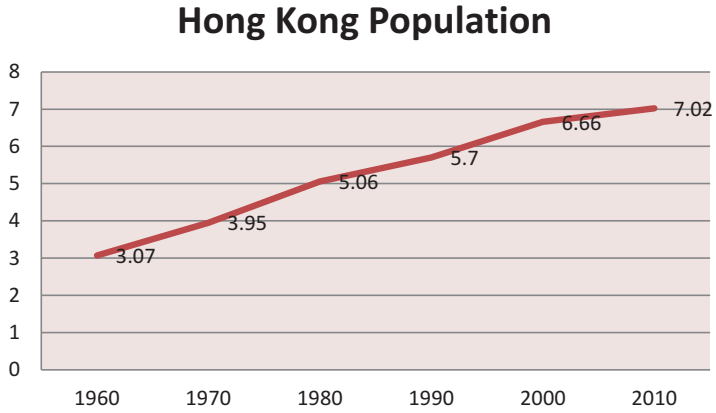

Fig. 5.5 Hong Kong population growth (1950–2010) (Authors, based on data obtained from Suzuki and Murakami (2009), and World Bank)

5.4.1.1 Urban and Demographics' Analysis

Hong Kong is a Special Administrative Region that follows China. It consists of three main regions; they are Hong Kong Island, Kowloon, and New Territories. These three regions are divided into 18 administrative districts. Its area is 1104 square km and has more than seven million inhabitants in 2014 (Verougstraete and Zeng 2014). It is called "Pearl of Asia", and it is considered a global hub for finance, tourism, and business services. Its population is estimated to be more than 8.6 million persons by 2026. As Fig. 5.5 showed, Hong Kong has a relatively rapid population growing with a population growth rate of 1.96% annually. Despite its fast-growing population, the built up area is less than 25% of its total. (Suzuki and

Murakami 2009). Its main planning pattern is derived from the garden cities movement, which was introduced in 1948. Its pattern was formulated through many development strategies to meet the demand of the housing, commercial, transport, recreation, and other community needs. It has a density of 16.000 people per square kilometer in Hong Kong Island, about 45.000 people per square kilometer in Kowloon, and about 3000 people per square kilometer in the New Territories (Suzuki and Murakami 2009; Census and Statistics Department 2012).

5.4.1.2 Rapid Public Transit Overview

Hong Kong public transit system is managed and operated by the Hong Kong Mass Transit Railway Corporation (MTRC), established in 1975. The rapid public transit system consists of metro and light rail. The metro has a length of 218 km and more than 84 stations. (Verougstraete and Zeng 2014). In addition, the light rail systems constitute two sub-systems, one has 68 stations with a length of 36 Km, and the other has seven routes with a length of 16 km, covering more than 11 million trips daily. (The Information Services Department 2015; Gilbert and Perl 2010).

The early lines of the public transit were sited to serve the high-density built-up district, where the majority of residents are located. Due to the continuous population growth, new districts should be constructed to face the growing demands. Hence, the public transit system was used as a backbone of this urban expansion. In addition, the airport, commercial centers, and other important facilities were located near and adjacent to its stations and lines.

As a result, the number of private cars is quite little if compared to other metropolitan cities. In Hong Kong, there are only 443,000 private vehicles, which represent about 62 vehicles/1000 inhabitants (HKSAR Transport Department 2013). Whereas in London, where one of the most developed public transit systems are located, there are 187 vehicles per every 1000 inhabitants. (The Driver and Vehicle Licensing Agency (DVLA) 2014).

5.4.1.3 LVC Mechanism

The success of Hong Kong transit system mainly depends on its 'Rail Plus Property' program (R+P), that is adopted by its agency MTCR (Mass Transit Railway Corporation). This program depends mainly on recovering the costs of construction, operation, and maintenance through a LVC mechanism using the joint development method. This mechanism partially funded some of the railway lines and stations of Honk Kong metro.

Rail plus Property Program (R+P) (R+P) is a part of the MTRC managing model. It depends on capturing the increment in properties and real estate value to finance public transit projects costs. It is based on the joint development method, as one of the land value capture methods.

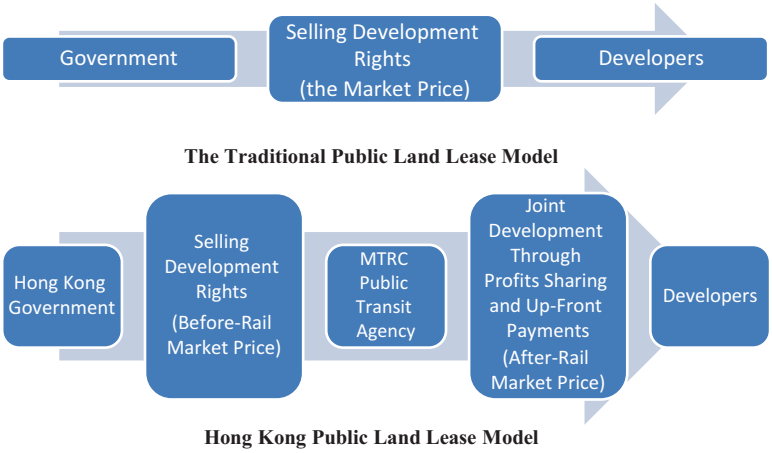

Fig. 5.6 Rail plus property model used by MTRC to fund public transit in Hong Kong (Authors)

As Fig. 5.6 shows, the government owns the vacant lands in Hong Kong. The government sells the development rights of lands adjacent to public transit lines and stations to MTRC for 50–70 years. This precedes the construction of the public transit project. The MTRC pays the land premium for these rights. The government does not take into account the increase in land value from the public transit project. In another way, the MTRC buys the development rights of lands, before its value gets higher. Then, MTRC starts to divide these land lots into small parcels to sell their development rights to private developers. Those developers pay the costs of the land premium to MTRC and bear the construction costs of the development. So, MTRC does not bear any financial risks. However, MTRC generates revenues through receiving a portion of the private developer's profits according to certain agreements, or in some cases MTRC may have the ownership of some of the commercial and office spaces to lease them.

R+P program has succeeded in generating revenues for the government through the ownership of most of the MTRC shares. However, 38% of the obtained revenues of the MTRC are coming from the joint development method (Suzuki and Murakami 2009). Furthermore, R+P program does not only achieve huge revenues, but it can be used to satisfy the required demand of residential and commercial spaces. In the period from 1995 to 2010, R+P program was responsible for construction of the residential units by approximately 100,000 ones, through its encouraging attribute of the urban development. (Verougstraete and Zeng 2014).

5.4.1.4 Lessons Learned

The land value mechanism used in Hong Kong has shown great success in funding the public transit development. This mechanism has not only provided the initial construction costs, but has steered and directed the urban growth of Hong Kong.

The main method used in this mechanism is the joint development between the government, MTRC, and private developers. The main reason for such success is the great increment in land and properties' value due to the investment in public transit sector. The current properties' prices constitute more than 15 times of the prices in 1980 (Verougstraete and Zeng 2014). This huge increase has maximized the revenues by the government through the profit sharing concept. It has been proved that this increase in properties' value was due to many factors. These factors have helped in multiplying the impact of Hong Kong public transit system on properties' values.

The first factor is land ownership. The land lots in Hong Kong are owned by the government, which extensively helped in the value capture process, as the government has given the development rights of these lands to MTRC in a very low price (before rail price). In addition, this has reduced the construction costs of the rail system, due to the low land acquisition costs for the station. The second factor is the scarcity of lands, which has motivated the private developers to abide to the joint development project, due to the limited alternatives. The third factor is Hong Kong high population, which remarkably increased the ridership rates, and consequently resulted in more revenues from the fare box. In addition, this in turn has facilitated the mobility of huge number of employees and customers for the business located near the rail stations, and thus raising the land value. The fourth factor is the high economic growth rates in the entire country, which provided a suitable climate for investments and developments.

As a result, the MTRC has succeeded in managing the land value capture mechanism to provide the needed fund, and to promote urban development. Furthermore, the MTRC bears the lowest financial risks. Further, R+P program is based on selling the development rights for the private developers, who bear the construction costs of the properties development, and thus would not suffer from any possible future financial loss.

5.4.2 Orestad, Copenhagen, Denmark

The public transit development in Orestad, the Copenhagen case, shows the importance of the analysis stage before the construction of any public transit development. This example illustrates how the negligence and inattention of the public transit demands, timing, and costs analysis could lead to a huge financial loss for the government, the developers, and the public money.

5.4.2.1 Urban and Demographics' Analysis

Copenhagen is the capital of Denmark. It has 10 districts. Its area is estimated by about 86.2 square Km. It has about 591,481 residents in 2015 (The Official Website of Denmark 2016a). Orestad is a small district, that is located 5 km south Copenhagen

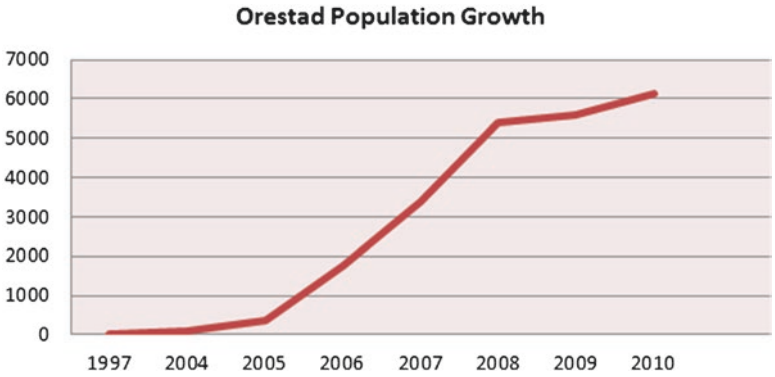

Fig. 5.7 Orestad population growth (1997–2010) (Authors, based on data obtained from CPH City & Port Development (2011))

city center. It is located on an island called Amager. It has an area of 3.1 square km. Despite its relatively close location to Copenhagen center and the Copenhagen airport; it was not developed until the 1990s. The main reason for that was the use of these lands for military training purposes. 1n 1992, a plan was set in order to develop this land. The development strategy mainly included two goals. The first goal is to establish a community, that will consist of about 20,000 residents, 20,000 university students and staff members, and about 80,000 employees. The second goal is to construct a metro system, that connects it with the city center, and the airport. In 1997, the implementation of the development plan has started. However, Orestad development strategy has failed in attracting residents, students, or business. In 2010, as shown in Fig. 5.7, the population, the total employees, students, and staff members' numbers of Orestad were estimated by about 6142, 12,000, and 18,500, and 1200 respectively. (CPH City & Port Development 2011).

5.4.2.2 Rapid Public Transit Overview

The rapid public transit system in Copenhagen consists of the metro rail, that has two modes: the surface railways and the underground metro. The surface railway system is called S-train. It has 84 stations, and seven lines. The underground metro has 22 stations, and two lines with total length of 20 km (The Official Website of Denmark 2016b). However, the public transit is being used as a backbone for the expansion plan in Copenhagen. In addition, it links the city center with the new communities. This plan is called the fingers' plan (Smith 2012). Eventually, it links all of the important facilities together like the city center, the commercial malls, the airports, and the universities. As a result, both of these two systems move about 145 million passengers in 2010, which represents about 60% of all passenger traffic. (Ministry of Transport 2010).

5.4.2.3 LVC Mechanism

The land value capture used in Orestad is represented by the land sales' program. This mechanism participates partially in funding its metro system.

The Land Sale's Program
In this program, the vacant lands are owned by the government. During, and after the construction of the metro line, the value of land lots starts to get higher due to the economic impacts, and the high accessibility of such system. Then, the government starts to sell these land lots with "after development" prices. The total revenues from the profits were estimated to be about 50% of the total metro costs. (Notay and Clark 2009).

5.4.2.4 Lessons Learned

From this case study, it can be learned that the impact of the metro system on land value is not stable. Reports show that the land sale rates and prices were less than expected, despite the strong linkage created with Copenhagen upon the establishment of this system. As in 2006, after 9 years from the beginning of the construction and before only 1 year from its completion, only 52% of land lots were sold. (Romana and Modelewska 2009). This can be attributed to the low market demand in this area, the low population, as well as the low metro ridership rates, together with the lack of mixed uses. All these factors have negatively affected the increment in lands' value; however, the use of the land value capture mechanism has partially succeeded in funding about 50% of the metro system construction cost, despite all the previous factors referring to the effectiveness of applying the "LVC" mechanism in funding public transit project under any circumstances.

On the other hand, two major errors occurred during the analysis stage and before the planning process. The first was the wrong estimation of the metro construction costs. In the planning stage in 1992, the study has shown that the metro will cost 485 million euros, whereas the real costs were 1065 million euros. The second was the wrong estimation of the construction period. It was planned that the construction will take 7 years from 1997 to 2003, which were actually extended to 10 years with a delay of three more years. This delay has caused the rise of the construction costs to reach 1600 million euros (SPUTNIC). This shows the importance of the preliminary feasibility launch stage for any public transit project, since any underestimations would cause huge financial loss for all participating stakeholders.

5.4.3 LVC Mechanism Criteria

From the above review and the comparative analysis of the previous two international case studies, a set of criteria were concluded. These criteria are intended to maximize the public transit impacts on land lots' value, and thus reach the highest increment. They are divided into five categories; public transit mode selection, land value capture methods' selection, economic, urban, population and demographics' criteria.

5.4.3.1 Public Transit Modes' Selection Criteria

The main four public transit modes that actually create an increase in land value are metro rail, commuter rail, light rail, and Rapid Bus Transit RBT in order.

Each of the previously mentioned modes must be used under specific circumstances.

1. The metro rail is used to move passengers between high populated districts in a high-frequency high-speed service.
2. The commuter rail is used to move passengers for a long distance between the city center, and the suburban areas in a very high-speed service.
3. The light rail and the RBT is used to move passengers for a short distance between adjacent, high and medium populated districts in a high-frequency service.

5.4.3.2 Land Value Capture Methods' Selection Criteria

The LVC mechanism used in new communities is based on two methods. They are joint development and land sale. This necessitates having available enough space with a lot of vacant land lots within the public transit stations and around them. In addition, there should be a scarcity in other alternatives to urge the private sector to participate in return for certain pre- contracted benefits. Furthermore, the stations' land lot must be owned by the government.

5.4.3.3 Urban and Demographics' Criteria

Any public transit service needs a high populated area in order to achieve its targeted ridership rates. Further, the public transit must be used as a backbone for any urban expansion. This is called 'Transit Oriented Development TOD'. There are certain factors that should be taken into consideration regarding this issue, including the following:

1. There must be an agglomeration of services around any public transit station through allowing high-density mixed-uses' development. Therefore, construction of transit stations is highly recommended to be located in high density areas rather than low ones;
2. In low-density districts, a plan to increase the density in these areas must be adopted before any planned public transit development through allowing more heights and more floor area ratio, and;
3. The public transit routes must be integrated with other modes, important roads and vital facilities such as airports, commercial malls, universities, and hotels. Their planned areas must be characterized by high rate of mobility of employees, youth, and new families to achieve high daily movement rates and to provide the required ridership rate for the public transit service.

5.4.3.4 Economic Criteria

The dependence on the private vehicles must be reduced to minimize the economic burdens of the required roads through raising the private vehicles' operating costs, imposing a tax on fuels' consumption, and using road tolls. The public transit costs and construction period must be calculated very accurately, in accordance with the inflation rates, and the economic growth. Public transit network must connect the industrial, commercial, and services areas with the residential areas to help in reducing unemployment rates.

5.4.4 Land Value Capture Mechanism Stakeholders

The land value capture mechanism incorporates many stakeholders. Each of them has different roles and responsibilities (Table 5.2).

5.5 Empirical Study (Borg El-Arab New City)

Alexandria Governorate is divided into seven districts, and Borg El-Arab new city (see Fig. 5.8). Alexandria Governorate has a population of 4.8 million inhabitants in 2015, with a growth of 0.8% more than in 2006. Accordingly, Alexandria annual population growth rate is 2.1%, which is considered to be relatively high among other metropolitan cities around the world (GOPP 2010a, b).

Table 5.2 The LVC mechanism stakeholders

The 'LVC' mechanism stakeholders	Municipal governments	Getting benefits from the public transit service, and from not being the main economic funder of the public transit projects.
	Residents	
	Planning authority	Formulating the general vision for the public transit plan on city or region scale.
		Setting the suitable land coding to achieve the required population and densities around public transit stations.
		Collecting revenues through Land Sale method.
	Public transit agency	Constructing and operating public transit projects, in accordance with the general vision.
		Collecting revenues through Joint Development method.
	Land owners	Getting benefits from the public transit service, its economic impacts, and the increased land value.
		Being the targeted ones who will contribute in the land sale method.
	Private developers	Getting benefits from the public transit service, its economic impacts, and the increased land value.
		Represent the target group, who will contribute in the land sale, and joint development methods.

Source: Authors

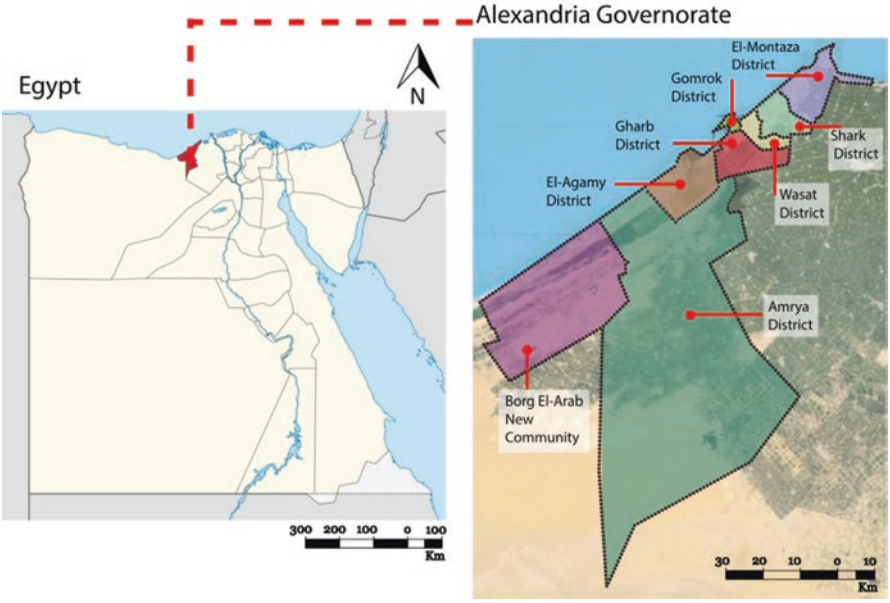

Fig. 5.8 Alexandria Governorate Districts (Authors)

Table 5.3 Alexandria Governorate districts population growth 1986–2006

	Population in thousand 1986	Population in thousand 1996	Population in thousand 2006
El-Montaza District	610	868	1169
Shark District	770	860	963
Wasat District	612	514	506
Gomrok District	212	171	143
Gharb District	497	439	373
El-Agamy District	97	195	343
Amrya District	111	228	450
Borg El-Arab New Community	0	41	92
Total	2909	3316	4039

Source: Authors, based on CAPMAS (1988, 1998, 2008)

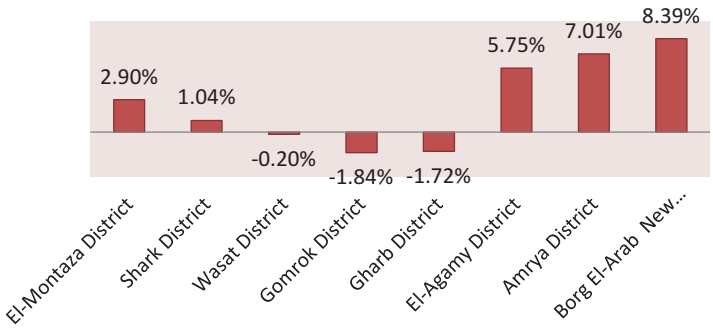

Fig. 5.9 Alexandria Governorate districts average annual population growth (1996–2006) (Authors, based on CAPMAS (1998, 2008))

5.5.1 Population Analysis

The population of Alexandria Governorate is not equally distributed. As shown in Table 5.3, most of the Governorate's population is concentrated in the eastern districts; since El-Montaza district and Shark District have almost 50% of the total governorate population, despite their relatively small areas, estimated to about 5.8% of Alexandria area. On the other hand, the western districts like Amrya District, El-Agamy District, and Borg El-Arab new community accommodate about 21% of the total population, despite their relatively huge area, estimated by about 89% of Alexandria area (CAPMAS 2008; GOPP 2010a, b).

The population growth in Alexandria districts is not the same. As shown in Fig. 5.9, some districts are growing rapidly such as Borg El-Arab, Amrya, Agamy, El-Montaza, and Shark districts in order. On the other hand, the population growth in the other three districts suffers from less growth rates; especially in Gomrok and Gharb districts.

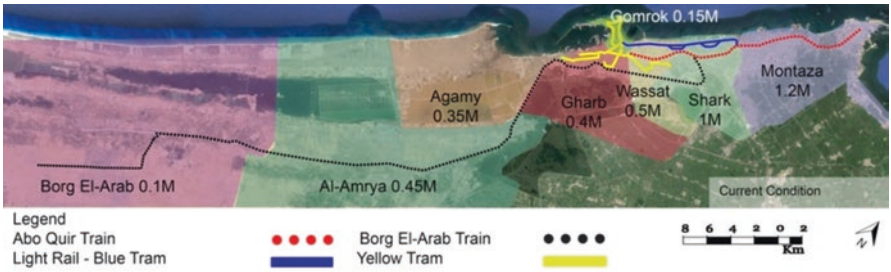

Fig. 5.10 Alexandria Governorate public transit system based on Google maps (Authors)

5.5.2 Public Transit Overview

In order to study and analyze the public transit system in Borg El-Arab new city, a review of the entire public transit system that covers all Alexandria Governorate must be illustrated. However, Alexandria Governorate is being served by the surface train, the light rail, and the public buses (see Fig. 5.10). Meanwhile, Borg El-Arab is served with two public transit systems; Borg El-Arab commuter train that links Borg El-Arab new city with Alexandria districts, and the public buses that link Borg El-Arab new city with Alexandria districts, in addition to linking all Borg El-Arab districts together.

5.5.2.1 Borg El-Arab Train

Borg El-Arab train is a surface train, that connects Borg El-Arab new community with Alexandria old city center, located in Wasat district. Further, it links the unpopulated Borg El-Arab new city with the less growth rate area; Wasat district, passing through the middle of the low-density Amrya district, and through abandoned areas in Shark and Gharb districts. As a result, it is totally ineffective, and is characterized by very low ridership rates, that sometimes reaches only 5 passengers/trip.

Its railway is segregated from other traffic modes, except on the intersections. Its length is 70 km and has ten stations. Despite that, its railway is physically connected to Abo Quir train railway that serves the eastern high-populated sides of Alexandria districts; however, it is totally operated in separation from Abo Quir train.

It has only four main daily trips; two trips from Alexandria to Borg El-Arab at 6:30 am and 3:30 pm, and the other two trips are from Borg El-Arab to Alexandria at 8:30 am and 4:45 pm; however, these timings are mostly not suitable for the residents or workers. Its average operating speed is 40–50 km/h.

Each train usually consists of six coaches, and the motor coach. Each train has a carrying capacity of about 1800 passengers per trip. In addition, the location of its stations is relatively far away from the current residential neighborhoods in Borg El-Arab New Community (see Fig. 5.11), and the public buses, that connect the train stations with Borg El-Arab New Community are few. Accordingly, it has very

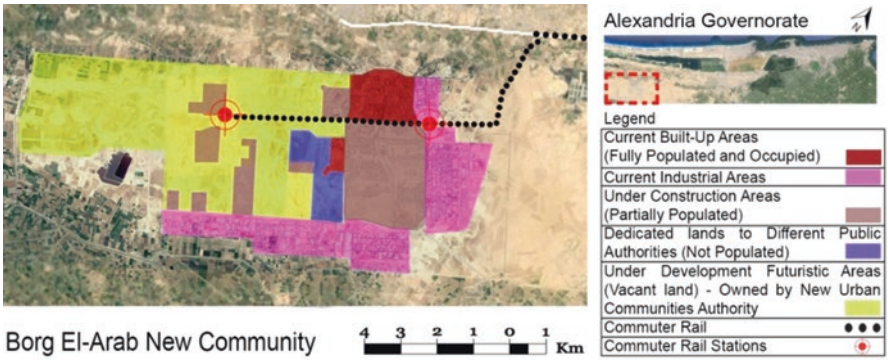

Fig. 5.11 Borg El-Arab urban context and its relation with the train stations (Authors)

low ridership rates. As for its condition, the trains and the stations are relatively in good condition, as it has been developed and upgraded in April 2014.

5.5.2.2 Public Buses

There is a very few number of public buses that link Borg El-Arab New community with Alexandria districts, or that serves Borg El-Arab new community in general. In addition, the New Urban Communities Authority (NUCA) has signed some contracts with private mini buses to work as public buses within Borg El-Arab.

5.5.3 The Proposed Development Strategy

The public transit development strategy proposed by the authors addresses the regional scale of Alexandria Governorate, in order to encourage residents, workers, and employees to move from the eastern high-populated districts to Borg El-Arab new city.

The proposed public transit network in Borg El-Arab is divided into two levels. The first one is linking it with the other seven districts. The second one is serving and linking all of Borg El-Arab districts (see Fig. 5.12).

5.5.3.1 The Commuter Rail

The commuter railways are proposed to link Alexandria city with Borg El-Arab new community. The current Borg El-Arab diesel train is to be replaced by a high-speed electric commuter trains. Its service will be periodically all over the day.

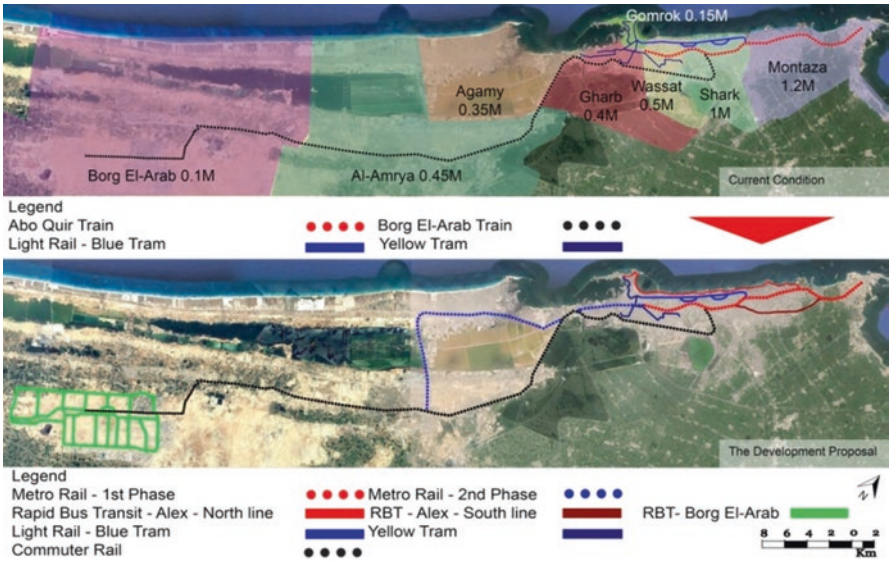

Fig. 5.12 The proposed public transit development strategy (Authors)

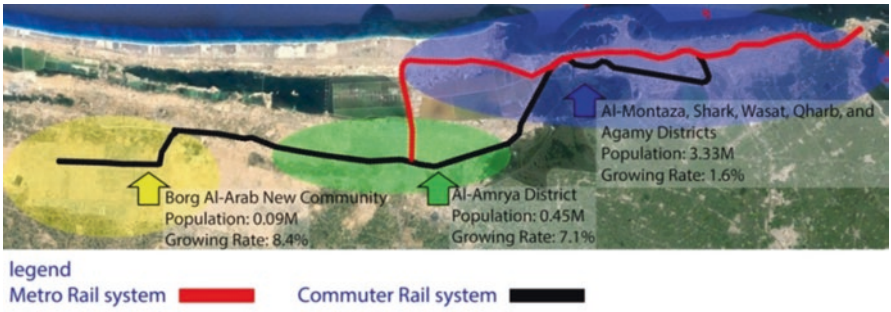

Fig. 5.13 The proposed commuter rail network served population diagram (Authors)

The commuter rail shall link the low populated Borg El-Arab new city with high populated Alexandria seven districts through another proposed metro network. This network will link all adjacent districts together. These districts are Al-Montaza, Shark, Wasat, Quarb, and Agamy districts. These districts have about 84% of Alexandria population. This would help in moving a huge number of workforce, employees, and residents to Borg El-Arab new city, and thus motivating urban development and urban regeneration futuristic plans. In addition, this would increase the properties' value in these areas. (see Fig. 5.13).

The commuter rail is integrated with the metro network, which is connected with the light rail networks, and the rapid bus transit networks. In addition, they are also

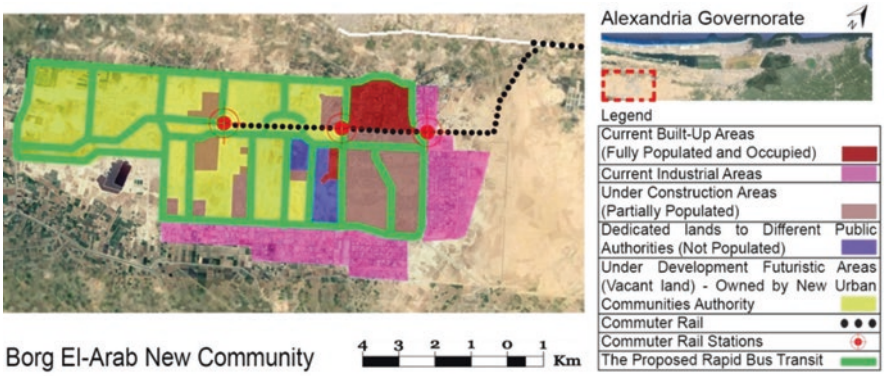

Fig. 5.14 The proposed rapid bus transit system in Borg El-Arab (Authors)

integrated with Alexandria main arterial roads, such as the Desert Road, Ring Road, Mostafa Kamel Road, Corniche Road, Agamy Road, and Abo Quir Road.

5.5.3.2 The Rapid Bus Transit RBT

The RBT system will be used on the main roads between districts, and thus covering the whole Borg El-Arab new city. The RBT systems are the most suitable ones for the medium populated areas. The proposed RBT connects all of its ten districts. This would encourage the urban development in the remote areas of Borg El-Arab. In addition, this would connect all Borg E-Arab districts, and its important facilities, together and with the commuter rail stations (see Fig. 5.14).

5.5.4 Proposed LVC Methods

The proposed financing mechanism consists mainly of two methods. They are the joint development method, and the land sale method. The joint development method will be used within and around the commuter rail stations. The land sale method will be used around the commuter rail stations, and the rapid bus transit route.

5.5.4.1 Joint Development Program

The joint development program shall achieve huge revenues quickly, and develop the public transit station as well. In this program, the public transit agency will sell the land premium of the public transit station in a public auction to private developers. The private developer is supposed to pay the land premium price, and build a new property with limited heights, in accordance to each station location. The new

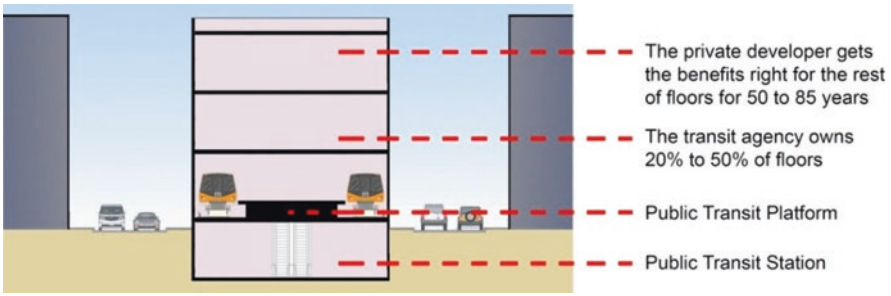

Fig. 5.15 The Proposed Joint Development Program to fund public transit in Alexandria Governorate (Authors)

property will consist of an underground floor as a station, ground floor as a platform, and a number of floors. Public transit agency shall own 20–50% of these floors and the private developer will get the profits' rights for the rest of floors for 50–85 years (Fig. 5.15).

The benefits that would be achieved by the public transit agency are:

1. The ridership rates will be multiplied. So, the revenues from the fare box will increase;
2. The development or the construction of the public transit stations;
3. The land premium price, that would be used to recover a portion of the public transit costs, and;
4. The public transit agency's share of the new property, that could be sold or leased.

This program is mostly suitable for the commuter rail stations. Furthermore, in this program, the private developer bears all the financial risks, including the construction costs and the land premium price.

5.5.4.2 Land Sale Program

This program will be used to sell the land lots around the RBT route; however, this program is not new; the New Urban Communities Authority (NUCA) uses this program since years to finance the internal infrastructure development such as: water, sewage systems, electricity, and road networks. NUCA provides the required infrastructure in new communities in an attempt to sell the land lots in a public auction with higher prices. So, NUCA would provide the Rapid Bus Transit service within Borg El-Arab new community, which will cause an increase in land lots' value. This increase would be captured through land lots' sales in a public auction.

The land sale program consists of two stages. The first stage is selling the available vacant lands around the commuter rail stations. The second stage is selling the available vacant lands around the rapid bus transit route (see Fig. 5.16).

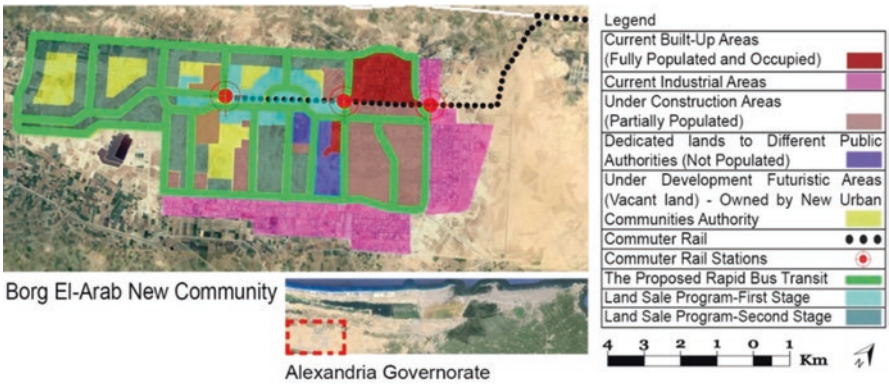

Fig. 5.16 The land sale program in Borg El-Arab New Community (Authors)

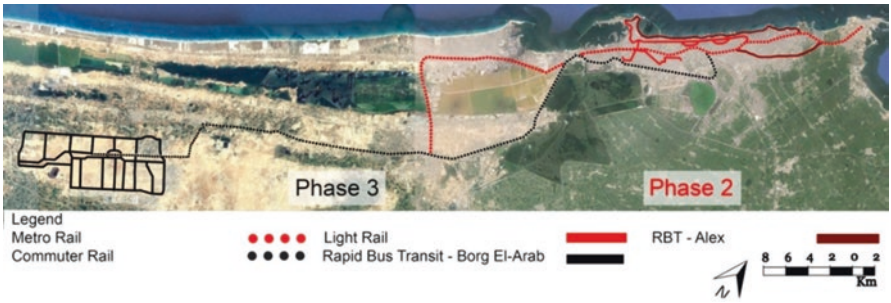

Fig. 5.17 The implementation phases of the proposed public transit development strategy (Authors)

5.5.5 Implementation Process, Legal Framework, and Stakeholders

The development strategy is proposed to start from the eastern districts of Alexandria Governorate, since these districts have the highest population mass. In addition, these districts are rapidly growing ones with highly congested streets. On the other hand, the proposed strategy shall end at the western side of Alexandria, since these districts have the lowest population mass. This strategy would steer the urban expansion towards the western side, which would encourage the urban development in Borg El-Arab New Community (see Fig. 5.17).

The implementation process consists of three phases (see Fig. 5.17, and Table 5.4). The first and third phases are allocated in Borg El-Arab new city. The second phase addresses the other seven Alexandria districts.

As for the legal framework, the proposed LVC mechanism shall consist of two methods; joint development and land sale. Both of them can be applied with the current Egyptian legal framework (Table 5.5).

Table 5.4 The implementation phases of the proposed public transit development strategy

Phases	Description	
Phase 1	A plan to increase the density and population in Borg El-Arab New Community must be adopted. This plan must include mixed uses development, more heights, and more floor area ratio. In addition, there must be some driving forces for developers through bonuses, payment facilities, and tax exemption.	
Phase 2	Public transit construction in Alexandria seven districts	Alexandria metro rail – Alexandria Rapid Bus Transit – Light rail upgrading (Blue and Yellow Tram)
Phase 3	Public transit construction in Borg El-Arab new city	Commuter rail – Borg El-Arab Rapid Bus Transit

Source: Authors

Table 5.5 The Egyptian legal framework related to the proposed LVC methods

Joint development	Applicable within the current regulations	
	Current regulation	The current law allows for the private sector to intervene and participate in constructing and financing the public infrastructure projects through Public-Private Partnership PPP bidding contracts.
	Method of implementation	The private sector will be selected though public bidding. The PPP agreement shall include paying the land premium price and constructing the public transit station, together with the above property by the private partner, and in return, the private partner will get profits' rights for specific number of the new property floors for specific time.
Land sale	Applicable within the current regulations	
	Current regulation	The current law allows for the new urban communities; authority to sell the lands in new cities. The price of a land is being estimated based on the public infrastructure costs and many other factors. Then, its price is being multiplied by a specific ratio based on any other privileges this land possesses. These privileges include many variables such as: number of façades that the land has, the façade length, and/or the width of the main road where the land is allocated.
	Method of implementation	Lands that are allocated within a walking distance from a public transit station will be classified as a privileged land. So, when estimating the land price, this privilege will be accounted for.

Source: Authors

Table 5.6 LVC mechanism stakeholders – Borg El-Arab New City

The National Government	Getting benefits from the public transit service and its social, economic, and environmental impacts.
New Urban Communities Authority	Getting benefits from not being the main economic funder of the public transit projects, since traditional funding of the public infrastructure projects come from three sources; the general government budget, the new urban communities authority budget and/or fares from residents.
Local Residents	
New Urban Communities Authority	Formulating the general vision for the public transit plan on city or region scale.
General Organization for Physical Planning	Setting the suitable land coding to achieve the required population and densities around the public transit stations.
	Collecting revenues through land sale method.
Alexandria Public Transit Authority	Constructing and operating public transit projects, that include the commuter rail, and the rapid bus transit in accordance with the general vision.
Egyptian National Railways	Collecting revenues through joint development method.
Land Owners in Borg El-Arab New City	Getting benefits from the public transit service, its economic impacts, and the increased land value.
	Represent the target group, who will contribute in the land sale method.
Private Developers	Getting benefits from the public transit service, its economic impacts, and the increased land value.
	Represent the target group, who will contribute in the land sale and joint development methods.

Source: Authors

Finally, the first and third phases proposed to be implemented in Borg El-Arab new city, incorporate many governmental stakeholders and non-governmental ones. Table 5.6 illustrates the responsibilities and the role of each one of them.

5.6 Conclusion

The Egyptian traditional funding methods are neither suitable nor effective in funding public transit development in Egypt. These methods include direct revenues from fares and advertising, general government budget funds, grants from other countries, and foreign loans. However, all these methods have failed in achieving any of their financial targets, and most importantly do not satisfy community needs, resulting in having a poor and inefficient transportation system with deteriorated condition. Therefore, such methods should be typically reviewed.

The public transit development, if successfully planned, can result in many social, economic, and contextual benefits. It even portrays the city image. As a result, investment in public transit development leads land value increment in the surrounding context; however, this is only attained in certain conditions related to

having rapid segregated high-frequency public transit modes. These modes should include commuter rail, metro rail, light rail, and rapid bus transit.

The capture of the increased land value to be used as a funding resource for infrastructure, has been used frequently in many countries, including Egypt by providing infrastructure, and then selling related land lots whose value increase. LVC includes nine flexible methods, that can be manipulated to fit different circumstances, and achieve maximum benefits. They include: land value tax 'LVT', tax increment finance 'TIF', special assessment 'SA', transit utility fees 'TUF', development impact fees 'DIF', negotiated exactions 'NE', joint development 'JD', air rights 'AR', and land sale 'LS'.

The study presented in this chapter has analyzed some of the 'LVC' mechanisms used in Hong Kong, SAR, China and Orestad, Copenhagen, Denmark, and have thus proven their ability to fund public transit development in new cities. These mechanisms were based on two methods. They are joint development and land sale; however, they require certain fundamental factors to guarantee their success, and which can be summarized as follows:

- There must be enough space within the public transit stations, and around them to use the joint development method. In addition, there must be a scarcity of alternatives in order to strongly motivate the private sector to participate through getting benefits in return for their contribution. Furthermore, the stations' allocation land lots must be owned by the government, and;
- The land sale method requires having a high percentage of vacant land. These land lots must be owned by the Governorate. Therefore, it mainly fits new communities.

On the other hand, the use of the other seven 'LVC' methods would be more efficient if applied in existing cities with many non-governmental properties. Each of them should be appropriately used in accordance with the available land lots, their properties, and land uses.

Furthermore, a set of criteria should be addressed to achieve the highest potential revenues, encourage pre- planned urban development, and provide the most effective public transit network. These criteria are divided into five categories:

- public transit modes selection criteria;
- Land value capture methods selection criteria;
- Urban and demographics criteria, and;
- Economic criteria.

In addition, the land value capture mechanism should incorporate many participating stakeholders, such as: the planning authority, the public transit agency, and the funding contributors (landowners and private developers). Each of these stakeholders has specific roles and responsibilities.

Finally, it can be concluded that the LVC methods can serve as a two faceted mechanism, that satisfies the community and low-income groups' needs, through providing an effective public transit network, while benefiting from the high-end landowners, and private developers, without bearing non affordable economic funds required to initiate any transit oriented development.

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Chapter 6
Monitoring Real Estate Bubble in Egypt: New Cairo Case Study

Mohamed Said Meselhy

Abstract Lately, the world has been witnessing universal challenges; such as social, political, cultural & environmental. These are affecting the economic policies worldwide. At the local level in Egypt, the economic conditions are critical, due to the world trade movement leading to the increase the inflation rate and the continuous decrease of local currency value with respect to foreign currencies, in addition to the reduction of saving rates for local currency. The Egyptian central bank & the Egyptian government did not offer saving rates for local currency that can adapt with the increase of inflation rates that exceeded 30%, which did not comply to the wishes of the citizens to increase or keep the value of their savings. On the other hand, investing in real estate is more reasonable to balance the increase of inflation rates. Accordingly, citizens and small investors had to invest in real estate as an alternative for saving rates provided by Egyptian central bank. This chapter discusses the run-up of real estate prices fuelled by demand of citizens and small investor with respect to limited supply; causing a real estate bubble in the future due to fake demand and the unbalance between supply, and real demand.

Keywords Real estate · New Cairo · Economic bubble · Economic policies · Investment

6.1 Introduction

Lately, the world has been witnessing universal challenges; including social, political, cultural and environmental challenges. That are affecting strongly the economic policies worldwide. This chapter will discuss some international case studies for real estate bubble that exploded earlier during the last century; it will highlight the problems that caused the bubble formation and explosion in addition to learn from these international case studies. The author will present practical study for the real

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estate in Egypt and will survey cases in New Cairo city. The Egyptian real estate market shows promising indications for real estate investment in different levels; starting from mega scale investors till individual investors. Egypt witnessed lately economic and political changes during last period; that led to change of investment strategies and replacement of real estate investment instead of bankable investment, as result of instability in local currency exchange rates and instability of political conditions. These circumstances led to invest in real estate market. Finally, in the conclusion of the chapter the author will compare between USA housing bubble and Egyptian real estate bubble. It will discuss different aspects, governmental policies, demand and supply, stakeholders, and bubble bursting.

6.2 Research Problem

6.2.1 On the Economic Level

The economic conditions are in continuous degradation, as a result of close association to world trade movement. This degradation leads to an increase of inflation rate and continuous decrease of local currency value with respect to foreign currencies. The Egyptian central bank did not offer saving rates for local currency that can adapt the increase of the inflation rates that exceeded 30% (based on the Inflation Rate in October 2016 at the Egyptian Central Bank, as shown in Fig. 6.1). In addition to that the Egyptian central bank could not save its needs from the foreign currency, for dollar financial liquidity the Egyptian government offered land allotments (Beit El Watan project) which price of meter square is paid by dollar (The Egyptian Central Bank 2016).

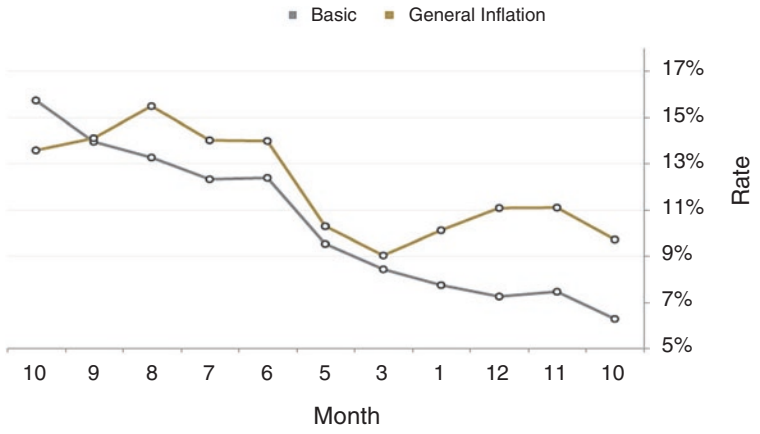

Fig. 6.1 The inflation rate in October 2016 at the Egyptian Central Bank (http://www.cbe.org.eg/ar/MonetaryPolicy/Pages/Inflation.aspx)

6.2.2 On the Real Estate Level

On the other hand, the investment in real estate is more reasonable to balance the increase of the inflation rates. This lead to the running-up of real estate prices fuelled by the demand of the citizens and the small investor with a limited supply; that will form a real estate bubble in the future due to the fake demand and that is the main chapter problem.

6.3 International Real Estate Bubble

The following section will discuss an international case studies for real estate bubble that exploded earlier in last century, it will highlight the problems which caused the bubble formation and explosion in addition to learn from these international case studies. Most of real estate bubble formed from the increasing of the demand in a comparing with limited supply (Fallis 1985). This will raise the house prices and made the market keep running up in a period of time which gave the market the trust because the prices will keep running up forever. As a result of economic, political, environmental and social changes in the countries will lead to decrease the demand to be below the offered supply (De Leeuw 1971). This considered the point of change in the real estate bubble, which will burst it as result of these circumstances. The real estate bubble that happened in USA, London, Tokyo, India, Poland, Australia, China, Romania, Spain, Denmark and Bulgaria are considered the most significant experiences which witnessed the real estate burst in different levels. This chapter will discuss in details the American experience in the real estate bursting that occurred at the end of twenty-first century. The chapter will discuss the causes and the learnt lessons from the American experience concerning the governmental policies, stakeholder's actions, supply and demand, and bubble bursting (Clauretie and Stacy Sirmans 2010).

6.3.1 The Housing Bubble in USA

We will study the American real estate bubble that occurred at the beginning of twenty-first century, which had a significant impact on the American market adding to this the effect on the world economy system during this period (Harris 2013).

6.3.1.1 The Primary Causes of the Housing Bubble in USA

In this section the four primary causes of the housing bubble will be discussed as shown in Fig. 6.2:

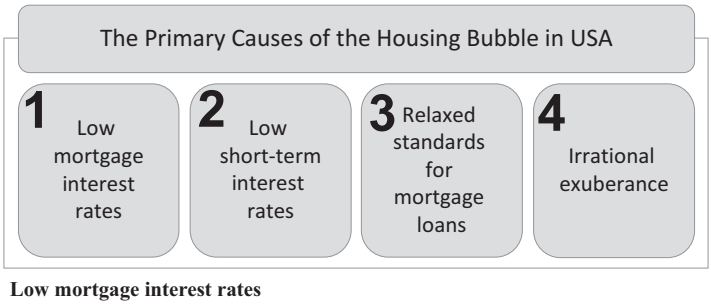

Fig. 6.2 The primary causes of the housing bubble in USA (Author)

Investors in the countries such as Japan and China sought investments providing relatively low risk and good returns (Shiller 2006). The low mortgage interest rates contributed to the housing bubble by keeping monthly mortgage payments affordable for more buyers even as home prices rose.

6.3.1.2 Low Short-Term Interest Rates

The low short-term interest rates contributed to the housing bubble in two primary ways. First, the low short-term interest rates encouraged the use of Adjustable Rate Mortgages (ARMs) (Nneji 2013a, b). As home prices rose faster than household incomes, home buyers were unable to afford house payments under fixed rate mortgages. The second way the low short-term interest rates contributed to the housing bubble was by encouraging leveraging (investing with borrowed money) (Harris 2013).

6.3.1.3 Relaxed Standards for Mortgage Loans

Standards for mortgage loans were relaxed as a result of the following factors; new governmental policies aimed at fostering an increase in home-ownership rates among lower-income households, Greater competition in the mortgage loan market.

6.3.1.4 Irrational Exuberance

Government regulators felt no need to try to control rising home prices, which they did not recognize as a bubble. Mortgage lenders continued to make increasing numbers of subprime mortgages and adjustable rate mortgages. These mortgages would continue to have low default rates if home prices kept rising (Shiller 2005).

6.3.1.5 The Bursting of the Housing Bubble

Most of the losses were not incurred by homeowners but by the financial system. Large losses were incurred by the following groups:

1. Mortgage lenders.
2. Investment banks.
3. Foreign investors (mainly banks and governments).
4. Insurance companies (Nneji et al. 2013a, b).

Generally, the bursting of any housing bubble would be expected to have a negative effect on the economy for two reasons: First, home construction is an important economic activity, and the decline in home construction would reduce GDP. Second, the decrease in home prices would also reduce household consumption due to the wealth effect.

6.4 Real Estate in Egypt (New Cairo Case Study)

The real estate in Egypt is going through the following process; government allotment for land, then sale of land allotment before construction, then sale of apartment for investment, and finally hold of apartment.

6.4.1 Government Allotment for Land

The Egyptian government started the allotment for the lands in new cities to citizens using the lottery process, as shown in Fig. 6.3. Where the government represented it through the ministry of housing and announced about it in the public media as a lottery for lands allotment in different new cities, the applicants should buy the manual requirement for the lottery. It consists of some terms and requirements without adding any condition or terms that guarantee the ability of the applicant to

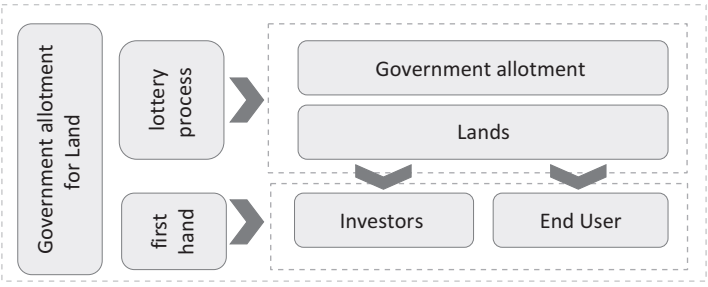

Fig. 6.3 Government allotment for land lottery (Author)

Table 6.1 Apartment meter share in land (Stage 01)

NO.	Land area	No of apartment	Government					
			Land meter price (lottery) EGP (Pound)	Land basic price EGP (Pound)	Apartment share in land EGP (Pound)	Built up area (Meter sq)	Apartment area (Meter sq)	Meter sq. share in land EGP (Pound)
1	527	8	4100	2,158,650	269,831	1132	141	1907
2	530	8	4100	2,173,000	271,625	1140	142	1907
3	566	8	4100	2,320,600	290,075	1217	152	1907
4	522	8	4100	2,140,200	267,525	1122	140	1907
5	526	8	4100	2,156,600	269,575	1131	141	1907
6	522	8	4100	2,140,200	267,525	1122	140	1907
7	708	12	4100	2,902,800	241,900	1522	127	1907
8	550	8	4100	2,255,000	281,875	1183	148	1907
9	500	8	4100	2,050,000	256,250	1075	134	1907
10	470	8	4100	1,927,000	240,875	1011	126	1907
11	522	8	4100	2,140,200	267,525	1122	140	1907
12	522	8	4100	2,140,200	267,525	1122	140	1907
13	522	8	4100	2,140,200	267,525	1122	140	1907
14	534	8	4100	2,189,400	273,675	1148	144	1907
15	568	8	4100	2,328,800	291,100	1221	153	1907
16	518	8	4100	2,123,800	265,475	1114	139	1907
17	942	12	4100	3,862,200	321,850	2025	169	1907
18	800	12	4100	3,280,000	273,333	1720	143	1907
19	694	12	4100	2,845,400	237,117	1492	124	1907
20	800	12	4100	3,280,000	273,333	1720	143	1907

Source: Author

complete the land payment and the construction of building in the future. The author of the chapter considered the winning to be named as the first hand, who could be the end-user which is the prefect case or could be the investor who aims to invest with down payment for the lottery and will sell the allotment later in case of he won the land (Ministry of Housing and Urban Communities http://www.moh.gov.eg/).

These investors aim to save their money in the real estate industry as the Egyptian central bank did not offer saving rates for local currency that can adapt the increase of inflation rates that exceeded 30%, meanwhile this chapter was written after the economic reform in November 2016, when the Egyptian central bank offered the interest rate and it reached 20% which is not equivalent to the inflation rates comparing with the change in the foreign currency. On the other hand, the investment in real estate is considered more reasonable for the balance with the increase occurred in the inflation rates.

In this stage, a survey was performed on different land areas of the lottery. This survey was summarized in the following (Table 6.1). It aims to study how does the

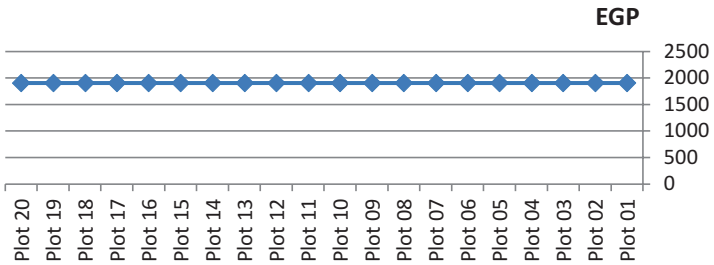

Fig. 6.4 Apartment meter square share in land (EGP) (Author)

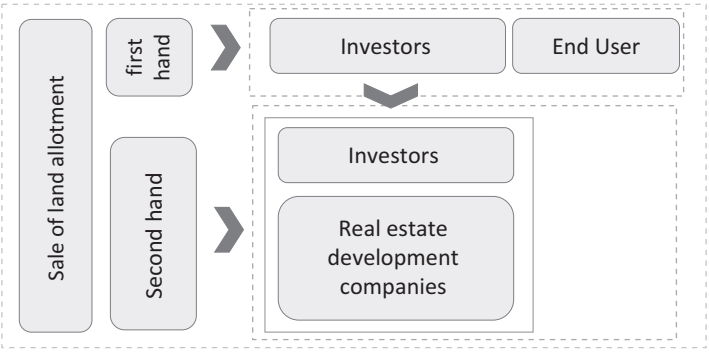

Fig. 6.5 Sell of the land allotment (Author)

apartment meter share in the land price during the first stage, taking in consideration that land meter price was considered on a fixed rate 4100 EGP it concluded that the apartment meter shares in the land price to be fixed at 1907 EGP, as shown in Fig. 6.4.

6.4.2 Sell of the Land Allotment

The government does not guarantee the ability of applicant for completing the land payment and construction of building in the future when the lottery was offered to public. The first hand can sell the land allotment to the investors or the real estate development companies as 2nd hand, because he does not have the affordability to pay the while land price and the construction of the building, as shown in Fig. 6.5. Therefore, the first hand who invest in the land lottery "Buy to sell not Buy to hold".

In this stage, a survey was performed on different land areas of lottery. This survey was summarized in the following Table 6.2, It aims to study the additional price required by the first hand owners in order to sell the land allotment to the investors or real estate development companies. It concluded that the inflation rate for meter square share in land has increased on average 94% (Fig. 6.6).

Table 6.2 Sale of land allotment (Stage 2)

NO.	Land area	No. of apartment	Meter sq. share in land (First Hand) EGP	Additional price	Total price land	Land meter price	Apartment share in land EGP (Pound)	Meter sq. share in land (Second Hand) EGP	Inflation rate (%)
1	530	8	1907	2,000,000	4,173,000	7874	521,625	3662	92
2	566	8	1907	2,250,000	4,570,600	8075	571,325	3756	97
3	526	8	1907	2200,000	4,356,600	8283	544,575	3852	102
4	522	8	1907	2,100,000	4,240,200	8123	530,025	3778	98
5	550	8	1907	2200,000	4,455,000	8100	556,875	3767	98
6	522	8	1907	2,000,000	4,140,200	7.931	517,525	3689	93
7	522	8	1907	2,300,000	4,440,200	8506	555,025	3956	107
8	522	8	1907	2,000,000	4,140,200	7931	517,525	3689	93
9	534	8	1907	1,800,000	3,989,400	7471	498,675	3475	82
10	568	8	1907	2,000,000	4,328,800	7621	541,100	3545	86
11	942	12	1907	3200.000	7,062200	7497	588,517	3487	83
12	800	12	1907	3200,000	6480.000	8100	540,000	3767	98
13	911	12	1907	3,500,000	7.235,100	7942	602,925	3694	94
14	784	12	1907	3,000,000	6.214,400	7927	517,867	3687	93
								3700	94

Source: By Author

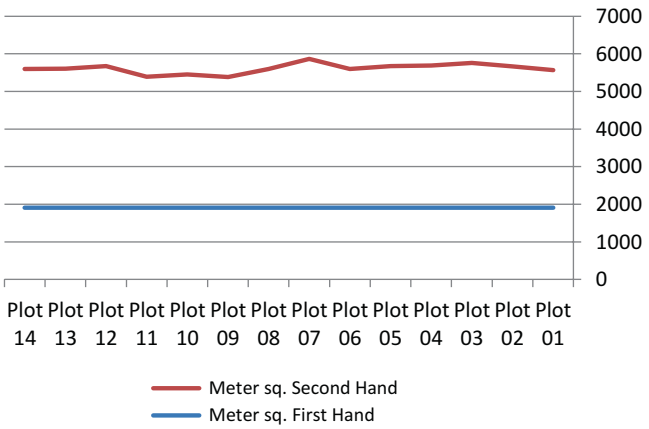

Fig. 6.6 Meter square share in land comparison between first & second hand (EGP) (Author)

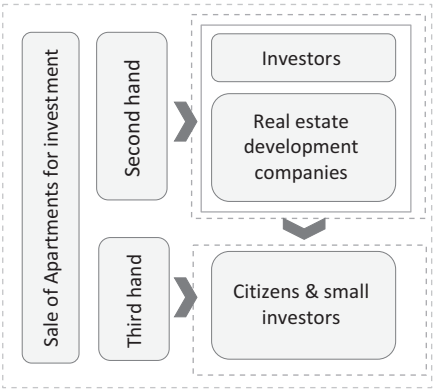

Fig. 6.7 Sell of apartment for investment (Author)

Table 6.3 Sale of apartment for investment (Stage 3)

No.	No. of apartment	Built up area (Meter sq.)	Actual cost by Meter Sq. after implementation EGP (Pound)	Profit margin percentage (%)	Price per Meter Sq. EGP (Pound)
01	9	1970	3860	32.25	5105
02	12	2200	4060	50.00	6090
03	9	1657	3800	60.00	6080
04	8	1580	4250	30.00	5525
05	9	1780	4100	50.00	6150
					5790

Source: Author

6.4.3 *Sell the Apartments to the Investment*

The investors or the real estate companies (2nd hand) will make their marking trying to sell the apartments to the citizens and the small investors (3rd hand) who are also aiming to invest in the real estate, as shown in Fig. 6.7, which is considered more profitable than investment in banks. "Buy to Invest not Buy to hold"

In this stage, a survey was performed on a different real estate companies. This survey was summarized in the following Table 6.3, which aims to study the construction cost for different projects before selling to users. It concluded that the meter square increased from 3700 EGP to 5790 EGP, where inflation the rate was 156.5% (Fig. 6.8).

6.4.4 *Hold of Apartments*

The third hand will sell the apartment to the fourth hand (end user) who will hold the apartment, that will make the price of the meter square in the apartment increases to more than 5790 EGP in order to add a profit to Minimum Attractive Rate of

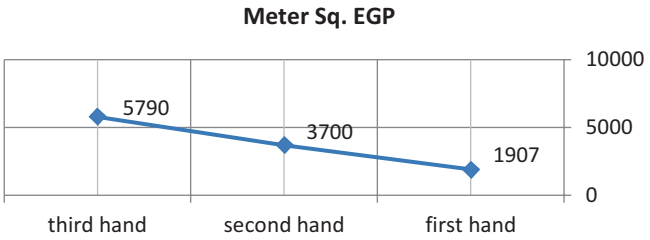

Fig. 6.8 Average meter square inflation rate (different stages) (Author)

Return (MARR) which is more than the inflation rate in the economic conditions. This will lead to the running-up of meter square price to the end-user comparing with the price which was offered by the government to the first hand.

6.5 Conclusion

This chapter will compare between the USA housing bubble and the Egyptian real estate bubble. It will discuss different aspects, governmental policies, demand and supply, stakeholders, and bubble bursting.

6.5.1 Governmental Policies

In USA the government made policies so as to relax the standards for mortgage loans, While the Egyptian government policies is seeking to overcome severe economic degradation conditions. For EGP Financial liquidity, the Egyptian government offered last lottery for those who can afford total price of land, this will increase the participation of real estate companies who buy to sell not to hold. On the other hand, for dollar financial liquidity the Egyptian government offered land allotments (Beit El watan project) in a condition to be paid by dollar.

6.5.2 Demand and Supply

The USA housing bubble, The Adjustable Rate Mortgages made monthly mortgage payments affordable for more buyers and thus contributed to rising home prices. In the Egyptian case, the stages lead to the increase of fake demands for the apartments as an investment tool, while the supply is increased but with a slow rate than it

demands. After period of time that can be estimated in this chapter, the third and the fourth hand who bought the apartments to invest need to sell their investment assets with MARR (as per his point of view) to end-users or others, that will increase the supply of the apartments and on the other hand the end-users cannot afford a new price of the meter square apartments as a result of different investments by the third, fourth hand...etc. this is the main cause that led to decrease the demand.

6.5.3 Stakeholders

In the USA housing bubble, all the participants who contributed to the housing bubble acted on the assumption that home prices would continue to rise which didn't happen. In the Egyptian real estate bubble, all participants who contributed to the real estate bubble (first hand, second hand, third hand, fourth hand, etc.…, home holder) are seeking for profit from real estate sell process, assuming that the price of houses will keep rising, which will not happen for ever.

6.5.4 Bubble Bursting

In the USA, the irrational exuberance was the main cause of the housing bubble. The housing bubble would not have occurred without the widespread belief that home prices would continue to rise (Clauretie and Stacy Sirmans. 2010). In the Egyptian real estate bubble, the irrational exuberance was that all participants believed that prices will be raised. This warns of bursting of the real estate bubble in Egypt.

The analysis for the American and the Egyptian experience in real estate bursting concluded the difference between USA and Egypt in different aspects; economic conditions, political conditions and debt strategies. Concerning the real estate market, the Egyptian market took the experience from the same symptoms that faced the American market earlier. These symptoms led to the burst of American real estate bubble in light of different circumstances for the American and the Egyptian experience; these symptoms such as the belief that prices of houses will keep rising forever and relaxed mortgage loan policies need to be ahead of Egyptian decision makers in order to work on amendment actions for these symptoms to avoid the expectation of real estate bubble burst in Egypt.

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Chapter 7
Exploring the Challenges for Effective Spatial Planning in New Urban Development: The Case of Ecotourism in Egypt

Emad Kenawy, David Shaw, and Taher Osman

Abstract Egypt is embarking on an ambitious National Strategy of new urban development, which includes the establishment of many new settlements. History has shown, here, as with many other developing countries, technical plans are formulated, without effective mechanisms for implementation. Instead, the plans end up gathering dust on the shelves of national agencies or local government with limited improvements on local economic or environmental well-being evident on the ground. This is attributed to the difficulties in understanding competing interests, and the lack of effective contribution of diverse stakeholders in the planning process. Current plan-making processes can be characterised by a central government monopoly in decision-making. This combined with fragmented government agencies lead to multiple, and often conflicting spatial plans for the same location. This chapter seeks to highlight such deficiencies through an exploration of recent ecotourism development proposals in Egypt. By drawing upon a critical documentary review of specific case studies, and semi-structured interviews with 56 ecotourism experts, and stakeholders, the analysis suggests that stakeholder engagement was tokenistic, with a particular central government agenda still dominant. If the aspirations of Egypt's new urban development are to be fully realised, then more effective collaboration between stakeholders, at all levels, is crucial.

Keywords Spatial plans' implementation · New urban development · New cities · Planning process · Collaborative approach · Ecotourism · Stakeholder engagement

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7.1 Introduction

The unbalanced demographic distribution, and high population growth rates are the key dimensions of Egypt's urban development dilemma. Over 95% of the Egyptians population live within, an extremely narrow strip of land, representing less than 7% of the of the country's total area (Ibrahim 2011). As a result of this population explosion, and subsequent urban sprawl, the Nile Valley, and its Delta have become too urbanised, and much of the most fertile land has been eradicated (Abu-Fadil 2013). According to a United Nation's report on combating desertification, and drought, published in 2011, Egypt is losing fertile lands faster than any other developing country. Approximately 3.5 acres of fertile land are lost every hour or around 30 thousand acres per annum (El-Hefnawi 2005; Elshamy 2015). Furthermore, more than 40% of this arable lands is classified as highly productive capable soils (class I & II) (Shalaby and Moghanm 2015). Therefore, Egypt has no alternative, but to push forward towards a comprehensive urban development strategy, that spreads urban growth towards the desert regions. This is intended to both minimise pressure on valuable agricultural land, and help to create a more balanced urban development perspective throughout the country.

This is not a new agenda, and within the last three decades, Egypt has formulated national visions, and strategies to help create four generations of new cities. These were located in dessert areas, and expected to accommodate at least 11 million of inhabitants by 2012, and 21 million by 2032. Nevertheless, these new settlements, according to the 2006 census, had only attracted 5% of the target population, some 903,000 (Mahmoud 2007; MIC 2016). According to the New Urban Communities' Authority, these figures had increased to 10%, or 2.2 million, by 2015 (NUCA 2015). This suggests that the sustained efforts, and investments to establish those cities has not helped to mitigate the traditional urbanization trends, and indeed arguably have exacerbated the pressures on the core urban centres (Ibrahim 2011). With the new cities around the Greater Cairo Region (GCR), higher commuter rates are causing excessive traffic congestion, and energy consumption (Ellahham 2014).

Several reasons have been suggested as to why the actual development of these new cities has lagged behind the expected growth. These include:

- Major changes to the original master plan of the new cities, which particularly prioritizes the interests of certain groups. For example, building residential recreational compounds, at the end of the urban boundary of Sadat City, on the Cairo-Alexandria Road, in favour of investors. As well as converting, the reclamation area, located in a distinct location in the eastern part of Burg Al Arab City, to residential compounds, although this area is located in the opposite direction of the proposed growth of the city (Mahmoud 2007);
- The new cities were not developed in accordance with a comprehensive strategy or vision that considered the interrelationships between themselves, or between the new, and existing established cities. Consequently, commuting flows between the settlements has resulted in unprecedented congestion. For example, the

Metropolitan area of Cairo, according to the most recent vision of *Cairo 2050*, was extended northwards, and hit the urban boundary of the 10th of Ramadan City. This had previously been established as an independent new city, and now it is has become a suburb of one of the largest urban areas in developing countries (Ellahham 2014) and;

- There has been no coordination or collaboration between, and among the governmental bodies, and other relevant stakeholders (the private sector, local communities, and NGOs, etc.) at any of the different stages of the development planning, implementation, or management processes. For example, during the process of identifying the location for 6th of October City, the lack of integration between governments' agencies initially led to a chosen location, which included significant archaeological, and cultural heritage areas. In order to protect these areas, the location of the city had been moved to a plateau rising about 180 m above the sea level. Then it was discovered that the tourist districts in the city were divided by a longstanding oil pipeline (Sumed), which extends through the western desert from Cairo to Alexandria. Due to difficulties in moving the pipeline, or changing the location of the city for a second time, the problem was addressed by creating wide buffer zones around the Sumed (Mahmoud 2007).

These issues, which limited the ability of newly established cities to meet national development strategies, are very unlikely to be resolved without transformational communication, and collaboration within, and between government institutions, as well as widening stakeholders' participation during the planning, implementation, and management process. The most appropriate starting point for this is by focusing on the planning process to ensure that development plans properly reflect all relevant stakeholders' interests, and deal with their aspirations, and concerns through face-to-face dialogue.

A rich body of literature (Mazmanian and Sabatier 1989; Gray 1997; Kenawy and Shaw 2014) has emphasised how a collaborative planning approach (CPA) is one of the foremost methods for enhancing spatial planning effectiveness. It potentially addresses conflict interests between stakeholders, and can help to gain broad support for implementation, which is considered a critical issue in highly centralised decision-making systems, such as Egypt. A CPA process can produce more shared, and equitable agreed solutions, based on establishing effective negotiations, and building a consensus between stakeholders. It improves the legitimacy, and quality of decision-making, as well as building integration among, and between, governmental, and non-governmental stakeholders through procedures of inclusiveness, communication, trust, and consensus building (Jarvis 2007). Nevertheless, dozens of Egyptian initiatives, with the full support of international donor organisations, that have attempted to apply the principles of stakeholder engagement to bridge the horizontal, and vertical fragmentation between the government institutions, and other relevant stakeholder groups input within the planning process, have failed to achieve their goals.

This chapter seeks to investigate the challenges for more effective spatial planning for the newly proposed urban development strategy, using recent examples of

Egyptian ecotourism development proposals. There are several reasons why this particular sectorial case has relevance:

- Such plans and development proposals have been developed in highly sensitive regions, both environmentally and culturally, and there are a wide spectrum of stakeholders (national, regional and local), who will be affected, and influenced by any ecotourism development (Preskill and Jones 2009);
- Ecotourism development is seen as being an important counterbalance to help mitigate the concerns associated with Egypt's mass-tourism strategies, which has led to Egypt's tourism offer, being perceived as low-price, and low-quality (Chemonics 2006);
- Well planned, and well implemented ecotourism development can maximise the benefits from Egypt's Environmental Sensitive Areas, which represent more than 20% of the country's total area (Ibrahim 2011); and
- Ecotourism can also provide opportunities for Egypt to expand its share of the global tourism market, and recover some competitiveness as a result of the more recent political turmoil, dating from January 2011(WEF 2013).

Seeking to explore how the lessons learnt from ecotourism development can be applied, in order to better realise the aspirations of the Egypt's new urban development strategy, this chapter includes two main parts. The first part develops the conceptual, and analytical framework for understanding the challenges, that have hindered the efficiency of stakeholders' engagement during ecotourism planning, based upon an analytical review of the relevant literature. In the second part, the collaborative planning approaches in practice are evaluated by commenting on the actual planning process in two case studies, based against the previously articulated conceptual framework. The sources of evidence for evaluating each of the selected case studies included, a critical review of the documentary evidence associated with each of the initiatives, observations of the processes in practice through which a better understanding of the relationships among, and between stakeholders could be established. These two initial activities were then supplemented by structured interviews with 56 ecotourism experts, and stakeholders. Initially interviewees were selected based on an initial stakeholders' mapping exercise, supplemented by a linear snowballing technique. All interviews followed a semi-structured format, in Arabic to allow for more in-depth discussion, and to help the research gain a better understanding of each interviewee's interpretation of the planning process.

7.2 Developing a Conceptual Framework

7.2.1 The Potentials of Collaborative Planning Approach

Environmental and social resource pressures are increasing in developing countries, whilst the state's capabilities to address such pressures are reducing. This conundrum requires a change in approach, away from the more traditional planning

approaches, which are controlled from the top (a hard systems approach) to a more collaborative, and alliance building perspective, with a wide spectrum of relevant stakeholders (a soft system approach designed to promote commitment support for both development plans, and their implementation (Kim 2002; Imran et al. 2011). This is because no single body, public or private, has the knowledge and/or abilities to address complex, and dynamic issues associated with spatial planning, and new urban development (Jarvis 2007). Without effective spaces to deliberate, appreciate, and hopefully resolve conflicts before advancing shared planning visions, different stakeholders likely impede plan implementation, which does not meet their needs, and aspirations (Bonilla 2008). CPA can provide such expectations within the plan making process. This approach attempts to bridge the gap between different stakeholders' group interests, by recognising mutual interdependence of collaborating together to make, and implement, shared decisions (Araujo 2000). By avoiding the costs associated with trying to resolve long-running, and long-standing conflicts it is anticipated that CPA can prove cost effective solutions (Jarvis 2007).

CPA has been widely recognised as a crucial component of spatial planning for new urban development, because of many reasons:

- Stakeholders' collaboration is seen as a key sustainable driver for resource management, by recognising, and respecting the variety of stakeholder interests in that resource, and encouraging deliberation between them (Kim 2002);
- CPA helps to devolve power from national governmental bodies, by providing stakeholders with specific roles, and responsibilities during planning, implementation, and management stages (Araujo 2000);
- It can promote stakeholders' skills in dealing with planning issues (Lima 2008), both in the short term, by analysing data, and information, and constructing plans, or visions, and in the long term, by building institutional capacity, and enhancing working practices, and knowledge (Kansas 2013);
- It provides a flexible process, which can be adjusted, and is responsive to temporal changes in local circumstances (Innes and Booher 1999; Kim 2002);
- CPA provides an opportunity to improve the stability, and legitimacy of decision-making by advancing a shared solution designed to meet most stakeholders' interests, thereby increasing local acceptance, and confidence in the plan, together with its proposed outcomes;
- It promotes continuous, and open accountability among the stakeholders (Kim 2002);
- The participation of multiple stakeholder groups helps to build their sense of ownership, and commitment towards the plan, and enhances their feeling of responsibility to ensure that final outcomes are achieved (Albert et al. 2003), and;
- CPA improves the quality of solutions being suggested based on collective capacities of stakeholders, and a comprehensive analysis of the problem (Jarvis 2007).

To deliver such aspirational outcomes the literature highlights a series of critical factors that are necessary pre-requisites for a successful collaborative planning

process. Identification of such factors creates a benchmark for evaluation of the challenges, and hurdles faced within the Egyptian context. A group of researchers, pioneered by Selin and Chavez (1994), have identified critical success factors following the examination of partnerships promoting sustainable tourism development, namely personal, interpersonal, organisational, and operational. Choi (2005), during his studies concerning the barriers to effective collaboration in sustainable tourism development in South Korea, merged the operational, and organisational themes. For him the critical components are:

- Personal factors, relating to the characteristics of individuals, and organizations, which facilitate, or undermine, collaboration;
- Interpersonal factors focus on the interrelationships between different stakeholders during the planning process, and;
- Operational factors are concerned with operationalizing stakeholder engagement and collaboration during the planning process.

Zaki et al. (2000) in their model for collaborative environmental planning have developed such ideas further focusing as much on the process. The first theme relates to the stakeholder engagement, developing the relationships between stakeholders, and enhancing their mutual learning, and capacity building skills. This seemed to be the most critical factor in determining whether the outcomes would be successful or not. The second theme relates to process issues, for which the outcomes might be shared goals and visions, effective leadership, and/or organising and building partnership. More specifically, this relates to the arrangements for stakeholders' engagement. Finally, the outcome theme relates to the extent to which innovative solutions are created, followed up, and monitored to ensure the outcomes of these collaborative efforts produce a process for action, rather than simply an unimplementable plan or strategy.

From the literature, the whole process of stakeholders' engagement is the most critical issue for delivering a successful collaborative planning approach. This involves focusing on the following steps, initial stakeholders' identification: broadening the stakeholder base through the process; relationship building between stakeholders with a focus on communications by encouraging listening, understanding, discussion, and decision-making; and careful consideration of how the dialogue, and communication can be convened, and facilitated (Brooks et al. 2007). This requires a clear identification of stakeholders' roles, and responsibilities in the process, and how, if necessary, their confidence and contribution can be developed. This might include regular follow-up after engagement actions to facilitate effectiveness in participation, and collaboration.

7.2.2 *Challenges to Stakeholders Involvement and Collaboration in Developing Countries*

The core factor that could significantly increase the likelihood of the new urban development plans being implemented is the stakeholders' engagement process. However, there are also many barriers, and challenges that reduce, or prevent the effective participation of relevant stakeholders (Aref and Redzuan 2008; Kenawy 2015). Stakeholders' collaboration for new urban development, in particular, can face specific challenges compared with other development projects, because of ambiguity in terms of the targeted population characteristics, and an inability to effectively engage a hypothetical group. Recognising, understanding, and anticipating these challenges is significant to mitigate their impacts, and promote appropriate individual, and organisational engagement during the planning process for new urban development (Dukeshire and Thurlow 2002; Kenawy et al. 2017). If these challenges are ignored then levels of stakeholders' conflicts may arise, undermining stakeholders' engagement, and the advancing of shared solutions, that meet most stakeholders' needs. This section investigates the main barriers, which have prevented an acceptable level of stakeholders' participation, during new urban development planning process in developing countries. Many authors Tosun (1998); Dogra and Gupta (2012); Kenawy (2015) have emphasised how most developing countries can be characterised by three significant structural deficiencies:

- Socio-economic factors, which include low standards of living, limited access to health, and basic infrastructure services, low economic growth rate, and a high unemployment rate;
- Political factors, which embody characteristics, such as high centralisation, fragmentation in the public administration system, and domination of political processes, by few elites, and;
- Cultural features, such as low levels of education (including poor literacy rates), and the majority of people living in highly stratified societies.

These deficiencies create significant challenges for effective stakeholders' participation in collaborative planning processes. From the perspective of collaborative planning, within such contexts, two distinct challenges can be identified:

- Structural barriers associated with the institutional deficiencies in the system of public administration, and;
- Stakeholder barriers associated with attitude, perspective, and ability of each stakeholders' group to effectively engage with the process (Choi 2005; Aref and Redzuan 2008).

Furthermore, from the discussions outlined above, we would argue that proactively operationalising stakeholders' engagement needs to be included, to better facilitate stakeholders' engagement throughout the planning process. Consequently, three key deficiencies, or concerns that mitigate against effective collaborative planning processes can be identified.

Deficiencies in Operationalising Stakeholders' Engagement, and Collaboration during Spatial Planning include:

- Poor identification of an appropriate stakeholders' network is a result of:
  - Deficiencies in relevant stakeholders' identification, at the beginning of the process, often leads to the exclusion of key stakeholders, who may have a substantial role to play in the spatial planning, implementation, and management process, and;
  - Not only are key stakeholders not identified, but there is often a lack of understanding of their powers, responsibilities, and their inter-relationships. This often leads to inadequate roles being defined for stakeholders, and their levels of participation, being misunderstood, as trust is undermined (Schmeer 2001).
- Inadequacies in stakeholders' engagement, during the spatial planning process is often the result of:
  - Late stakeholders' engagement during the planning process. This is often cited, as a critical reason why many stakeholders are resistant to the plan, and its implementation, because they believe that the decisions have already been made, and they are being informed rather than engaged in the process (Tseng and Penning-Rowsell 2012), and;
  - Inappropriate and insufficient methods of stakeholders' involvement at each stage of the planning process.

Deficiencies in the structure of the governmental institutions, and the way they operate during the planning process include:

- A lack of coordination between highly fragmented government agencies often leads to significant overlap, and duplication in their roles, and responsibilities;
- A lack of resources, (information, financial resources, and human capacity) often limits collaborative efforts, and leads to the formulation of plans, that are in practice, rarely implemented. This undermines trust in communities in their belief that any future proposals will make a difference (Wafik 2002).
- The lack of political will, and elite domination leads to such groups maintaining control of the resources, and maximising their profits (Choi 2005).

Deficiencies in Non-Governmental Organisations include:

- A lack of trust in the formal government bodies, as a result of previous unmet promises;
- A lack of awareness about the formal planning process, and their roles, responsibilities, and potential to influence outcomes, and;
- Extremely low standards of living, combined with high levels of illiteracy within local communities means that individuals are more concerned with how they can meet their daily needs, rather than looking forward to an aspirational future (Dogra and Gupta 2012).

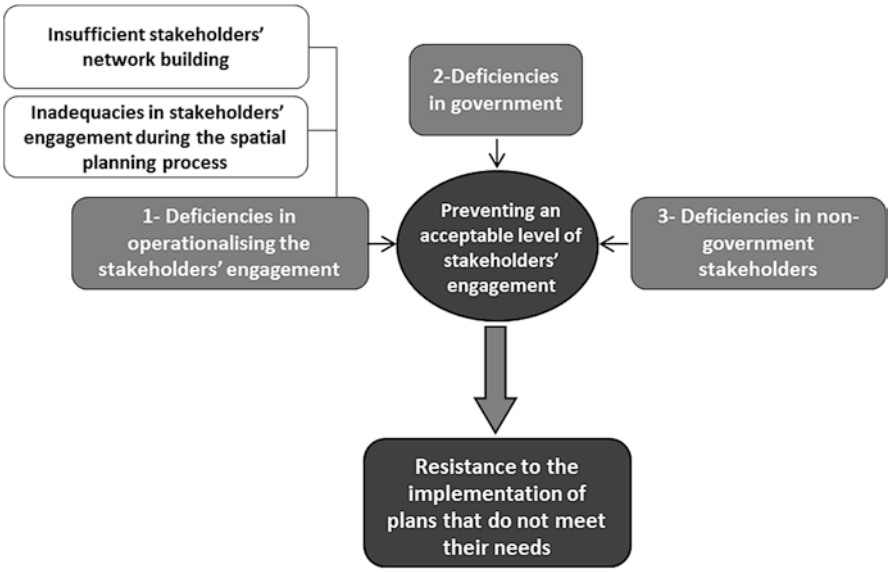


Fig. 7.1 The Conceptual framework (Authors)

Consequently, Fig. 7.1 describes the conceptual framework used to evaluate the effectiveness of stakeholders' engagement, during two specific Egyptian ecotourism initiatives, upon which the three key deficiencies outlined above, are based**.**

7.3 The Egyptian Ecotourism Initiatives

Within Egypt many initiatives have sought to promote ecotourism development, thereby spreading development potential. But, most have been unsuccessful. The tensions between, and among different stakeholder groups have not only prevented such benefits occurring in practice, but also led to a continuing degradation of ecotourism destinations, and increased marginalisation of local communities from any of the benefits returning from tourism development. These communities, through informal, and unregulated activities, e.g., selling souvenirs to visitors, further accelerated degradation of the environment (Kenawy 2015).

In this analysis, two initiatives have been chosen as illustrative case studies. Both are located in regions with a long history of resources' conflict. This provides a critical context for identifying challenges to stakeholders' engagement, and collaboration. Furthermore, both deliberately set out to engage in a more inclusive approach to the planning process. Hence, the analysis can explore, and understand some of the challenges in operationalising effective stakeholders' engagement during planning process.

Both are located in the desert regions, and offer the potential to provide a distinct, and bespoke ecotourism experience (see Table 7.1). More specifically, the two case studies are:

- The Red Sea Sustainable Tourism Initiative (RSSTI) was one of the largest ecotourism development initiatives in Egypt, which lasted five years, (1999 to 2004). Established under the Egypt's Environment Policy Program (EEPP), with a focus on development, and management of the Red Sea Governorate (RSG), and its resources (IUCN, UNDP et al. 2006). The overall aim of the RSSTI was to assist in the development and dissemination of environmentally sound ecotourism facilities and activities. During the lifetime of RSSTI, USAID provided technical assistance via several expert contractors. At the end of the program, it also transferred significant resources to the three main governmental agencies involved (34 million US$ for the EEAA, 26 million US$ for the TDA, and 2 million US$ for the RSG), and;
- Ecotourism for Sustainable Development in the New Valley Governorate (ESDNVG) was intended to improve the livelihood of communities, within the NVG, more particularly focusing on the Farafra, Dakhla, and Kharga oases. The approach was to use ecotourism development, and thereby developed more effective management approaches to using local environmental and cultural resources. It also aimed to promote the attractiveness of the New Valley oases, by including them as part of the main ecotourism destinations within Egypt. Any future ecotourism development projects that were proposed, were intended to be based on the results locally based, and locally engaged inventory, and analytical phases.

7.4 Evaluation and Analysis of Stakeholders' Engagement in Practice

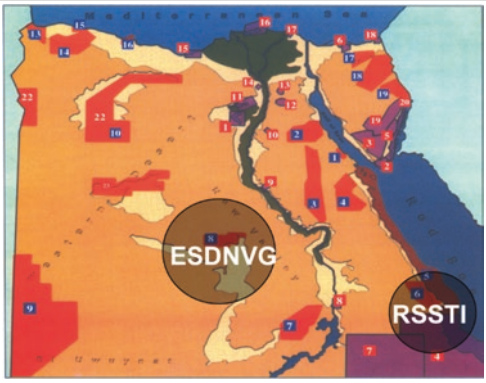
7.4.1 Deficiencies in Operationalising Stakeholders' Engagement

Two key deficiencies in the way that stakeholders' engagement works, within the planning process, have been identified.

7.4.1.1 Insufficiency in Building the Stakeholders' Network

Omissions in Identifying Appropriate Stakeholders' Networks
The internal stakeholder lists, for both initiatives, omitted a number of critical stakeholders, including governmental bodies, such as General Organization for Physical Planning (GOPP). One of the interviewees noted why the omission of GOPP was so significant, because they "had prepared several recent spatial plans and therefore

Table 7.1 The contexts and locations of the case studies

Cases	ESDNVG	RSSTI
The location		
	It was located in the Farafra, Dakhla, and Kharga Oases	It was located in the Southern Red Sea (RS) Region, extending from south of Marsa Alam city to north of Shalateen city and just south of Ras Banas – stretching from the RS coast to the mountain ridgeline in the west
The project life time	30 months (1/2010–6/2012)	Lasted five years, (1999–2004)
Prepared by	CISS, TDA and Italian Egyptian Debt for Development Swap Program (DDSP)	EEAA, TDA & USAID
The budget	€527,000 was funded by the Italian Egypt DDSP	USAID provided technical assistance & transferred 62 million US$ to the three main governmental agencies involved
Focal attractions	 The white desert park 	
Secondary attractions	 Natural cool and hot springs  Local handicrafts	 Example of flora & fauna

Source: Authors, based on (TDA, RSSTI et al. 2003; CISS and EDG 2012, and cited in (Kenawy 2015))

CISS Cooperation Internationale Süd-Süd, *TDA* Tourism Development Authority, *EEAA* Egyptian Environmental Affairs Agency, *USAID* United States Agency for International Development

had an up-to-date database for the key infrastructure in each location" (PS-14).[1] Similarly, many local government bodies were excluded although, in theory, they were often charged with implementing the spatial plans (EC-29). Furthermore, even if the right stakeholders' group was included, the conveners were often not successful at nominating or attracting the most appropriate individuals, to represent these different stakeholders' groups. Public sector representatives were simply nominated by the Chairman of each agency, without real consideration of the appropriateness of the individual concerned. As one of the interviewees remarked, "the local convening teams could not establish any criteria for the nomination of representatives from governmental agencies, because they did not have any idea about the hierarchical positions, nor employees' skills in each agency. Furthermore the Chiefs of these agencies would not accept any external body nominating a specific employee, within their organisation for any task" (EC-1). Therefore, often their nominated people had little, or no, knowledge of ecotourism development. Furthermore, their participation throughout the planning process was ineffective, because they had no delegated decision-making authority and were, in effect, simply observers.

With regards to the local community representatives, in the RSSTI initiative, the convener hired a team of senior social scientists, and experienced field researchers to survey and interview local residents to collect baseline information (Snyder 2004). This activity was helpful in identifying knowledgeable key persons, who could be a reference for the project. However, one interviewee claimed that *"These nominated persons were largely excluded from the planning activities except [for] providing the missing information, and taking part in a raising awareness campaign, at the end of the planning process"* (PS-6). In the ESDNVG initiative, local community delegates were nominated using a snowballing technique. The New Valley Tourism Authority (NVTA) directly invited whom they thought were the key persons, one each from the three main oases, to an initial meeting. They then were able to nominate other interested and active representatives to be involved in the different planning stages (EC-26).

In choosing representation, the conveners for both initiatives ignored or excluded experienced NGOs, such as Nature Conservation Egypt, and Hurghada Environmental Protection, and Conservation Association (HEPCA). Both had already contributed to activities in the NVG, and RSG respectively (NG-1). It was felt, with the benefit of hindsight, that these more experienced NGOs could have played a more pivotal role, during the ecotourism planning processes, through the provision of training, raising the awareness of stakeholders, and providing technical advice and support. Private sector representation was also weak, and limited. Within the ESDNVG process, the convener ignored pre-existing networks that might have provided them access as to how to contact the key representatives for each group.

[1] (PS-14) A reference to the interviewee/s: the acronyms refer to the interviewee groups: EC = Experts & Consultants in ecotourism development or participatory planning, PS = An employee in the Public Sector, NG = A member of NGO boards, LC = A member of the key persons of the Local Communities; and the number refers to the serial number of the interviewee in each group.

By contrast, the convener of the RSSTI initiative invited private sectors' representation drawn from the managers of existing tourism facilities (hotels, diving centres, diving lodges, ….etc.). A professional research team had previously carried out a survey of all the managers of tourism facilities in the RSSTI boundaries, and this provided context for individual invitations (TDA, RSSTI et al. 2003). In addition, RSSTI also invited national, and international tourism industry bodies to separate events, aiming to widen the discussion about ecotourism development potentials in Egypt more generally rather than focusing exclusively on the Southern Red Sea Region (TDA, USAID et al. 2004).

Not only was there a lack of adequate stakeholders' mapping in building a suitable stakeholders' network, but also the convenors failed to define the roles and responsibilities of the chosen partners during the planning process. In addition, the conveners failed to take into account level of power and interest in the development of each group, and classified them based on either, the level of position or, sector characteristics. This technique maintained interest disputes between the different stakeholders' groups. *"The main reason behind using this method was the wide range of education, background, culture, and positions between, and among different stakeholders' groups – particularly, the artisans could not understand the language of top executive employees"* (EC-20). Consequently, these classification methods used in both initiatives could be viewed as a useful first stage of the process, by identifying the range of stakeholders to be engaged. Following this stage, these separate groups really needed to be brought together, in order that true collaboration and real mitigation of existing conflicts of interests could be recognised as the foundation for building shared commitment for the plans' implementation (EC-29). This failed to happen.

The Exclusion of External Stakeholders[2] Although there were a significant number of international governmental and non-governmental organisations, who were interested in supporting the ecotourism development in Egypt – whether from a technical or financial perspective, (such as United Nations' Development Programme (UNDP) and United Nations' Environment Programme (UNEP) – neither initiative sought to engage with any external actors.

Limited Interaction Between the Key Agencies and Their Stakeholders' Representatives Although this dialogue is crucial in developing support, and commitment to any final agreements, individuals who were invited, within both initiatives, to represent the interests of local people, handicraft groups or NGOs, only tended to offer their personal opinions without engaging in dialogue with other group members. Moreover, the dialogue between governmental representatives, and their parent authorities was also weak and limited. For example, in the EDNVG, "*the EEAA representatives from the regional office simply faxed a summary of the final recommendations, and outcomes of ESDNVG to the central office in Cairo, without any discussion between them during the planning process"* (PS-12). In the

[2] These are governmental and non-governmental bodies who are interested in, affected or influence by ecotourism development, but are located outside the initiatives' boundaries.

same way, another interviewee highlighted that *"representatives from the local police, and security agencies simply gave their boss a copy of the meeting's minutes, to provide evidence of their participation in the planning process"* (PS-21).

However, dialogue during the RSSTI process, involved regular reports, and meetings before, and after, each activity. It was claimed that this more proactive and interactive approach was due to the fact that the representatives were from central government offices (TDA and EEAA), and that they had had previous experience of similar projects (EC-20). Moreover, there were also bilateral negotiations between the representatives of the EEAA, TDA, and their parent agencies trying to address significant conflicts about the appropriate density for eco-lodge development. With the private sector agencies, positive exchange between meetings, including providing the nominated representative with a clear steer, as to the sectors desired outcomes was effective, because the big national, and international tourism agencies had already created an effective collaborative network within the Red Sea Region(EC-20) (Table 7.2).

7.4.1.2 Inadequacies in Stakeholders' Engagement Within the Planning Process

Inadequacies in Levels of Participation and Actual Stakeholders' Engagement at Each Stage of the Planning Process Judged against Arnstein's (1969) ladder of participation, stakeholders' engagement, in both initiatives, can at best be seen as tokenistic. Engagement was confined to informing, consultation and placation (beginning of interactive negotiation). But even then, the informing techniques used were often wholly inappropriate. Written communication was often undertaken through the medium of English, and therefore not accessible to many of the key audiences, who were either illiterate and/or could not understand English properly (EC-26).

The consultation phases, in both initiatives, failed to achieve their objectives of widening the stakeholders' participation base, because the majority of attendees had previously been participants in the process (PS-4). Local communities were the specifically targeted group for these consultation activities, but they did not engage. The RSSTI planning team felt that interviews with local residents might be the best method to understand their views because of widespread illiteracy (TDA, USAID, et al. 2004).

At other stages, although the literature highlights the importance of interactive negotiations in developing the solutions, in practice many stakeholders were absent from this stage of the process. Decisions on the final outcome of each initiative were taken by the key government agency, without retuning to the stakeholders, to explain or to seek their approval (EC-26).

A significant problem was that no clear roles or responsibilities for the stakeholders (except for the focal actors of governmental agencies) were really identified, and defined. Often *"the funders defined the roles, and responsibilities of the government agencies through a contract, early in the initiative. This made these agencies*

Table 7.2 Insufficient stakeholders' network building during Egyptian ecotourism initiatives

	Critical factors for building stakeholders' network	Performance of initiatives		Comments
		RSSTI	ESDNVG	
	Did the stakeholder list include all relevant groups?	◉	◉	Some relevant stakeholders' groups. Such as GOPP & local government bodies were excluded from both initiatives
	The representatives of local communities	●	●	In RSSTI, these were based on a survey and interviews. In ESDNV, they were based on a snowballing technique organised by NVTA
	The representatives of the public sector	○	○	Simply nominated by the respective agency bosses without reference to key skills and knowledge of the individual concerned.
	The representatives of the private sector	◉	◉	Limited representation from the managers of existing tourism facilities were involved in RSSTI. Representatives of hoteliers, tour operators and loc al guides were more centrally involved in ESDNVG
	The representatives of NGOs experienced in ecotourism development	○	○	Although several experienced NGOs had conducted activities near both initiatives, none of these were nominated
	Clear techniques and criteria for an analysis of stakeholders' knowledge skills and understanding of the issues	○	○	The conveners assumed that all stakeholders in both projects had the same level of influence and interest
	External stakeholders' involvement	○	○	No global or national NGOs were involved
Dialogue between SRs & their parent bodies	Public sector	●	○	Dialogue was good in RSSTI, but limited in ESDNVG
	Private sector	●	◉	Dialogue was good in RSSTI, but limited in ESDNVG
	Local communities and NGOs	○	○	There was no dialogue

Source: Author

● Fully achieved, ◉ Partially achieved, ○ Not achieved

accountable during the process" (EC-24). More explicitly, with the "*RSSTI, the funder linked its release of grant funding to each agency based on the delivery of their defined responsibilities, at each stage of the initiative. Consequently, these agencies were much more engaged than the others in the RSSTI process"* (PS-10). Consequently, the majority of other stakeholders' groups were only pro-actively involved in the informing stage. When developing actual plans and outcomes the stakeholders' base was much nwarrower. According to Kansas (2013), for an effective stakeholders' engagement process, it is necessary to clearly define their roles and responsibilities, based on their interests and experiences, from the outset.

Inappropriate Stakeholders' Involvement Methods In both cases, the main methods of stakeholders' engagement focused on informing, and raising the awareness of the stakeholders to the issues, rather than actively involving them, so that they could have an input during decision-making process (EC-29). Such a narrow approach cannot fulfil the requirements of a collaborative approach for ecotourism development. A summary of these issues can be found in Table 7.3 and summarised below:

- Normally the diagnosis phase comprised two main methods. The first involved individual or group interviews, and surveys. Whilst such an approach was appropriate, sampling was not required during the RSSTI process, because there were only 19 small settlements within the area of the initiative. Such an approach was inappropriate for more geographically dispersed stakeholders, as was the case with ESDNVG. Here the planning team needed to look at complementary methods, such as drop-in centres to improve information received from this phase (EC-8). A second approach involved public meetings that were designed to introduce the initiatives to interested stakeholders. These were largely tokenistic, because the meetings were dominated by long speeches from governmental representatives, leaving little time for other stakeholders to make an effective contribution, and/or, to give full answers to questions. (EC-20).
- During the analysis phase two main techniques were used. However, only the workshops in ESDNVG really added significant value. Here to enhance the effectiveness of stakeholders' engagement, within these workshops, a series of learning sessions were initially designed to teach stakeholders how to build a SWOT[3] analysis. The convener divided the participants into small discussion groups (10–14 people), to ensure that the voices from all the stakeholders could be heard during the discussions (EC-27). Such an approach had a positive impact, as it *"encouraged communication between the stakeholders, and tested their knowledge about the ecotourism development planning, using role-playing techniques"* (EC-20). Also within ESDNVG, a questionnaire was used to get feedback from stakeholders beyond the network. However, because the respondents' answers were very brief, its value was limited. (EC-1).
- The workshops during the development phase in both initiatives involved a one-way direction of information (from the planning team to the stakeholders). Also, simply holding one public meeting (a legal requirement) in ESDNVG was insufficient due to the geographically dispersed nature of the stakeholders. Furthermore, feedback, and reflections from the stakeholders were very limited, because the majority of participants did not know much about initiatives before the meeting (EC-24).
- After plan approval, stakeholders' involvement events were organised as scheduled. Most were concerned with awareness-raising programs and advice for running ecotourism activities. There was a consensus these events could have been

[3] A Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis is a structured planning technique evaluating the needs or outcomes of a project or organization.

Table 7.3 An evaluation of the methods used, their appropriateness and effectiveness in each phase of the process

	Diagnosis	Analysis		Development			After plan making
The involvement methods	Face-to-face interview	Public meeting	Workshop	Questionnaire	Workshop	Public Hearing	Awareness-raising programmes
Appropriateness	√	√	√	×	√	√	√
Effectiveness	×	×	*	×	×	×	×

Source: Authors
√achieved, ×not achieved, *It was sufficient during ESDNVG only

more valuable, if they had focused on building the stakeholders' commitment to the plan, and implementation (PS-12).

Further deficiencies related to how the meetings, throughout the process, were organised, include:

- Agendas were often lacking any meaningful representation of actual community requirements, and there was no, or limited opportunity for enabling stakeholders, to reflect their concerns;
- The information presented at meetings, was often not in an accessible or understandable format to meet audience expectations;
- The scheduling of the meetings effectively excluded many critical stakeholder groups. Because they took place during normal working hours, many non-governmental stakeholders were, because of work commitments, unable to attend (NG-1);
- The structure of the meetings allowed very limited time for stakeholders' groups, to fruitfully contribute their inputs (EC-3), and;
- There was a lack of follow-up measures meant that stakeholder groups were informed of any meetings' outcomes and/or progress (EC-29).

Stakeholder Motivation Was Often Lacking Within the ESDNVG, to try to encourage effective stakeholder participation, incentives were offered. For those representing the local communities, any expenses and a compensatory payment to cover any lost income were made. However, this did not encourage the right individuals to participate, nor did it facilitate effective participation. It was simply paid to those who attended meetings, and was not linked to particular needs in the process nor their individual contributions. Furthermore, money was not really a motivation for community leaders, who sought legitimacy or prestige through their engagement in the process (EC-3). The private sector groups were promised access to information, through the updated database of NVG ecotourism resources (CISS and EDG 2012). However, in practice, there was a lot of prevarication, and this information was not provided to the private sector until late in the process, thereby undermining trust.

Lack of Stakeholders' Preparation in Egypt, ecotourism development potentials, and requirements are not well known, and many of the stakeholders' groups were neither qualified, nor properly prepared before, the initiation of the planning process. If there were training activities, these usually took place late in the process, and were often concerned with practical issues associated with the running of ecotourism activities, (CISS and EDG 2012) rather than initailly raising awareness about ecotourism development potentials, and clearly establishing the roles and responsibilities of stakeholders during the planning process (PS-10).

7.4.2 Deficiencies in the Government

There were five key deficiencies identified in the way governmental institutions were structured and operated during the spatial planning process.

Fragmentation Within and Between Government Agencies Although new urban development in general, and ecotourism development in particular requires intensive coordination between, and within concerned governmental authorities, there was, and still remains a significant overlap and duplication in their roles and responsibilities; a lack of communication between governmental agencies; and, the development of fragmented and disjointed sectoral plans for a particular area, that are frequently incompatible with one another.

Concerning horizontal fragmentation, there was, and there remains a lack of coordination between the EEAA, and TDA. These are the key government stakeholders for ecotourism development in Egypt. To illustrate this, "The *EEAA refused to sign the final RSSTI plan trying to force the TDA to change the eco-lodge density in low intensive zones from 20 to 2 rooms per feddan. The TDA was eventually forced to do so, because the funder of RSSTI, USAID, stipulated that any money transferred to pay for the project could only occur with the approval of all the governmental stakeholders involved in the preparation of the final plan"* (EC-23).

Moreover, there was wide-scale duplication of effort at both the regional, and local levels, with confusion over the roles responsibilities and functions of the Governorates, and the Regional Branch Offices (RBOs) of the EEAA and TDA. In this regard, one of the interviewees commented that *"The Environmental Management Unit in the Governorate, and regional offices of the EEAA, and the TDA have almost the same mandates for monitoring tourism activities, leading to a tripling of activity in this regard"* (*PS*-13). Despite recognising these overlapping competences, both initiatives did offer some potential for better co-operation, and coordination between governmental bodies. Nevertheless, this opportunity was lost, and this lack of integration adversely affected the relationships between such agencies, thereby undermining the efficiency of the planning process (*PS*-11).

Concerning vertical fragmentation, within the same organisation, there was often a lack of coordination and communication between its offices, at different levels, including central, regional, and local. This was a critical weakness in the spatial planning process (PS-8). The central governmental bodies usually dominated and intervened without respecting the knowledge and responsibilities of lower-tier government agencies. As one of the interviewees noted, "*During the RSSTI planning process, only the central offices of TDA, and EEAA participated as stakeholders. Representatives from both the regional and local branches, who were charged with follow-up activities once the plans had been agreed, were excluded"* (PS-6).

Lack of Information A reasonably up to date information system can be considered as one of the most significant pre-requisites for any plan making process. Nevertheless, reliable information concerning Egypt's existing ecotourism resources and potential remain limited. This is despite the fact *"there are various authorities*

concerned with collecting, and analysing data, such as the national Information, Decision Support Centre, and several information centres, located in each governorate. However, there is no integration between such agencies, and consequently, there is no coherence or consistency in the information base." (EC-3). Consequently, *"each ecotourism initiative spent more than 20% of their time, and budget on building their own information systems. It would have been better, if there was an integrated national information system, and this time and resources could have been better used in the plan making process"* (EC-12).

The Lack of Financial Resources is probably the most critical barrier in initiating, and supporting effective stakeholders' engagement in the planning process (EC-5). This is because the stakeholder engagement requires considerable time and effort, over a sustained period, to initially prepare and motivate different stakeholders to become engaged in the process from the outset, and then remain involved in the subsequent activities (EC-11). Because most of the initiatives were externally funded by international donors, and were time limited, several interviewees emphasised how the initiative's focus was on plan making, rather than delivery. *"The resources for plan implementation were trivial. International funds for the initiatives [were] oriented towards plan making. No money was left for implementation stage"* (EC-4). Furthermore, *"Nationally there is no strategy for financing the implementation, and management stages of such initiatives, which inevitably stop once the funding has ended"* (EC-24). The government probably needs to be proactively engaged in building private-public partnerships, during the planning stages, to better ensure effective implementation, together with having effective monitoring systems embedded in the process. (EC-14).

The Lack of Capacity amongst governmental staff, who were supposed to be managing the initiatives, was one of the main constraints in delivering an ecotourism planning process. For example, whilst TDA was nominally the focal actor for the ecotourism development projects, the majority of its staff lacked any basic knowledge of the issues. This lack of knowledge was exacerbated by rapid staff turnover leading to a lack of continuity of critical individuals. Following the RSSTI project, all the TDA staff, who had worked in the project, were motivated to join the private sector, with better posts, and higher salaries (PS-4). This adversely affected the outcomes, and deliverables of the projects (EC-28). Similarly, the EEAA staff, who had a particular focus on environmental protection in designated areas, did not valorise the importance of proper management of ecotourism development, for the both indigenous communities, and their environment. The TDA, and EEAA, who should have been supportive partners, were both unable, and unwilling to compromise, and instead sought to enforce often contradictory regulations, that justified their decisions (EC-1). Hence, *"the majority of conflicts between both EEAA, and TDA, were attributed to the fact that the staff of EEAA, took decisions on personal base, rather than a professional one. Several conflicts could have been resolved through negotiations, but they refused."* (EC-5).

Furthermore, a more general lack of skilled cadres in local government, is also a major problem for new urban development planning projects, including ecotourism. One interviewee commented *"The* RBOs *of EEAA, and TDA are significantly understaffed, and are already overloaded with other tasks, like monitoring the environmental impact of the existing activities"* (PS-13). Hence, *"A major obstacle, that faced both initiatives, was the basic lack of staff, who were properly trained, so that they could participate efficiently in the planning process. Building a consensus between the stakeholders, requires a basic knowledge, skills, and experience of both ecotourism development, and negotiation procedures. Both were lacking"* (EC-20).

Lack of Political Will, and Domination by Elite Stakeholders The lack of real political will, was one of the major barriers to the adoption of a stakeholder approach, to ecotourism development in Egypt. As one of the interviewees said, reflecting the view of the others, *"Most of the challenges to ecotourism development in Egypt, are a result of a lack of national willingness to develop this type of tourism. Due to high unemployment rates across the country, the state has traditionally promoted labour-intensive tourism [mass-tourism] to mitigate this problem"* (EC-1). Furthermore, *"Plenty of government bodies believe that there is no real need to engage with local people in the plan making, because they are not fully aware of future plans, and policies."* (EC-17).

Moreover, a convergence of power, and capital, has led to the dominance of the elite of Egyptian society over the tourism development, while excluding local communities, to maintain control of the resources, and maximise their profits (EC-9). Hence, one interviewee acknowledged that *"Elitist bodies are fighting ecotourism development in some places, such as the RSG, so they can establish mass-tourism projects, to maximise their short-term profits, without caring for the sustainability of the resources"* (PS-10). Consequently, according to one of the ecotourism consultants, who reflected the views of many others, *"Strong political support is required to promote effective participatory approaches during ecotourism development processes. This will, on the one hand, motivate stakeholders to become involved in open participation, and on the other hand, encourage the authorities to accept the views of others"* (EC-18).

7.4.3 Deficiencies in the Local Communities, and Other Stakeholders' Abilities to Effectively Engage in Ecotourism Processes

A Lack of Trust All the interviewees agreed that a lack of trust in the government was evident. Three themes underpin, and reinforce this mistrust.

- This is generally attributed to the negative experiences from previous projects, including a legacy of unmet promises. In this respect, one of the interviewees commented, *"How can a local community trust the government, and then engage in a new process, when experiences to date involve several failed projects, without any visible benefits, or enhancements in their quality of life?"* (LC-1). Many stakeholders, particularly local communities, are negatively disposed towards any governmental activities, because they cynically believe that the government only involves the stakeholders to endorse decisions already made by government, and is therefore only tokenistic, to complete external funding agency requirements (NG-1). For example, *"The response from many of the local communities during the planning process of RSSTI was negative, because they had previously been engaged in similar initiatives before, without any real attempts to address their priority issues"* (PS-18). The RSG had been subjected to more than 75 studies, and initiatives dealing directly, or indirectly, with ecotourism development in the twenty years up to 2008 (TDA, EEAA et al. 2008). Different international donors, often with broadly similar objectives funded many of these projects. Nevertheless, in the end, the ecotourism issues, and challenges were the same as before, without real development taking place. How could the local communities or other stakeholders, in the RSG, trust government bodies after these experiences? (EC-8);
- A lack of transparency concerning the information provided by government to the stakeholders, and the government's decision-making processes. One member of a local community claimed that, *"They did not speak with us once, for example, about the project budgets, and how they were going to be spent. What are or have been the main reasons behind the lack of effective implementation? At least they should involve us to help in addressing any of these deficiencies"* (LC-2). Another interviewee claimed, *"The government does not respect our views. They always decide what they need, because they believed that they are the only ones aware of all the circumstances relevant to the project"* (NG-3), and;
- Changing decisions based on political expediency rather than long-term coherent and sustained visions. In this regard, one interviewee remarked that, *"There are no strategic decisions, or visions adopted by the government. Any changes in the highest-ranking staff, are always followed by total change in plans. Therefore, we are not confident in any promises of the government as any agreed outcomes are likely to be changed"* (EC-8).

The Lack of Community Awareness of local potentials for ecotourism development, and lack of understanding concerning the planning process itself, are key factors, which affect the efficiency of their engagement. *"Although Egyptian ecotourism development initiatives were initiated at the beginning of the 1990s, the principles of ecotourism development are not well known by the stakeholders, particularly in the local communities"* (EC-1). Due to a lack of awareness of the potentials for ecotourism development to improve their wellbeing, together with their doubts in the benefits that their participation can bring, stakeholders were often unwilling to contribute to the development process. In this respect, one interviewee

commented, *"There is a negative attitude of stakeholders towards ecotourism, because they believe that ecotourism is a restricted tourism form, which will prevent them from continuing their existing activities and limit their job opportunities"* (EC-8). Another interviewee commented, *"Apathy from local communities towards ecotourism development is a direct result of their exclusion, for a long time, from affairs, which have affected their life. Furthermore, they do not know how they can be active, and effective participants"* (EC-7). Hence, CISS and EDG (2012) have emphasised that stakeholders need to be continuously reminded of the potential benefits of ecotourism development, and the value of their involvement during the process. Ideally, such engagement should help to achieve effective participation, and motivate new local participants' willing to support the development of a locally bespoke ecotourism industry.

Widespread Illiteracy and Low Standard of Living Amongst Local Communities Both initiatives were located in peripheral regions, whose local communities are characterised by high illiteracy rates, and limited access to basic health, and public infrastructure services. Therefore, their major priorities are focused on short-term aspirations. How they can meet their daily subsistence needs and do they have access to basic public services? This situation can be understood as one of the most significant barriers to effective ecotourism development, and stakeholders' participation (EC-6) because their priorities are on their daily needs. Moreover, inability of the local communities to express their own aspirations is often the result of the poor education, low-income levels, and low levels of ambition (EC-12). Hence, one of the interviewees observed that, *"Most of local communities have not been interested in taking part in planning activities, because they are pre-occupied with providing their basic daily needs. How could they leave their daily work without sufficient monetary compensation?"* (EC-3). Similarly, another interviewee thought that, *"Local communities might be interested in being involved in planning activities, if they felt that the process could help to solve their life challenges. So the planning team should build the local people's trust in the initiatives, by providing realistic opportunities for local communities to enhance their quality of life"* (EC-23).

7.5 Conclusions

The study presented in this chapter has tried to identify some of the main challenges that inhibit Egypt from realising its national development strategies, in particular the role of new urban development in desert regions. Our approach is to evaluate the planning processes, associated with Egyptian ecotourism development. We argue that wide ranging stakeholders' engagement and collaboration, using CPA, may be one of the key ways to address these challenges, by ensuring that development plans should properly reflect all stakeholder interests, and conflicts considered within a transparent manner. Critical flaws in what is still largely top-down process have

been identified. Our analysis indicates that engagement practices remain mostly tokenistic. Central government's role remains dominant, but internally horizontally and vertically fragmented. Accordingly, there is a crucial need for building the internal capacities of both central and local government, alongside a necessity of achieving horizontal, and vertical integration between all governmental authorities. In addition, significant efforts should focus on building trust between the government, and stakeholders, to alleviate previous negative experiences, that are commonly associated with a lack of efficient deliverables. Only by understanding the true motivations of every particular stakeholder, can their proactive engagement with the process, and its outcomes, be encouraged.

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Chapter 8
Decision Making Ideology: Correlation Analysis Between Informal Settlements Growth & Upgrading Policies in Egypt

Aya Elsisy, Ayman M. Ashour, Marwa A. Khalifa, and Laila M. Khodeir

Abstract Planning for future urban development usually pursues a comprehensive understanding for complex city systems with all its diversities. The balance of these systems depends on their interchanging dynamics when they contribute in city's generation, and stabilize its development momentum. Since formal and informal systems integrate within market dynamics; development policies should be inclusive for both. In this chapter, development management in Egypt is investigated through assessing effectiveness of decision making ideology on success of informal settlements' upgrading policies. This chapter discusses the integration level of upgrading policies within Egypt's agenda for sustainable development, and constructs a correlation analysis between growing informality and the upgrading policies implemented; tracking down deficiencies and poor practices. The findings assist in establishing a platform for evaluating the applicability of 'Good Urban Governance' within the Egyptian legislative and institutional frameworks; putting into consideration the poor institutional setup, the poor legislations' understanding, and the poor steering structure for city development management.

Keywords Decision making ideology · Informal settlements · Upgrading policies · Good urban governance · Egypt

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8.1 Introduction

In September 2000, World leaders met to discuss pressing issues related to humanity & environmental development in the Millennium Summit, held by United Nations in New York. They agreed upon the Millennium Development Goals (MDGs) concerned with reducing hunger, poverty, illness, and discrimination by promoting commitments on national leaders to provide standard quality of life for their citizens. Goal nº 7 stated the parameters that "*Ensure Environmental Sustainability*"; from which Target 11 declared, that in order to achieve that we need to "*Achieve significant improvement in the lives of at least 100 million slum dwellers by 2020*" (UN-Habitat 2003). The relation constructed between environmental sustainability, and improving the lives of slum dwellers continued to prevail in the New Urban Agenda, as well as in the Sustainable Development Goals (SDGs) declared in 2015; where it confirmed that in order to "*Make cities inclusive, safe, resilient and sustainable*", all should have access to adequate, and affordable housing with basic services by 2030; stating clearly that slum dwellers are in fact a distinctive part of the city (UN-Habitat 2015).

Since formal and informal systems integrate within market dynamics; strategic policies for sustainable development should be inclusive for both. To achieve effective sustainable development management, three aspects are important to consider. The first aspect is inclusive participatory approach for strategies' generation (M Andersson 2015a, b; Thomas 1996; UN-Habitat 2009), the second aspect is accurate estimation for problem with its potentials and challenges (GTZ 2009; UN-Habitat 2015), and the third aspect is the steering structure and coordination strategies between active stakeholders (El-Refaay 2016-November 3; GTZ 2009; Yousry 2016-November 10). These three aspects are the key elements of the decision-making process, and they need to be considered when developing urban intervention policies, that deals with informal urbanism and other urban problems.

8.2 Sustainable Development Management & Urban Intervention Policies

Sustainable development management pursues satisfying human needs and aspirations, reflected on physical, environmental and socio-economic progress. There are three main aspects that should be considered when developing an effective management plan for sustainable development. The first aspect is the strategy generation by all development partners (El-Refaay 2016-November 3). They should agree on defining the areas of development, the targets needed to be achieved, and the standard baseline to measure positive progress in city development (M Andersson 2015a, b; Thomas 1996; UN-Habitat 2009). Their involvement from the beginning will assure consistency and commitment. The second aspect is the accurate

estimation for potentials, and challenges affecting areas of development. Development of comprehensive database for all parameters, and variables is essential for core and evidence based analysis (GTZ 2009; UN-Habitat 2015). The third aspect is the coordination strategies between development partners, along with the steering structure, and institutional setup, that provides the procedural platform for development management (El-Refaay 2016-November 3; GTZ 2009; Yousry 2016-November 10).

The three aspects considered can be reflected on the strategies and policies of urban development, and informal upgrading. Egypt has been facing the challenges of slums & informal settlements since decades, and most of intervention policies practiced have failed to effectively solve informal urbanism drawbacks. The concept of informal settlements is paradoxically perceived by different governmental sectors in Egypt (Mahmoud and Elrahman 2016). Therefore, the ideology of intervention policies conducted is different and have diverse backgrounds. Accordingly, agreeing on a unified strategy among different stakeholders – that resembles the first aspect of effective development management – is quite challenging within the Egyptian context. Regarding the second aspect, a fluctuation in estimating informal settlements' data resulted from having different understanding for the same problem, different authorities dealing with it, and different methodologies for collecting data (Arandel and Batran 1997; GTZ 2009). For instance, different reports have different estimations for the actual number of informal settlers in Egypt; as it ranges between 40% and 75% of urban population, according to different sources (Tadamun 2014).

Problem underestimation or misinterpretation in Egypt comes as a direct result of lack of accurate information about informal areas. There is no integrated database for informal inhabitants' actual population numbers, their financial status, their legal rights, and the registry of land – if it exists – as well as other data that need to be covered. The problem is not always with data availability, but with its accuracy and consistency. Records could be found in different governmental sectors where different authorities have changed scope and strategy of data collection throughout time, thus providing inconsistent information about informal settlements (Arandel and Batran 1997; GTZ 2009). Transparency is another issue, where the published figures regarding informal areas' sizes or numbers were occasionally reduced than the actual figures to enhance governmental public image, so people support its strategies and promote its viability (GTZ 2009). The lack of accurate information affects the ideology of decision making and results in weak practices that don't consider important aspects or undermine its role. Therefore, data analysis becomes poor and accordingly, suggested solutions are inadequate.

The third aspect, defining coordination strategies, is correlated with the successful assigning of roles and responsibilities. Different jurisdictions should not overlap, which provides a sustainable setup for development management, and an effective channel for monitory evaluation. Since Egypt has developed through changing political and socio-economical agendas; laws and legislations are changing constantly and not always in a constitutional way (Soliman 2014; Zahran 2016-November 14). Diverse reforms and additions to the original laws and legislations made the

legal framework saturated with decrees and adjustments, which in return makes tracking, understanding or practicing these legislations a difficult process. Many stakeholders suffer from legal ignorance and don't have a full understanding for law limitations, therefore some of their decisions are built on false assumptions. Accordingly, the coordination strategies are challenged by weak procedural recognition of roles and responsibilities, and poor steering structure for development management.

On the other hand, Good Urban Governance (GUG) has been promoted as a comprehensive approach, that deals with the discussed sustainable development management aspects, and an alternative tool for decision-making. Its principles bring out the importance of equity of access to decision-making process, as well as civic engagement and community participation (UN-Habitat 2009). The capacity building for active parties, governmental or non-governmental, is essential for providing comprehensive and adequate solutions for informal urbanism drawbacks, as it is a highly complex system, that needs an effective integration between involved stakeholders. These principles require bases in the institutional framework, as well as a certain level of awareness among the different stakeholders involved, especially citizens. However, replication of first-world models on third-world countries is a practice that needs careful analysis and investigation (Roy 2005). Principles of GUG can't be easily borrowed and implemented as they are. Instead, they need to be tailored according to the receiving context with all its strengths and weaknesses.

This chapter investigates areas of sustainable urban development in respect to decision making process ideology in Egypt. The application domain is informal settlements' upgrading policies. The adopted methodology is divided into theoretical and field studies. The theoretical study reviews the academic researches, records and reports concerning the correlation between the growth of informal settlements, and the intervention policies developed by decision makers. These studies summarized the problems of decision making in Egypt, as well as the incompetent urban management practices. The chapter focuses on the operational, institutional and legalization problems, disregarding the physical and socio-economical perspectives. The analysis for this part considered the principles of GUG as measuring baseline for assessing the performance of the institutional setup. Accordingly, the theoretical study is divided into two sections.

The first section investigates the ideology behind the formation and existence of informal system in Egypt. It allocates its position in city system dynamics and investigates its defining characteristics. The second section overviews the ideology of intervention policies conducted through history to correct or prevent the informal phenomenon. It linked this ideology with the changing political and socio-economic status, that affected city's agenda for development. The field study is based on one to one interviews held by author(s) with selected stakeholders from different entities, related to urban management generally and informal upgrading specifically. The stakeholders are clustered into four groups; *Non-governmental Entities, Strategic Managers, Local Executives/Beneficiaries* and *Experts/Academic Researchers'* group, as illustrated in Fig. 8.1. Each group has a distinctive role in the process as follows:

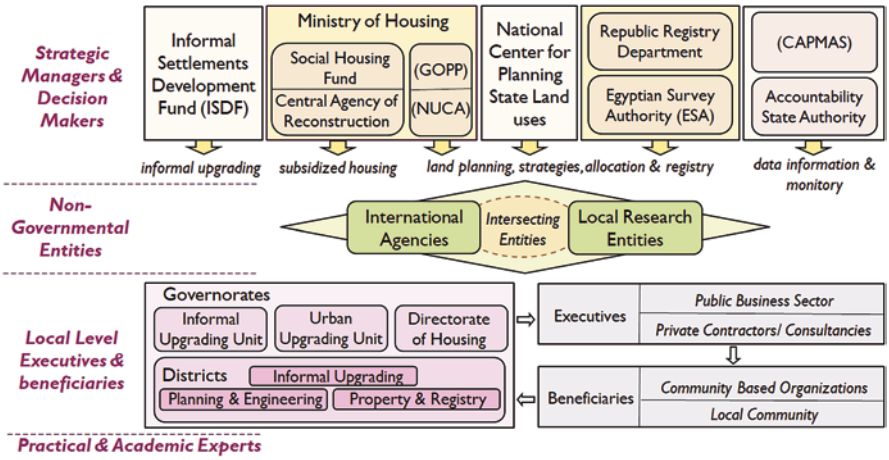

Fig. 8.1 Interviewed groups for field study (Authors)

- **Non-Governmental Entities Group:** is concerned the mediator for the interviewing process, and it includes two sub-groups. The first is the international agencies that work as consultants, introduce technical support for the governmental entities, or conduct researches on the Egyptian context. The international agencies selected are the UN-Habitat and GIZ. The second sub-group is the local consultancy and research offices, organizations, and initiatives concerned with urban studies. The selected entities are Tadamun, Madd, Cluster & Megawra. These two sub-groups are vital to be at the first stage of interviews for two reasons. First, they introduce connections with other different stakeholders, governmental, and non-governmental, on all institutional levels, from local to national. Second these stakeholders work on comparing the urban theories and studies with the actual implementation of the action plans proposed. They develop these theories using evidence-based data from pilot projects.
- **Strategic Managers Group:** are basically the policy makers, and strategy developers. They are national governmental entities, that produce strategic, and detailed planning, as well as action plans, and codes of procedures. They also manage the data collection, and analysis needed for executing a project, monitoring the process of implementation, and allocating funds and resources, depending on their role in the institutional setup. These are key stakeholders, with high power and interest, yet their coordination procedures are not clear in the literature. Also, the data they collect, the work they do, and the reports they produce are not all accessible to public. The selected entities are the Informal Settlements Development Fund (ISDF) responsible for informal upgrading policies, the Social Housing Fund under the authority of the Ministry of Housing responsible for subsidized housing policies, the General Organization for Physical Planning (GOPP), the New Urban Communities Authority (NUCA), the Egyptian Survey Authority (ESA), the Republic Registry, and the National Center for Planning

State Land Uses responsible for land policies, regulations, and planning strategies, and finally the Central Agency for Public Mobilization and Statistics (CAPMAS), together with Accountability State Authority responsible for data collection, analysis and monitory.

- **Local Executives/Beneficiaries Group:** are the executive arms for implementing action plans for upgrading policies. They work closely with laws implications, as well as beneficiaries of the upgrading projects. They test the validity of the proposed scenarios, and procedures by both evidence and result-based data, yet they don't have much of authority or resources to change these plans. The selected entities are the Urban Upgrading Units (UUU), and the Informal Upgrading Units, within the Cairo and Giza Governorates, the urban planning and engineering units in the local administrations, and the departments for defining properties, registry and building permits.
- **Experts & Academic Researchers Group:** are consultants and advisors that have both theoretical and practical experiences. They are key personals that have worked in governmental and non-governmental entities, as well as national and international agencies. This stage of interviews is important to have a comprehensive perspective over the effectiveness, and efficiency of informal upgrading policies specifically, and the ideology of decision-making process in Egypt generally. Their opinions validate the overall study results.

This chapter is a part of an ongoing research assessing GUG in promoting informal upgrading policies in Egypt. Due to time limitations, the conclusion of this chapter is driven from a sample of interview respondents from different stakeholder groups.

8.3 Informal Housing System in Egypt

Informal housing is an active sector in the Egyptian local economy. According to statistics, it has been able for decades to provide a continuous supply for affordable housing units serving limited income citizens, more than what the government with all its resources could provide (Arandel and Batran 1997; GTZ 2009). The informal population growth in Greater Cairo Region (GCR) is compared with the formal one in Fig. 8.2 based on statistical records from Central Agency for Public Mobilization & Statistics (CAPMAS) (Sims 2011). It shows that informal housing units are under higher demand than the formal ones. In spite being generated in large quantities, formal housing has failed to increase the population of its beneficiaries. This is not restricted to GCR, or to the period prior to the public revolution in 2011. The informal housing between 2011 and 2014 has provided and delivered almost 6.5 million housing units; 3 times more than what was planned by government for the same period, and 43 times what was actually provided for low income groups (Shawkat 2014).

Different parameters are tangled together to define informal urbanism, forming a complex understanding for the terminology. Yet, all agree that informality is a type of violation for the laws defined, where informal settlements are the physical urban

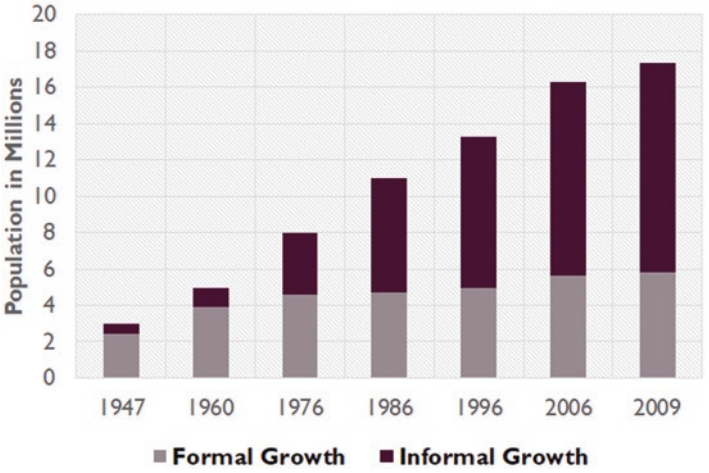

Fig. 8.2 Formal & informal population growth in Greater Cairo Region (1946–2009) (CAPMAS census)

manifestation of such violations (ElMouelhi 2014). There are different causes and incentives for violations, represented in informal development, where they have political, managerial, legislative and socio-economic backgrounds. There are also different levels of urban development violations, starting from illegal occupation of land to unregistered tenure contracts. To understand the system of informal housing in Egypt, we need to investigate the causes, and incentives for these violations, as well as the growth dynamics of informal urbanism within the context.

In Egypt, land prices have been increasing substantially since 1960s. Low income groups couldn't access the land market, and was unable to gain land ownership easily (Arandel and Batran 1997). Programs of leasing public lands, or selling it through subsidized prices are very limited in Egypt, while private land is sold for the best & highest land use price. As a result, gradual informal occupation of land has taken place by those who couldn't buy or rent a housing unit (Soliman 1996). Another issue is that land registry procedures are quite complicated, and costly for low income groups; so most of them don't go through legal procedures to sell or lease their land and they do it only following customary rules (GTZ 2009; Hassan 2011). However, the high-density sprawl on agricultural lands is the most pressing issue of informal development, as it jeopardizes Egypt's food security.

Egypt has lost 35% of its arable land since 1950 due to urban extension on the peri-urban areas, and it still losing between 10,400 and 31,100 acres each year for the same reason (GOPP 2014). This type of land informality represents almost 80% of informal settlements in Egypt (Khalifa 2011), since the profit value of land exchanging its use from agriculture to urban is about 200% (Barthes 2014). The increasing need for housing units gives developers, either formal or informal ones, an incentive to acquire more land, and develop it to benefit from the housing market; however, the informal housing market is more vibrant, because it competes unfairly

with the formal one. The informal market doesn't need to follow procedural regulations, or get official approvals; giving it a more opportunity to increase its profit, and speed up its production rate (Acioly Jr 2010).

Land regulations, and building standards are also defied by inhabitants. Informal inhabitants usually argue that they need to have more foot print, and more separated spaces within a remarkably small residence, and that they don't have the luxury to have big rooms, or openings in every room, or wide stair cases as recommended by law. Also, they tend to have multiple floor heights with a minimum clear height for each floor due to same reasons. Informal developers who control the informal land, and building markets tend to promote the same arguments to gain more profits by increasing the densities and number of units designed per plot (Morales-Schechinger 2016b). They also justify for the same reasons why informal areas tend to access infrastructure through extending water pipes or electricity wires illegally to their residences. The argument states that land laws are rigid, and it is not adapted to different contexts, and regions within Egypt, making them unrealistic and inconsistent with the customary practices of urban development.

However, in fact, laws and regulations for land, buildings and inhabitants are changing constantly, adding layers of complication on the housing provision process, and on the rights and obligations of each party involved (GTZ 2009; Hassan 2011; Sims 2011; UN-Habitat 2003). Moreover, these laws are overruled by presidential decrees, and temporary regulations along the Egyptian history. All the previous aspects illustrate that the ideology of informal market depend on finding the easiest, and the most profitable way to fulfill the market needs (Acioly Jr 2010). On the other side, the inefficient formal system contributes in making following the laws for decent citizens more challenging, and violating the laws for corrupted citizens more tempting. Accordingly, the laws and legislations that control urban development in Egypt need to be analyzed, and adjusted to provide better performance. Also, the institutional setup that applies, and enforces these laws need to be audited to enhance its practice for controlling, and managing urban development.

The following diagram, Fig. 8.3, shows the defining spectrum of different laws, managing urban development in Egypt, and how they vary in flexibility and limitations. Moreover, it shows that land informality in Egypt is the most defining violation for informal areas, followed by building regulations. Violations in buildings standards do not necessarily classify the area as informal, unless they reached a critical level of deterioration, making them unsafe. However, violating other standards (like minimum indoor spaces dimensions, minimum openings dimensions, or standards for vertical circulation) doesn't categorize the area as informal. The diagram shows that the informality definition range could be widened if these standards, as well as the tenancy regulations, were included. For instance, if all housing units, that are not officially registered are considered informal, about 91% of housing units in Egypt will be considered informal as only 9% are officially registered (Abd-ElKader 2017-April 23; Kodya 2017-April 23).

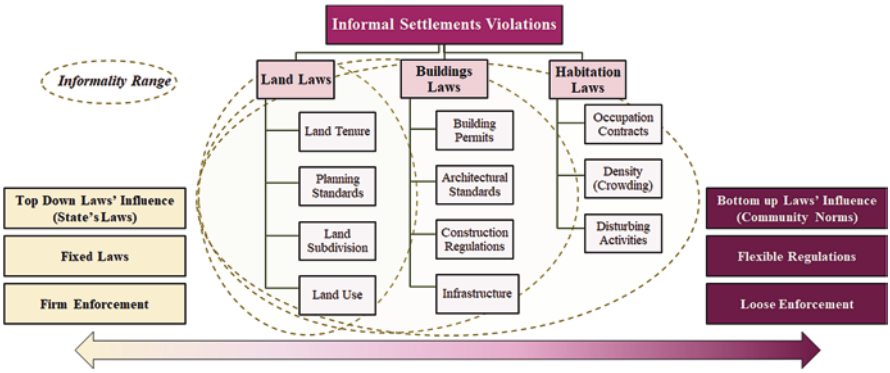

Fig. 8.3 Informal settlements' laws violation & spectrum for legislation (Authors)

8.4 Ideology of Urban Intervention Policies

The prevailing ideology for academics, researchers, and human rights advocates that cities have social responsibility towards those in need. Mostly people living in slums are subjected to poverty, illiteracy, sickness, crime, and above all life threating conditions. Young generations are considered the productive sector for city's development, while living in such conditions will affect their role in the society, and eventually affect their liability (Acioly Jr 2010). Levels of hatred crimes & terrorism can be tracked back to the feeling of injustice, and inequality between different social classes. Involving this sector into the community will increase their sense of belonging, and decrease their sense of exclusion. Urban intervention policies, pro-poor policies and urban upgrading systems fall under the reactive and proactive approaches. The proactive approach is working ahead of the problem, trying to anticipate the upcoming challenges, and deal with it before occurring. The reactive approach deals with current situation, analyzing needs, and areas of development based on the actual existence of the problem.

Consequently, the development of pro-poor policies, or strategies targeting the urban poor, and their informal agglomerations are originally classified into three categories; corrective, containment and preventive polices (UN-Habitat 2003). Corrective policies are the ones related to improving the lives of slum dwellers, and upgrading their existing environment (Khalifa 2015). Containment policies restrain the spread of the phenomenon to limit its growth, and retain sprawling. While preventive polices are concerned with introducing alternatives for citizens with higher probability of occupying informal settlements as advised by (UNDP 2005). These policies tend to track the root causes of the problem by providing inclusive and subsidized housing policies (Khalifa 2015). This chapter adds one more category based on quality management's definition for corrective actions, which is remedial policies as shown in Fig. 8.4.

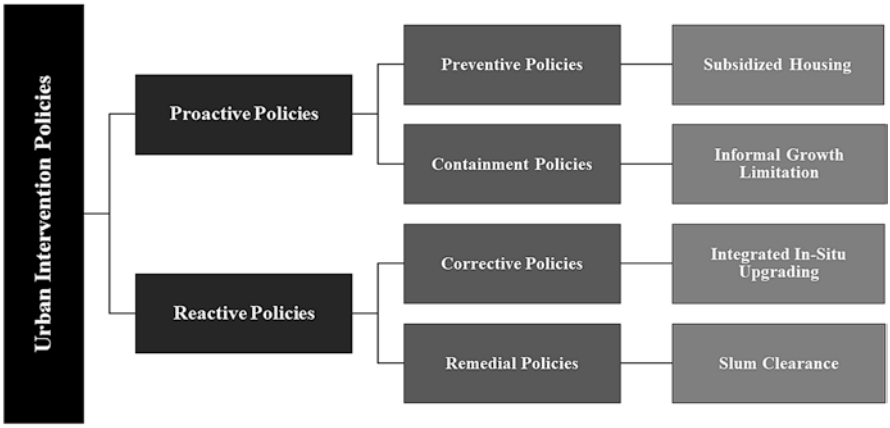

Fig. 8.4 Urban intervention policies categories. (Authors based on Dale 2015; Khalifa 2015; Shawkat 2014)

Remedial action terminology is explained in quality management's definition for procedural actions in monitory, and evaluation of both project, and process management (Cleland and Ireland 2006; Dale 2015; Eurolab 2017). Accordingly, remedial policies tend to only deal with current problems, and fix its drawbacks without introducing any actions to sustain the corrected situation, or restrain problems from remerging. Remedial policies are the ones, which target fixing spotted problems, that can't be overlooked. The followed strategy is the rapid response, targeting fast tangible results. Usually not much analysis or deep core investigation for causes of the problems are proceeded, before adopting these policies. They act more as an instant action plans, that target hazardous situations, or faster outcomes for political agendas, or economic revenues (Dale 2015). Approaches like slum clearance/forced eviction, eradication, and rapid reallocation can fall under this category.

Historically, intervention policies started with this category, represented in forced evictions, that denied the right of informal settlers to exist where they are; however, this only relocated informality in other locations, but never restrained it (UN-Habitat 2003). The shift afterwards went to resettling informal communities in other locations planned, and constructed by governments. This caused huge financial burden on governments, as well as negative consequences resulting from breaking the existing community, and usually resettling it away from job opportunities and adequate services. Yet many countries are still following these policies in reallocating settlements placed in danger locations. Eventually enabling, and empowering the community to help themselves was the next paradigm adopted by policy makers and academics (UN-Habitat 2003).

The enabling approach faced multiple challenges in providing the land, supporting the citizens, managing the enabling process, and achieving fast results that governments and political parties pressured to have. That moved policies later to physical upgrading of informal areas, through introducing infrastructure and services. Afterwards, paradigms have shifted to a more comprehensive approach of upgrading, that involved socio-economic aspects, until it reached an integrative

approach, that tangled all the city policies and resources, including upgrading ones, to a city system that functions all together, through governance principles achieving development for the whole city (Khalifa 2015).

In spite the developed ideology for handling informal urbanism, not all stakeholders involved in the process are convinced with the recent approaches, and favor more the old ones. They question the validity of upgrading policies from different perspectives. They argue that upgrading, and titling of slums for example, could be an incentive for current, and possible future informal occupation. They also state that countries following these approaches are approving violations of regulations done by citizens, and soon enough these countries will not be able to control urban development (Morales-Schechinger 2016a). Moreover, upgrading opponents argue that upgrading approaches aren't necessarily supporting the poor. The main beneficiaries of providing services, and titles for informal areas are the informal speculators and developers who are waiting to force out the poor in exchange for higher rent or higher selling values from the middle class, or even the rich, after regularizing these areas (Morales-Schechinger 2016a, b).

On the other hand, the counter arguments state that in the integrated city system strategy, the governmental housing policy for lower income groups is the complement strategy for restraining the growth of informal housing market. Thus, the failure to provide adequate or/and affordable housing through this policy is correlated with the increase of informal settlements; the citizens' spontaneous proactive action for fulfilling their basic need for shelter (Acioly 2010; GTZ 2009; UN-Habitat 2003). The involvement of countries in improving the lives of informal dwellers is a compensation of its failure to provide access to adequate and affordable housing. Also, working with the community, encouraging their participation in developing the country, and improving their lives is an indicator for sustainable development systems (UN-Habitat 2003, 2015; UNDP 2005).

8.4.1 Correlation Analysis Between Informal Growth & Urban Intervention Policies in Egypt

Egypt has experienced tremendous changes, politically and socio-economically, which changed its national strategies and agendas throughout time. These changes are classified to definite eras by different literature (Hassan 2011; Khalifa 2015; Tadamun 2014). The reflection of political changes and socio-economic aspects is important to evaluate the strategies conducted within the comprehensive understanding of the country's development agenda at the time. The following diagram (see Fig. 8.5) constructs a relation between the different strategies implemented, since 1952 revolution until present, and the existing political status along with remarkable incidents, that shifted the paradigm of these strategies, and changed the scope of intervention.

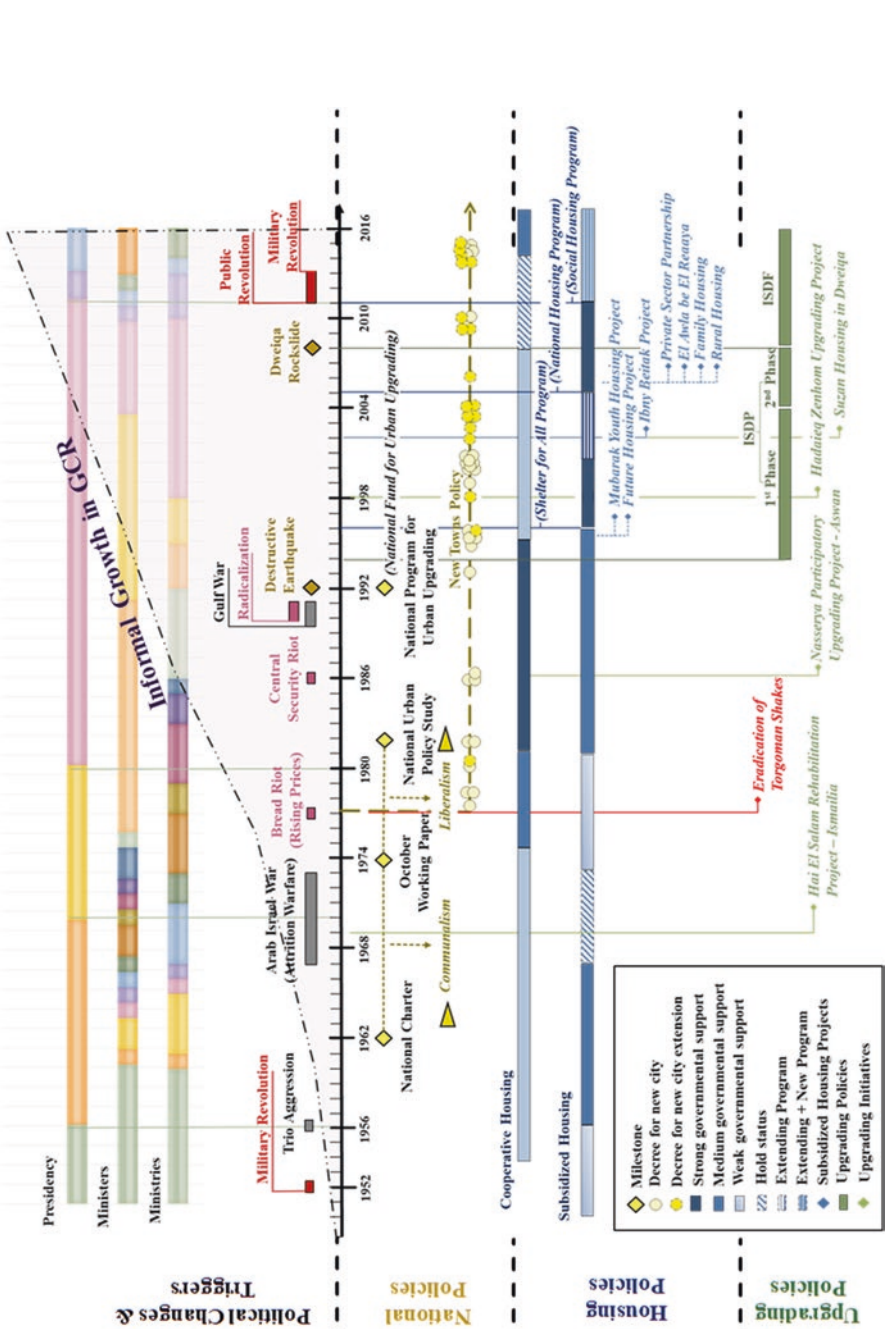

Fig. 8.5 Correlation between informal growth & intervention policies in Egypt. (Authors based on CHI 2011; Hassan 2011; Khalifa 2015; UN-Habitat 2003; Wahdan 2013)

In the communalism era (from 1956 to 1974), the ideology for the state was to be totally responsible for housing provision for lower income groups. The State also controlled the rent rates through rent control laws, the building industry through nationalization, and the land supply for developing these projects (Sims 2011; Wahdan 2013). This was a result to the sensitive political status after the revolution in 1952. This trend of centralization and controlling all assets by the state was not sustainable, as it deprived the housing market from private sector participation (Hassan 2011), and increased immigration from rural areas towards industrial zones (Arandel and Batran 1997; Soliman 1996). When the Arab-Israel War started in 1967, the housing provision system collapsed as all the financial resources was allocated to the military. During this period, the control over the evolution of informal areas was weak. Areas like Mansheyt Nasser, and Ezbet El Hagana grew substantially to provide housing for lower income groups (GTZ 2009).

After the war in 1973, the state shifted its strategy towards liberalism, and started to promote its withdrawal from the housing market, leaving the role for cooperatives and private sector (Alpopi and Manole 2013; Hassan 2011). It supported the cooperatives through loans, and facilitation in land acquisition. Further, it supported the private sector through subsidizing the building industry (Hassan 2011). The New Urban Communities Authority (NUCA) was established by presidential decree in 1979, to attract the urban extensions away from agricultural land towards the desert. However, building in the desert cost the state more than was planned in extending infrastructure, and roads to connect these areas (Sims 2011, 2015). This financial burden was added to the housing prices, excluding the urban poor from these new communities.

Therefore, the supply from formal housing units increased, without a correspondent balance in demand, resulting in increasing the vacancy rate (Sims 2011). The rent control law was still a problem for rental market, and the obligation of having at least 67% rental units in each privately developed building, discouraged owners to rent their units waiting for a legislation change (Hassan 2011). So, urban poor accommodated informal areas, as it had more affordable units, with more space flexibility, and more alternatives for provision system. The Open- Door policy was not also sustainable, as it injected large sums of money in the market, without proper steering for the development management. Therefore, the majority of financial influx benefited the informal market, as shown in Fig. 8.5, where the informal growth rate in GCR reached one of its highest values compared to other periods.

In 1981, President Mubarak called for the National Urban Policy Study, that was conducted by USAID, along with some local consultants (Dorman 2013; Sims 2015; USAID 1981). This study intended to investigate the potentials, opportunities and challenges of urban development, as well as evaluating the strategies implemented. Yet the recommendations for this study hasn't been taken into consideration in full (Dorman 2013). On the positive side, the support for the cooperatives increased, the provision for housing loans was facilitated with the establishment of the Housing & Development Bank, and the rent control law was adjusted to allow free market, but with fixed values for rents (Hassan 2011). Yet the scheme for new towns continued, more cities and residential units were constructed, with no

economic base or adequate access to services. After radicalization incidents, and buildings collapse in 1992 Earthquake, the State started the systematic approaches for intervention policies.

On the upgrading level, the National Urban Upgrading Fund was established in 1994. It worked on two phases' program, the Informal Settlements' Upgrading Program, and the Informal Settlements' Belting Program, under the authority of GOPP. The first phase was concerned with providing infrastructure for deprived areas, while the second developed detailed physical plans for areas of possible extensions around informal settlements, to restrain its horizontal growth (Khalifa 2015). After Dewiqa incident in 2008, the mapping effort was once more redone by ISDF, to map out the informal areas, and reclassify it differently than what was done by GOPP, having different priorities and strategies. The GOPP fund program stopped, and unsafe informal areas were targeted and classified by ISDF instead of deteriorated ones in general, giving priority to life threating conditions.

On the affordable housing level, the State started consecutive systematized programs, correlated with the last three electoral periods of President Mubrak; These programs are "Shelter for All" Program in 1999, "Mubark National Housing" Project in 2005, and finally the "Social Housing Program" declared in 2011, before his stepping down after the public revolution. These schemes provided alternatives for provision and loaning systems, along with specified selection criteria for each project, such as newlyweds, family housing, widows, and elders. Also it specified schemes for rural, and incremental housing (site & services) (Khalifa 2015; Sims 2015); however, these programs failed to accommodate the target groups, as applying conditions, targeted locations, and delivery systems excluded them (Shawkat 2014).

8.4.2 Reflection on Sustainable Urban Development Aspects

As illustrated in Fig. 8.5, all efforts done by the Egyptian government couldn't reduce the substantial growth of informal urbanism. Interviews with relevant stakeholders have been carried out, with respect to the evaluation of the intervention policies performed in Egypt, including three main aspects of sustainable development (explained in Sect. 8.2): strategy generation, accurate problem estimation, and cooperation strategy, which can be explained as follows:

- **Strategy Generation Institutional Setup:** Defining strategies, and national agreement on it lacked authenticity, and was based on centralized methodology for decision making. Defining goals didn't involve valuable stakeholders in its generation, and was unrealistic concerning city resources, and its sustainable development (Ibrahim 2016-December 6). The scope of the Ministry of Housing had changed constantly, as well as the minsters responsible, with no clear justification within short periods in the earlier times, as shown in Fig. 8.5, affecting the validity of decision making. The change of the ISDF executive chairman from Minister of Local development, to Minister of Informal Settlements, and finally

to Minister of Housing, affected the projects implemented, and slightly altered the working methodology with each change within only 8 years (Gohar 2016-December 8). These consecutive changes show an inconsistent trend for decision-making process in Egypt.

- **Accurate Estimation for Potential & Challenges:** Having accurate estimation for development areas have faced challenges, either due to lack of resources, lack of transparency or/and lack of coordination between different resources. There is general trend currently from officials, academics, and consultancies to map informal settlements, and classify more its characteristics, along with mapping the territory of unplanned areas, and deprived districts (Ibrahim 2016-December 6); however, these studies and researches are not aligned. The international agencies and researchers share their efforts through development groups meetings (El-Refaay 2016-November 3; Yousry 2016-November 10). Governmental entities don't have a systematic cooperation strategy, or protocol for sharing information till now.
- **Generating Cooperation Strategies and Steering Structure:** Alignment of governmental projects, strategies and plans is quite a difficult process, within the complicated legislation system, that most of its practitioners are not totally aware with its limitations and exemptions. In spite being a very centralized system of governing, the Ministries, governmental agencies, and funding agencies seem to be working under very different agendas, and there is weak synergy between their plans. For instance, the strategic, and detailed development plans produced by GOPP don't align with the spatial financial plans of Ministry of Planning, or that of infrastructure networks, or even that of land jurisdictions produced by the National Center for Planning State Land Use (Nada 2016-November 17; Zahran 2016-November 14). All this weaken the ability of the institutional setup to host a national wide city policy. It can manage successful small-scale projects, but it is unable to scale them up to adopt national policies.

8.5 Conclusion

To develop a sustainable strategy for intervention policy towards informal settlements, different variables should be taken into consideration in designing the appropriate and affordable formal housing system, that could substitute the informal one. The following tables; Tables 8.1, and 8.2 summarize these variables and attributes, based on literature and performed interviews (El-Ibrashy 2016-December 6; El-Refaay 2016-November 3; Gohar 2016-December 8; Ibrahim 2016-December 6; Nada 2016-November 17; Shaath 2016-December 8; Yousry 2016-November 10; Zahran 2016-November 14). This represents an initial derivation of variables, that need further validation through ongoing research, interviewing involved stakeholders, and analyzing the legislation framework with its gaps, and contradictions.

The first category of variables, illustrated in Table 8.1, shows the indicators measuring the success of housing provision system. These variables are concluded from

Table 8.1 Defining variables for housing provision system

	Measuring variable	Attributes				
Housing provision process	Spaces alternative	Area			No of rooms	
	Payment alternative	Rent	Possessive rent		Installments	Loan
	Provision requirements	Age	Gender	Social status	Occupation	Income level
	Delivery time lag	Announced time of delivery			Actual time of delivery	
Adequate housing	Access to transportation	Good		Poor	None	
	Access to infrastructure	Good		Poor	None	
	Access to services	Average person/area from each essential service				
	Access to jobs	Average distance from current job occupation				
	Crowd factor	Area/person – person/room				
Affordable housing	Percentage from household income (20:30%)	Percentage of increase				
	Percentage of failing to pay	% of evicted households			% of payment extension	
Security of tenure	Probability of eviction	High		Medium	Low	
	Reliability of property documents	High		Medium	Low	

Source: Authors based on (10Touba 2016; Hassan 2011; Shawkat 2014; UN-Habitat 2003)

the definition of adequate housing, and appropriate delivery defined by the UN-Habitat (UN-Habitat 2003). Also these variables summed up the indicators published by (10Touba 2016) for built environment deprivations (BEDI), the factors used by (Hassan 2011) to evaluate housing policies in Egypt, and the parameters used for comparing Egyptian public housing projects introduced by (Shawkat 2014). The second category of variables illustrated in Table 8.2, discuss the sustainability of the housing provision system, depending on "Good Urban Governance" indicators, and its operationalization introduced in the global campaign for urban governance paper (UN-Habitat 2002, 2009). Also, it concluded its attributes from intervention policies failure justification introduced in (10Touba 2016; GTZ 2009; Hassan 2011; Shawkat 2014).

In conclusion, managing sustainable urban development in complex city systems needs a comprehensive study for all fields contributing in forming these systems. Overlooking informal development while planning for new cities will only result in inadequate policies, and strategies that will fail to satisfy the actual needs, and waste financial resources. This chapter concluded three main issues with respect to sustainable development, and effective decision-making ideology in Egypt. These issues are the weak institutional setup, the lack of an agreed strategic vision among stakeholders, and the lack of appropriate steering structure, and appropriate problem identification. That resulted in intervention policies that suffered from problem underestimation, symptoms treatment, and project syndrome.

Table 8.2 Defining variables for housing provision sustainability

	Measuring variable	Attributes				
Accountability	Delivery failure penalty	Exist		Compensation		None
	Dispute resolution	Known/easy		Known/complex		Unknown/ none
	Monitory evaluation	Good		Poor		None
Transparency	Selection criteria	Known/stable		Known/changing		Unknown
	Actual date of delivery	Known/accurate		Known/inaccurate		Unknown
	Public hearing for complaints	Exist/effective		Exist/ineffective		None
	Accurate published reports	Exist/accurate		Exist/inaccurate		None
Participation & civic engagement	Defining needs	Public hearing	Focus groups	Surveys		None
	Assigning responsibilities	Consultation	Placation	Partnership	Delegated power	Citizen control
	Community monitory	Exist/effective		Exist/ineffective		None

Source: Authors based on (10Touba 2016; GTZ 2009; Hassan 2011; Shawkat 2014; UN-Habitat 2002, 2009)

Problem underestimation is a result of asymmetrical information, due to lack of information (data collection problems), lack of coordination (data integration problems) or/and lack of transparency (the right of data acquisition). Symptoms treatment is a result of weak analysis, and incomprehensive upgrading approaches, that don't focus on all aspects involved. The analysis strategy is generic, and isn't depending on evidence core based detailed analysis. That is a direct result for not having a clear approved strategy, that involve all aspects of development, yet it seeks fast results, and checklists' assessment. Project Syndrome is a result of poor coordination strategies between active stakeholders, and weak steering structure, that makes scaling up successful upgrading projects into upgrading policies more challenging. That is due to inconsistent organizational, setup that have crossing jurisdictions in controlling different city resources, needed for adopting successful comprehensive upgrading policy.

Tracking down the gaps in the ideology of decision making in Egypt will provide a base platform for receiving the principles of "Good Urban Governance", and evaluating its applicability within the Egyptian context on upgrading strategies. Tailoring these principles according to our needs, potentials and challenges is essential for its success. This platform is meant to support the validity of decision-making in Egypt regarding upgrading strategies, as well as the holistic sustainable urban development for our existing and new cities.

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Chapter 9
So It's Always a Chance: Community-Led Solutions to New Urban Expansion

Ahmed M. Soliman

Abstract President Abd Al-Fatah El Sisi declared that more than 50% of urban, and rural agglomerations in Egypt are informal (Youm 7, 2016). In addition, arbitrary urbanization, and rapid population growth of urban, and rural agglomerations have increased the demand for housing, especially for low income groups. It is estimated that Egypt's population has rose over the past decade from 72.8 million people in 2006, to 94 million people in 2017, an increase of 21.2 million people (CAPMAS, General statistics for population and housing: population census. Central Agency for Public Mobilization and Statistics, Cairo, 2017). This population inhabited around 6% of Egyptian territory. If this trend is continued, Egypt's population will reach more than 183 million by the year 2050, by which we will need at least one-fold of the current urban, and rural agglomerations to be added for meeting future housing demand, and various social amenities. Also, if the current housing policy, and planning trends are to be continued, it is expected that more than 50% of the future urban, and rural agglomeration will be spreading informally on adjacent agricultural land on the periphery of urban areas. This brief background leads to question the future of Egyptian urbanism, and how to tackle the spreading of urban informality. It is the time to understand how the urban poor formulated urban informality in which they secured their land tenure. If the urban patterns of low-income groups are to be remodeled, and if the informal process of cooperation among the urban poor is to be formalized, it would enhance the Egyptian built environment, and meet the official planning processes.

This chapter is an attempt to shed light on hidden potential actions of urban informality, as a cooperation/participation process among the urban poor, and to understand how they formulated the informal urban expansions that met their requirements, and their needs. Potential actions of the urban poor, and their relative impact on the housing production are defined as the priorities of the participants (government, professionals, and the poor) and their ability, liability and willingness towards the production of housing being supplied. Three important themes are

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explored, those of preferred, effective, and actual actions. This research applies a deductive methodology to test theoretical concepts, and patterns by using new empirical data. The potential actions, among the urban poor, are examined in relation to land plots with security of tenure, and its relationship to the housing process as a use and/or an exchange value, and the way it had been created, developed, and invested.

This chapter utilizes the above arguments through two sources; first; the examination of reports of the General Strategies Urban Plan's (GSUPs) for selected Egyptian cities. The second is information based on practical studies, previous researches, participant observation, and the exploration and understanding of complex issues of urban informality in which the author was involved. The main arguments are driven by investigating the informal new urban expansions in Benha city to explore the three themes of potential action, and to deduce the main lessons learnt from such development (Soliman 2017). The aim is to reach a practical, and applicable housing policy, and to remodel the current planning ideas to serve the immediate and future population needs for housing and various social amenities in a cooperative way in order to alleviate poverty.

The findings of the study would change concepts of the current housing policy for the advantage of the urban poor. They are diverse, and multifaceted based on the history of potential actions, and the development patterns of the informal urban expansions. Throughout Egyptian cities, informal security of land tenure has been the preferred methods for safeguarding the interests of disadvantages groups. A form of legalization among users based on collective land tenure is highlighted.

Keywords Urban informality · Informal urban expansions · Potential actions · The urban poor · Land tenure

9.1 The Basis of Legitimacy of the Right of Land Ownership

Based on studies of informal housing areas in Egypt (Kipper and Fischer 2009; Sims 2010; Soliman 2004, 2017; Eric 2012), land allocated for residential use represents the most important and immediate commodity. Without land there can be no building or even shelter for people. The land located in cities is not only dedicated for residential uses, but there are several different uses and activities. Until recently, most third world countries superficially regarded land dedicated for housing without considering its impact on the economic, social, and political change (Pickvance 1988; Sait and Lim 2006). Leilani Farha (2017) stated that housing "is now a means to secure and accumulate wealth rather than a place to live in, to raise a family and thrive within a community. Housing lost its value as a universal human right.

It is argued that land prices have increased much faster than the prices of other consumer goods (Durand-Lasserve 1996), but land value and housing development represent more than just a sector of economy or an 'aspect' of urban development in

Middle Eastern and North African cities (Pickvance 1988). The real estate market is very complicated in terms of land ownership (Sait and Lim 2006) and land tenure (McAuslan 1985, 2002; Payne 2002; Payne 1999; Payne et al. 2009; Roy 2011), depending on the different laws and various land ownership (McAuslan 2002) within countries. Private and public ownership exist a free market economy, public property exists in a socialist economy, private, religious, and public property existed in countries of religious establishment such as some Arab countries (Sait and Lim 2006). The struggle over residential land in Third World cities leads to increasing the gap between the different social strata (McAuslan 2002). The real estate market is linked to socioeconomic and political transformations (Soliman 2017) by which land prices increase to increase profits of land dealers irrespective of its negative impact on society (Payne 2002). The penetration of the private sector on illegally divided agricultural land adjacent to cities, and changing it into non-agricultural use, leads to price increase, squandering of agricultural wealth, and distortion of the urban environment (Soliman 2017; Sims 2010; AlSayyad and Roy 2004).

Turner (1972, 1976) concedes that the real estate market has become a theory and practice of low-income housing for urban development, in the hands of the World Bank and national governments (Pugh 1997). Since 1980s and 1990s, objectives policies have changed, requiring different proposes in different contexts (Pugh 1997; Fernandes and Varley 1998; Soliman 2004), different ideologies (Burgess 1985; De Soto 1989, 2000), and different communication technologies (Castells 1997; Alexander 2005). Turner said that *housing is not what it is*, *but what it does in people's lives*, it could be argued housing is not what it is rather what it has done to the urban fabric of a given context (Soliman 2017).

Contrary to the views of John Turner (1972, 1976); it could be said that in site selection for residential areas in informal zones, the economic factors come first, then, the insurance of land possession take second place. On the other hand, without financial resources land possession is impossible even if the land is sold at the lowest price.

Currently, the ownership of land on Egypt is divided to private and public property. The latter as State Assembly is divided into private ownership and state ownership. While ownership of the endowment is what is known territory of *Awqaf. Awqaf* land divided into two types, *Waqaf Khairy,* and *Waqaf Ahaly*, the latter can be transferred into freehold ownership, while the former is owed by charity projects. The public land ownership belonging to the state-owned and are subject to the National Center for the use of state land directly to the Prime Minister of the Council of Ministers (founded Presidential Decree No. 154 of 2001). Public land in Egypt is characterized by its fragmentation as a result of the cumulative impact of legislations that extended over six decades. Approximately 45 Laws and Decrees directly or indirectly impact land ownership. It is worth mentioning that there are many gaps related to the use of State land; represented in the multiplicity and diversity of legislation and laws that manage, exploit, and dispose of control of public land.

There are three trends related to right to property: the capitalist trend that gives the landlord all the freedom in his/her property as an absolute right. The second is the *socialist trend* which limits the right of ownership to the State as the sole owner

of all means of production. The third is a mixed trend that is clearly shown in the definition of the right of the ownership in the current Egyptian Civil Law, as it indicates that "the owner of the thing has, in the limits of the law, the *right to use, exploit and dispose* of his own property".

The nature of ownership's right is a right in kind which allows its owner all the authorities in a place. It is characterized by three aspects and determined with three rights, namely, first: collective ownership which gives its owner all the rights to the scope of the right things. The main principle in possession is the proclamation and not to the prohibition or adhere to. Second, ownership is right awareness and confined to the owner of which others are not allowed to share in the ownership or interfere in the affairs of the property's unless it is determined by the law or under the certain agreement. A third is a permanent ownership, as long as it remains an enduring theme, do not go away, but the demise of the theme or mortality does not change by changing a person on the fact that the owner is always right effect.

The right to property authorizes the owner three powers which are the use, exploitation, and dispose of land. Both the use and exploitation are approaching from each other. Since use and exploitation are applied to commodities and the difference between them is concentrated in the beneficiary of money. If the property owner called the user, and if not property owner and paid a certain amount of money called exploitative money. The consequences of this distinction that property owner has full authority over his property, and if not the owner will comply with the preservation of land on its condition as was received. Hence, there is a difference between ownership and tenure, the property owner could own the land and use it whatever he wishes, while a user is the right to benefit from it, and here it is called a possession of a piece of land. It is argued that land tenure involves a complex set of formal and informal land rights, ranging from various rights of use to conditional or full rights to dispose of land as it calls a "*continuum of land rights*" (UN-Habitat 2015).

Not every owner of a piece of land is a hand holder and not every hand holder is a property owner, but to combine ownership and tenure has to have the right of ownership and tenure by depending on three rights of awareness, collective, and permanent, and the three powers of exploitation, use and disposition. The Civil Law determines various ways in articles no. 870 and 984 to gain full ownership of property as follows:

- First, comes the seizure of property of no man land: if the land is not planted nor built on, and was planted or built by a citizen (exploit) who continued to use this property without a long break (use), is considered the first reason to gain possession and ownership of the land which results in many of the difficulties in the realm of protection and disposition;
- Second, inheritance is one of the main methods for the acquisition of ownership of property, and the least problematic in terms of proof, which accrues to the heirs the remains of what the deceased left after the implementation of the obligations of the estate;

- Third, commandment with inheritance; which means legal disposition issued by a person for the benefit of a non-owner at no charge, and appends a disposition, concluded by the owner of one of the heirs to retain possession of the land disposed, and the right to benefit over the life of the recommended;
- Fourth, adhesion is one of the reasons to gain a complete ownership where possessions are not moveable. It is associated with two bases regarding the property that is not movable, the first linked to the fact that the landowner owns what is within and above the land, and the second is associated with the possibility of disarming the property from the position without causing damage;
- Fifth, a contract is the official document to gain ownership, and considered mostly problematic in the domain of real estate, where the law prohibits transfer of real estate ownership and all rights related to real estate, except through one way which is to register the proclamation per the prevailing law and its decrees of the Property Declaration System;
- Sixth, pre-emption as a cause for special gain of real estate ownership aims to ensure the unification of the possession powers in the hands of one person, and seek to overcome the many problems arising from the implementation of the neighboring adhesion, and;
- Seventh and finally, tenure is one of the most important means of gaining ownership by low-income and poor people, where the law stipulates that a person may gain ownership and long tenure of the property (15 years) or short (5 years), but this applies to private property, not public property.

The next section addresses the potential action of the three cooperatives pillars within informal urban expansion in Benha city and studies the activation of these potentials in a formal way to legalize land ownership, ensure residents' rights, and maximize the role of real estate for the prosperity of the country's economy.

9.2 Research Setting

The city of Benha is located approximately 45 km north of Egypt's capital, Cairo. The city has expanded, like all Egyptian cities, to all directions with urban sprawl surrounding both edges of the river Nile and on surrounding agriculture lands. In 2007, the GSUP set forth a vision for Benha for the next 20 years and therefore projected population growth and needs until 2027. It created a new urban boundary with an area of 944 hectare of the city, for a projected density of 54 inha./hectare. The city's population is projected to a total population of 21, 200 by 2027. In 2011, the GSUP was officially approved by the responsible minister according to the Building and Planning Law (BPL)119 of 2008, making a way for the detailed planning process for the new urban expansion areas. As a part of the proposed urban land expansion, El Rezqa area (see Fig. 9.1) was chosen as a demonstration pilot project to investigate new informal urban expansion on the ground (for further details see Soliman 2017).

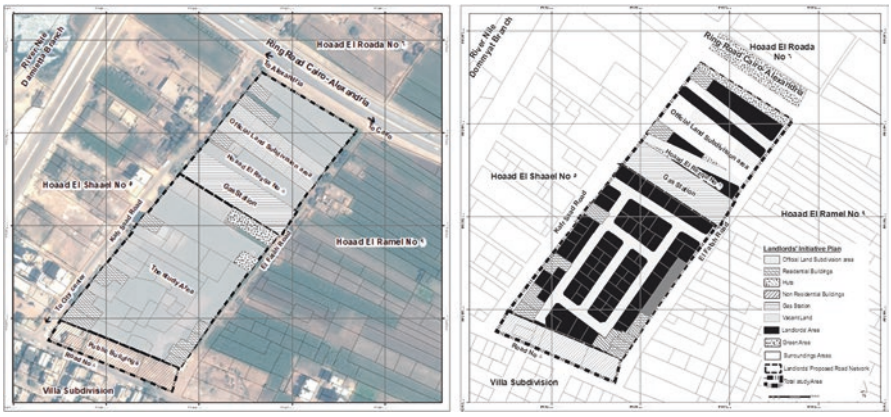

Fig. 9.1 Left, the current land uses of El Rezqa area, Right, the proposed urban expansion of El Rezqa area (Soliman 2017)

Through case study method, using Geographic Information System (GIS) tools, the author understands the spatial conditions through participant observation, and the exploration and understanding of complex issues are raised. Case study method helps to explain both the process and the outcome of informal urban expansion through complete observation, evaluation, comparison, and analysis of the case under investigation. The illegal urban expansion followed the irrigation pattern of the agricultural land subdivision and separated into small liner narrow strips. These strips with an average area varied between 0.041 and 0.52 hectare perpendicular to a small canal, which is currently formed Kafr Saad Street.

9.3 The Potential Action of the Three Cooperatives Pillars

There are various attempts to house low-income groups. Some attempts are built by government agencies or international bodies, in the form of upgrading policy, sites and services, or a combination of both, which are called “formal methods”. Other attempts are made by the low income community to achieve adequate and appropriate physical and social needs (for example see Davidson and Payne 1983; Soliman 1996).

In recent development of informal urban expansion in Egypt, a group of individuals and official bodies are together responsible for the scale and nature of the final urban product; and on the availability and legalization of land for low-income groups, this entity could be called the “three-cooperative pillars” or “the three cooperative magnets”. It consists of three main groups; the first pillar is the government or official bodies responsible for housing policy, the second pillar is the professionals, whether architects or planners or social workers, and the third is the users, the beneficiaries, or the residents of the informal areas. This cooperative

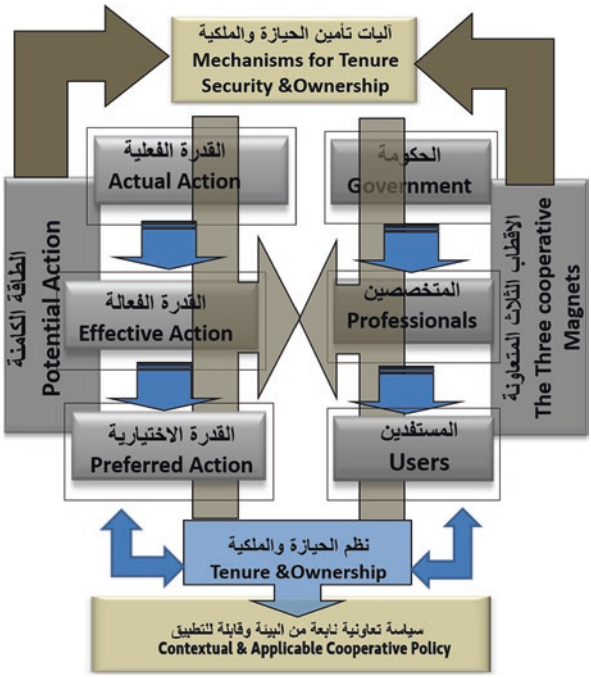

Fig. 9.2 The potential action of the three cooperatives pillars (Author)

group, formally or informally, controls the balance and mechanisms of the legalization of land tenure through several mechanisms, subsequently, controls the new uran expansion in the periphery of the Egyptian cities.

First, the government is playing a key role in the formation of the informal urban expansion in the three types, formal, informal and semi-informal. The role of government also affects the land acquisition mechanisms through the real estate market, and regular methods upgrading informal residential areas, or by applying sites and services policies, or directing towards new urban expansions. Government agencies are trying to give *de facto* tenure recognition to those areas in several different ways, such as the delivery of some of the infrastructure services (water and electricity), the collection of symbolic fees to stay in their areas, residents' participation in electoral processes, etc. This process leads to increased densification of those areas, without imparting legal legitimacy of land ownership and thus codifies ostensibly intervened in the transition to formal housing areas without securing land tenure (see Fig. 9.2).

The second pillar is the professionals, architects, planners, economists, social workers, or a team of different specializations who lead the housing policy in the formal and / or informal realms. The failure or success of the implementation of a housing policy is based on the negative or positive contribution of professionals. Specialists, directly or indirectly contributed to the spread of informal housing areas, by failing to provide serious solutions to legalize land ownership, ignoring the marginal economic sector, proposing temporary non holistic solutions that do not affect the overall development of informal areas, all of which eventually negatively

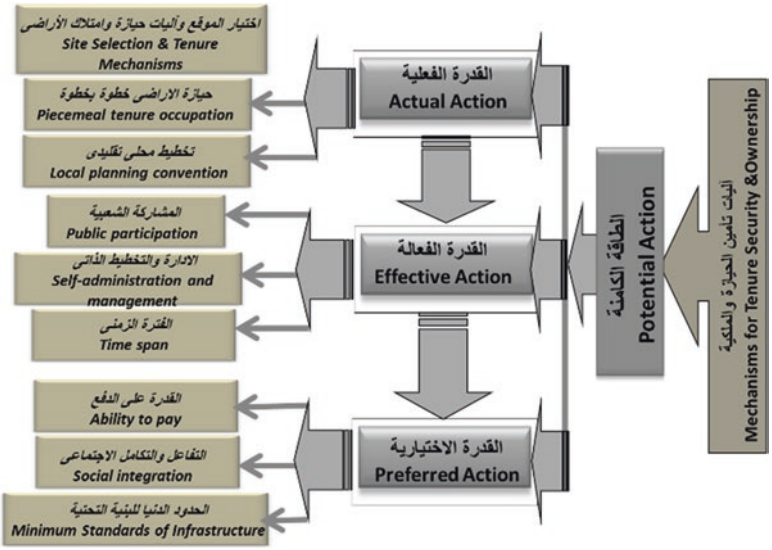

Fig. 9.3 Formulation of urban informality by the three cooperative pillars

impacts the social entity of the residents. The third pillar are the users; the residents of informal areas; who used all innovative available mechanisms to provide the land that fulfills their social needs and suits their economic abilities. Citizens in search for a home, play an important role in the genesis of planning informal urban expansion for housing.

The three cooperative pillars (governments, professionnels, and users), work together or separately, in the formation and configuration of informal residential areas, and may also have contributed, directly or indirectly, in upgrading and improving those areas. Therefore, the role of each partner must be clarified and defined among the various variables that affect the housing system and the mechanisms for legalizing land ownership. The objective is to reach a cooperative policy suitable for the different possibilities, capabilities, and requirements of all stakeholder in the process of legalization of landownership and the possession of residence.

The priorities of the three cooperative pillars in potential action for each stakeholder to secure land tenure depend on three basic criteria: willingness, liability, and responsibility, which could lead to three actions, the actual action, effective action, and preferred action. The next section deals with the analysis of the three main directions by examining the role of each of the three cooperative pillars in legalizing the possession of land plots in El Rezqa area as a new informal urban expansion (Soliman 2017). This might enable the urban poor and decision makers to carry out an appropriate role définition in improving the urban environment or reaching cooperative mechanisms to legalize land ownership in informal areas (see Fig. 9.3).

9.3.1 Actual Action

The actual action is the means and methods that can be provided by the three collaborating pillars in the land market to achieve a state of balance between supply and demand for land, and ensure the availability of suitable land for various classes in the community. Those means could be summarized in three main aspects; site selection and land acquisition, piecemeal tenure occupation, and informal local planning convention (see Fig. 9.2).

9.3.1.1 Site Selection and Land Acquisition

The availability of land means, on the one hand, to overcome the obstacles that impede the urban poor to shelter, and on the other hand it allows a lower cost of investment in the long term to secure the future of the family, which cannot be found with such speed and with such cost if families try alone to create these opportunities.

Sites on the periphery of Benha city, as well as other Egyptian cities, are being chosen due to residents' social needs and their economic potential. People who search for new housing plots are guided through social cohesion to residential sites, where the most important priorities in site selection is the proximity to workplace, which is considered a traditional behavioral pattern in low-income communities. Before the final settlement in the urban periphery, settlers pass through a transitional location in a temporary shelter or in deteriorating housing in the center city, which is the focus of the media for being a center for newcomers (Soliman 1996). Therefore, the economic factor is the first priority for the site selection for low-income groups.

The mechanisms of land acquisition and ownership in informal areas differ from one pattern to another and from one location to another. The mechanisms of the formation of areas for temporary shelter usually start by the government initiatives, where official bodies designate certain locations in existing cities as temporary shelter areas. These locations are often outside the urban fabric of Egyptian cities, far from public transportation and lack basic services. Later, water is delivered as a basis for infrastructure. With the implementation of a temporarily housing project, the unit is restricted to a specific area, but with time, residents extend onto the public land adjacent to their units and increase the residential unit's space. Most added area of land were spaces for green areas; roads; or corridor space between residential blocks. The residents fill the voids without restricting the movement within the public space.

The second phenomenon is the temporary shelters where the residents conquer a governmental land, such as reclamation area in Kotor city (Soliman 2010). The process of conquering such site, follows the piecemeal approach, where individuals working in the same area begin to take over parts of land plots, and sell it to newcomers who continue to add new parts of the land to their units, and so on until they

exploiting all spaces available to them. When the community reached the consolidation phase, people start a claim their basic services such as: sanitation, and drinking water, for their site. As soon as the basic infrastructure is installed, the whole site gains moral support (*de facto* tenure recognition) from the governmental bodies.

In squatters' areas, the methods of conquering governmental land are diverse and numerous depending on the circumstances and nature of each city and region, but the seizure of land almost has one style. Land acquisition has occurred through four main phenomena; the acquisition of land during the construction of mega national projects (such as El *Haganha* area in Cairo), the capture of land which is neglected and out of urban development plans (such as *El Materyhia* area in Cairo), the capture of land where there is a dispute over property or ownership (such as *El Dekhila* area in Alexandria), and finally, seizing rugged land that is not served by utilities (such as land adjacent to River banks). Squatting government land occurs through two methods. First, workers in the same area begin to take over areas of land through the formation of rubbish dumps, or stores for scrap, they continue these additions, until they are reassured that the local authorities would not enter those lands. As soon as the situation is settled, the establishment of housing units is spread. With time, settlers begin dividing the land and selling it to new comers, the process continues until the construction of all vacant spaces.

Second, in many cases, the local authorities issue an official statement approving to store building materials outside the residential area of cities, or use a piece of land in storing construction materials (gravel - sand). A person who has a license for such activities in a certain location starts to illegally subdivide the site and prepare it to be suitable for habitation, and generates multiples of residential units to house workers within the site. Upon completion of the activity or expiration of the license, the person responsible for the site begins, dividing it into small land plots which he sells to newcomers, relying on the official license acquired from governmental agencies, to convince newcomers of his/her possession of the site as a whole, this gives the newcomers the confidence to the acquisition of the rest of the site.

Invasion of land continues over time, and increases the consolidation of the area to the point of becoming a residential area with huge numbers of residents, between 15 and 20,000 people, and thus impose a fait accompli before the government agencies awareness of the existence of this large residential area, which is difficult to remove, nor damage its social entity.

In the new urban expansion on agricultural land, as in El Rezqa area, securing land tenure is necessary for the establishment of residential units in accordance with the mechanisms of development in the area. Bearing in mind that agricultural land adjacent to cities have the privilege of legal ownership, but land subdivision and construction process are illegal, where these actions take place without obtaining licenses from the local authorities. These areas have become important marginal real estate investment areas within cities. In addition, to the lack of control of urban growth (Active Planning Control), the marginal real estate areas have encouraged many individuals and investors to change their use of agricultural land to residential. The privilege of tenure security resulting through three basic rights, collective, inhibitor and lasting, leading to informal ownership. These rights result from the

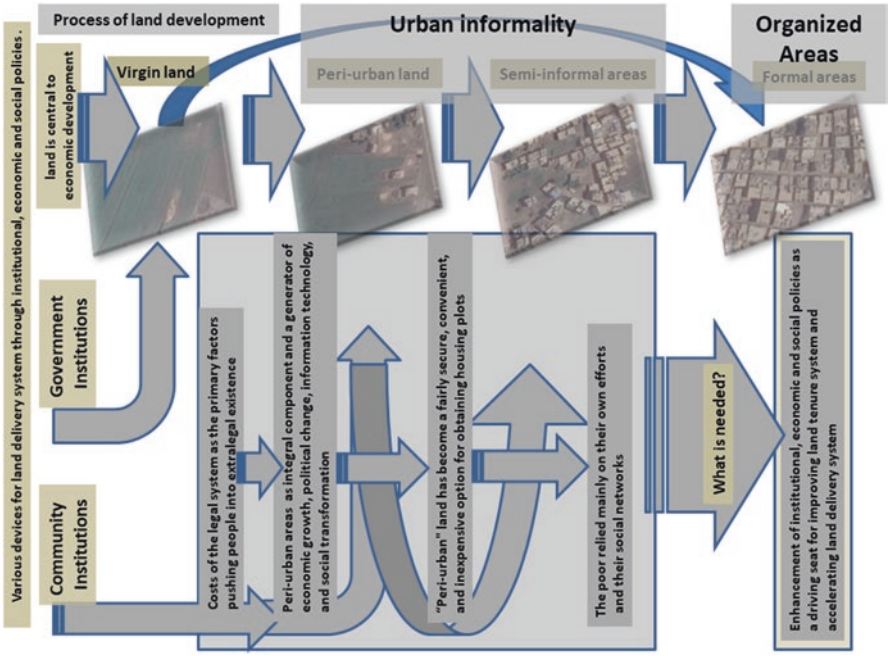

Fig. 9.4 New urban expansion areas on the periphery of Egyptian cities (Author)

acquisition of common land by a group of people, and the common rights of all people eased the way to the generally accepted customary right of residents (see Fig. 9.4).

9.3.1.2 Piecemeal Tenure Occupation

The principle of piecemeal tenure occupation is characterized by the process of the suitability of land acquisition with the possibilities and needs of the residents of the components of housing units in terms of space, location, infrastructure, etc. The principle of piecemeal tenure occupation depends on the sequence of land tenure, with the beginning of the planning and composition of informal communities. It passes through several different stages; scattered tenure expansion, collective tenure expansion, and consolidated tenure expansion. With each stage of growth, residential construction starts in sequential steps, and in parallel with the construction of the infrastructure, which serves the stages of growth in the first outburst (see Fig. 9.3).

Scattered tenure expansion starts with the stability of urban expansion on agricultural land and the availability of the economic resources of the residents. Land tenure starts individually spaced at distances according to the possibilities of each inhabitant, and takes into account the agreed upon road network within the area.

The owners of land holdings within the site participate together to decide the width of the road, and the size of land plots based on the area left for the road network which is considered "common holdings" as an area owned by the public domain for all owners of land plots in informal residential blocks. In this case, a resident secures his land through a certain use and then starts the construction of the core of the housing unit or the foundation of housing unit.

Collective tenure expansion starts with the economic boom of residents followed by attracting other people who are looking for housing plots. With the growth of joint holdings, a subdivision of the rest of the site occurs, through splitting spaces between scattered buildings within the site to meet the increasing demand for housing plots. The construction process follows a piecemeal method, and the site gradually changes to meet the needs and possibilities of each family and with securing land ownership, where moral support existed (*de facto* tenure recognition) or legal support (*de jure* tenure recognition), or both.

In parallel with the increased collaboration and community management for each tribal family, growth and consolidation increased, going in parallel with the potential, optional, and actual action of the residents. Upon completion of that phase reassuring residents of the right of exploitation and use of land, moving to the right to act more securely, and turn out a piece of land to the unrealized commodity from two goals with the right to dispose of buying and selling in the official/ non-official real estate market. The result leads to the formation of a network of tenure relations which go beyond the formal systems. This network is the result of the fragmentation of property resulting from the distribution of land as a result of inheritance.

Associated with the three previous phases, safety factor or stability for the acquisition and ownership of a piece of land has existed. The residents managed to secure possession of their land, and get both moral support (*de facto*) legal support (*de jure*). This enables the residents to ensure continuity in terms of both employment and housing, as well as, to secure their homes from the danger of demolition by one way or another. To secure their homes from the danger of elimination, moral support (*de facto*) consists of several ways, including the supply of infrastructure services (electricity, water, …. etc), while legal support (*de jure*) comes through other ways such as the validity and enforceability of claims, court order, a decision to enable, or the minutes of both set-aside minutes' violation or minutes violation build without a permit, which is based on official documents that circulate as an official document to prove legal possession of the land.

The State's role in legitimizing process of these areas is to recognize their existence in the location, and supply the necessary infrastructure, and try to improve the physical condition to enhance the urban environment. In addition, all professionals or experts in the field of housing see the upgrading of basic infrastructure (in *El Heker* project, Ismallia) as a fast way to integrate those areas with the surrounding urban environment, and are not trying to integrate or enhance the marginal economic sector, as an integral part and a keystone to the process of upgrading.

9.3.1.3 Informal Local Planning

Informal local planning is based on several principles and rights, developed by people themselves, applied under the supervision of the head of the unofficial union or the oldest person in the community, or the oldest person settled in the area, or head of the tribal factions in the region.

Rights; requirements; and ideologies are taken into account; the freedom of ownership; private possession and respect to the rights of others exist in the informality of housing production. The main aim of informal local planning is to maintain the local urban fabric of the informal housing areas (see Fig. 9.3), the protection of the area from natural disasters, and the preservation of life, traditions, customs and lifestyle of the residents in cities. These ideologies are divided into the customary rights, physical rights, human, and socio-economic rights.

Customary rights are formulated through traditional tenure for local people to possess a piece of land granted by a delegated council of the factions of the clan without the intervention of a third party. These customary rights provided three collective requirements to achieve three rights; the exploitation, use and disposition of land, and adopted the local minimum standards in planning the informal residential areas.

These requirements have relied on several basic principles. First, the simplicity in the construction of the road network reduces the total cost of infrastructure, with the flexibility to increase the size of land to meet the future needs per household, according to economic and social changes in the family cycle. Second, reducing the space and keeping the frontage of land parcels overlooking the road to a minimum size, increases the number of land plots within each housing blocks. This would serve the largest possible number of residents, and at the same time would reduce land prices, and reduce the construction cost of infrastructure for those land plots. Third principle is to provide equal space in front of land plots to form a road network within the communities, that respects the privacy of residents, and sustains the projection of each building in order to preserve privacy and rights of others.

Informal local planning responds to the living standard, and expresses and the viable force of nature. Informal planning is suitable for all types of residents by considering the limits and wishes of each individual family. Residents manage to coordinate their positions to fit the collective uses according to the needs of all dwellers, leaving construction details for each family. This process maintains the personality and wishes of each family regarding the generated housing form, without harming the privacy of neighbors. All planning problems including boundaries of land plots in the area are resolved directly on site and in the presence of all beneficiaries.

Physical rights centered on the rights of individuals to enjoy the air, easement rights, building heights and the rights of the different uses of buildings. These rights are designed to achieve the configuration and balance appropriate function for each area. These rights represent the requirements and needs of the residents of informal housing areas in terms of traffic rights, road construction and integration with the

local road network, and achieve an appropriate composition of the surrounding environment.

In addition, all residential plots follow an attached row houses composition to achieve two goals. First, natural protection from the sun's rays and heat, and second minimizing building facades to reduce infrastructure costs for the area. The spatial configuration of informal housing areas depends on the slow pace of development to meet all aspects of life and activities within those areas. The end result of this planning process is an urban fabric suitable for the needs of residents, expresses their lifestyle, and reflects the nature of the environment and the habits and behavior of the community.

The appropriate environmental configuration aims to protect residents from climatic and natural aspects and to provide a suitable residential environment through several key determinants. Firstly; planning informal residential areas depend on the establishment of relatively narrow roads and lanes, to suit the needs and requirements of the residents, since there is no rapid traffic in those areas. Secondly; the use of narrow roads and lanes provides shade to those corridors to protect pedestrians from the sun during summer, while allowing buildings' overhangs to protect passers-by from rain during winter. Climate impacts the lifestyle of the individual and determines the type of adaptations to the surroundings' determinants that affect the community, its culture and the lives of individuals and the place. The residents implement classical solutions such as the internal courtyard provides heavenly shadow inside the housing unit, at the same time the courtyard is used for daily activities such as: washing, cooking, poultry farming, …etc. The composition of residential informality adopted the size of the housing unit as a target to form a basic housing assembly unit and local planning of informal residential areas.

Economic and social rights of the philosophy of informal local planning is based on four main aspects, maintaining the privacy of individuals and buildings together, maintaining the individual property and the freedom in making improvements and upgrading the residential unit, and finally freedom to determine the scope of improvements according to the specific needs of each family. These rights aim to expand the principles of exploitation, use, and disposal of the piece of land, in order to achieve social and economic harmony, and to eliminate segregation between residents of informal housing areas. All those features are the result of social agreement between residents and the oldest person in the community.

9.3.2 Effective Action

Effective action are the possibilities that can be provided by cooperating among the three pillars for possession and ownership of land in informal residential areas, which could affect the housing systems, and are represented in the following factors: public participation, self-management, and the schedule for the construction of housing.

9.3.2.1 Public Participation

Public participation in informal housing is the outcome, and the reason for creating a sense of belonging to the residential group, associated with the presence of a community. This collective conscience and solidarity usually flourishes in the events of confrontation with the local authorities, that threaten the area's stability (Hamdi and Goethert 1988). When residents confront local authorities by refusing to to be evicted out of their land, they instigate a sense of community (such as the *Manshiet Mubarak* area in *Samnood*), and formulate collective demands for this community. This collective feeling is the means of communication that allows residents to recognize their needs, resources, and aspirations especially with the proliferation of social media.

In addition, the social and cultural aspects among groups influence the nature and formation of urban space in informal areas. The anthropological study, carried out by Amos Rapoport demonstrated (Rapoport 1982), the importance of lifestyle and daily behavior on one hand, and the importance of the relationship between social groups on the other hand, in the formation of prevailing cultural models, which crystallize in the urban fabric of the area. The decorations that people sometimes draw on the facades of their homes, such as pilgrimage scenes after performing Hajj, or weddings decorations, symbols welcoming the month of Ramadan are expressions of cultural and ideological beliefs shared by the community.

As a result of these collective affiliations community unions, local NGOs, and unofficial sponsors automatically arise, they handle affairs of physical, social, and religious respects in the community. An older person, or the Sheikh of the mosque, usually acts as the head of the association, based on his wisdom, well-behaved character, strength, and restraint. Through these associations, all problems that occur among residents are solved without resorting to third parties or to official authorities, where the decisions of the community associations are binding and final for all. This configuration determines the affairs of the community and solve all arising problems, whether related to road or exchange or the limits of including plot boundaries and construction limits demarcating the rights of others, which determine the character of informal housing areas and result in the stability, security, and organization of all residents.

9.3.2.2 Self-Administration and Management

The impact of self-administration and management of the development processes appears clearly in making the suitable urban fabric with the local cultural reality (Turner 1976). The impact appeared clearly at the level of urban space designated for daily use of the residents. Self-administration and management in informal housing areas, result in the graphical and architectural heritage produced by the people (Vernacular Architecture), reflecting the culture and customs of the community (Soliman 2012).

The principle of self-administration and management succeeded in several aspects. First, at the level of pre-urban communities, the collective bonding is still maintained. Second, the residents adopt the same methods that were followed in their homelands, often rural areas, due to the presence of kinship and clan-relations, which are still linked by belonging to the group and the environment. Third, the lack of financial resources of the residents led to the reliance on human effort to save expenses, which otherwise could be spent by hiring subcontractors (Soliman 2012). Fourth, residents participate in converting raw, local, and used materials into construction and building materials, thus reducing the cost of building and infrastructure. Fifth, women play an important role in the revitalization efforts and self-management, due to their free time, available experience, neighborly relations; and their ability for integration and social interaction. This, in addition, to taking advantage of women's time in the construction process depending on their ability to accomplish the work assigned to them. Sixth, self-financing systems are developed by associations, through the formation of residents monthly saving groups (*Ghamhyhia*) agreed upon between all members of the group during the configuration of the association.

9.3.2.3 Time Span

The time factor is the most efficient housing variable, which reveals its importance in the chronological order of the different steps considered; in order to have a piece of land in urban areas. The newcomers to the urban centers assess their positions according to their economic and social conditions for a certain period of time, next they consider changing their homes and their positions based on the choices available to them at every stage.

The time factor plays a role starting from the arrival of a resident to the urban center until the stability in a certain area. This time factor runs parallel to every step the resident takes and with every change happening, including moving from one place to another, the beginning and the final stages of the construction of his/her house the beginning of his/her contract to put his hand on a piece of land, or buy a piece of land in the informal housing areas. The time factor is closely linked to the economic, social and political changes of the society as a whole.

When agreeing to buy a piece of land or to lay hands on a piece of land among two parties; they agree on a select plot on the site which is withheld to create the required road network. The process is fast starting with pinpointing the demarcation and identification of land plots, and clarifying the road network to assure each owner of the borders of his/her own land, the land subdivision proceeds rapidly, but according to the financial capacities of each owner separately. In some cases, contractors build several rooms cut off the land paid on an agreed premium cost, thus securing possession of land and at the same time providing a shelter at the lowest cost and in record time for the new settlers. The two parties contract on purchasing a piece of land and/or building a housing unit within a few hours or a few days. In this case, the availability of financial resources is the key factor. In the case of

absence of financial resources, the process of obtaining housing units or acquiring a piece of land might take a longer period of time.
The actual action available in informal areas provides opportunities for residents of the low-income groups; through public participation, self-planning, and the time factor. The process helps to secure land tenure in the area at the city level, and thus adds residential lands to the national territory, which is influenced by processes of inventory supply and demand for the land market. In this case, the three manifestations: public participation, planning, and self-management considering the time factor, automatically help in the provision of secured suitable land for construction, and thus can achieve equilibrium between supply and demand in the real estate market.

9.3.3 Preferred Action

The preferred action is the fundamental option favored by the three polar cooperating systems and mechanisms of acquisition and ownership of residential land. The following factors, affordability, social interaction and integration, and finally the minimum requirements of infrastructure are the main determinants.

9.3.3.1 Affordability

Ability to pay comes as the first optional action for residents in informal housing areas. The economic level of low-income families determines the possibilities and limits of expenditure. The priorities of the limited income strata for spending are in food, clothes, health, and what is left is spent on housing. The ability to pay for the low-income strata is confined to what is available for their income, both in the formal and/ informal economy. Each family of limited income groups has a specific size and is linked to the level of income to spend, and can adapt according to its income, so spending on housing is linked to the size of the family income. Families in informal housing areas, varying in housing expenditure, this is reflected in plot size, methods of securing tenure, and finally the residential area site. Informal housing areas provide different choices to suit all classes of low-income categories, according to their ability to pay, due to social needs, without imposing extra expenditures on households.

In addition, a large proportion of residents of systemic methods projects, having to waive their rights of all their land, due to their inability to pay ongoing expenses to legitimately secure their land. The piece of land is resold to new comers to urban areas, while the first settlers search for other sites in the outskirts of the city at the lower costs. This process is called the removal or skimming the poor of the area (Creaming off the poor). This leads to the emergence of new informal residential areas in cities. Most of the systemic methods projects do not meet the needs of

limited-income classes, but they reach other social groups with the help of real estate speculations to those sites, this phenomenon happened at Salam district project in the city of Ismailia (Davidson and Payne 1983).

9.3.3.2 Social Interaction and Integration

Social interaction and integration ability of residents in informal housing areas takes the form of links, extensive kinship, gatherings of tribal or religious groups, and popular or religious unions, which aims to achieve many types of participation and mutual assistance. Informal housing areas in Egyptian cities show strong social interaction between residents based on several studies applied to those areas (Soliman 1996). Each sector has a social and tribal characteristic. And those social engagements are reflected on the conduct, behavior, and way of life of each category of informal housing areas. Social cohesion assists organizations and civil departments in most public services, where all the families are involved to serve all residents in established residential areas. Create a *Kotab*, or a nursery or elementary school, to teach children between the ages of 3–5 years, the residents pay a nominal weekly payment, or pay services in the form of food or other substances. The madrassa is managed by an individual who is familiar with the teachings of religious doctrine, he is teaching the Quran and Sunnah and traditional values, besides writing and reading. The spread of the *madrassa* (school or *Kotab*) in part of *Zayhia* (small place for prayer), or a small mosque constructed by self-efforts. The main role of the *madrassa* is to establish religious belief in small young people, and to help them in the initial studies in public schools. A small clinic supported by the residents themselves provides health services to the people of the area.

Through social interaction, all residents commit themselves to the construction in accordance with the agreements among which included several principles. These principles include leaving equal land space in front of their plots for road network, in general, the architectural structure of the entire area is agreed upon, and then the urban fabric for each zone separately to serve all parts of the area is agreed upon.

9.3.3.3 Minimum Local Standards of Infrastructure

Minimal infrastructure is considered the third priority for residents in informal areas. Residents start improving infrastructure after fulfilling other priorities such as private insurance and stability of land ownership. There are two types of standards: infrastructure within the housing unit and infrastructure outside the housing unit; both are completed according to the economic and social status of residents. The priority is for supplying the area with electricity and a drinking water network, while the sewage network is installed by the people through the cooperation of all residents to assemble all organic waste in an orderly manner, which is mostly disposed of either in agricultural banks, lakes or any highway adjacent to the site.

9.4 Conclusion

The formation of unofficial urban residential expansion is characterized by three main directives. The first is the private investor who intervenes with land of unknown origin, then, starts the formation of urban informality. The second trend, in the case of the private investor's intervention through purchasing agricultural land, and over time, carries out the illegal division of land turning it into semi-official residential areas. The third trend, takes place when the state intervenes to create residential areas, through formal methods (sites and services, upgrading, and improvement) as a result new informal urban residential expansion rapidly appeared nearby those sites.

Through these trends, it became clear that the urban poor has accumulated assets sufficient to build a successful capitalist system, and that the value of their savings are represented in the territories where they build their homes. The urban poor realized the problems of land ownership and sensed *de facto* recognition of ownership and possession of land, of which they have developed what suits them to empower themselves within urban areas. But the completion of this investment in a formal way must be guided to secure the land or to put those assets in an effective legal framework to serve both the user and official bodies as a means of serving the mechanisms of local and national economy.

The potential action of the three-pillars as a key role in the acquisition and ownership of land is essential to house limited income strata. When the three criteria of inherent action in the form of desire, ability, and responsibility are flourished, the legalization of tenure and property mechanisms are met. The result impacts positively on the main underlying potentials in the form of effective capacity, actual capacity, and optional capability. To create the underlying potentialities among the three pillars, a reasonable and appropriate cooperation is needed to legalize land ownership and possession, to regulate new urban expansion, on one hand, and to secure the stability of the real estate market on the other. This requires addressing the problem of legalization of land tenure for limited income strata with all its manifestations, the economic, social and political and should not be dealt with separately from the overall development of the country.

To underlying power steering the three cooperating pillars is the provision of official avenues legalize land ownership at the lowest possible cost. The ability to pay should be carefully studied and should be realistic to reflect the economics of the low-income classes.

Through the previous study, it became clear that the acquisition of land represented in abandoned roads and common spaces is essential to a group of people. Land plots, and the rights to casual non-customary ownership of land in the space of public domain, should be realized as a starting point. This would lead to developing laws and legislation relevant and appropriate to the nature and potentials of low-income strata, as well as, would lead to activating and enlarging the real estate market in informal residential areas. This legislation should be simple and flexible, taking into account the exemption from the payment of fees rationing. Among the

legislation applied in Egypt is *Aini* record and should be opened to informal settlements for registration of land plots.

The residents in informal areas established together an explicit commitment (*Altazmat*) to provide security for their property and their activities. This represents combinations of selectively borrowed rules from the current legal system and improvises to certain conditions and norms. The residents gained these norms from their place of origin or derived them locally, and combined them to reflect ties supported by society as a whole and implemented by a group of people.

Cooperation is needed to activate the actual capacity of the three pillars. A form of organization or a union composed of all residents should be established. A joint acquisition in the form of real estate's shares should be established and registered in *Segel Aini* department. This will lead to opening the way for a tradable mortgage from banks and selling them, providing many areas for investment in order to achieve material return and rewarding for those classes and help improve their standard of living. However, the legalization of the possession and ownership of land is not an integral part of the field of marginal economic activity in isolation from the economic life of existing urban areas.

Finally, the State should provide essential components for legalization, which individuals cannot provide by themselves. Individuals as beneficiaries of housing policies should provide necessary human effort and cooperation to implement the settlement projects record *Segel Aini* system. The bottom line is that the three pillars should collaborate together to enable all individuals to participate in a scientific way, to draw a real legislative policy for urban informality, to keep up with the overall development of the country, and to guide new urban expansion.

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Chapter 10
Reusing Lost Urban Space

Rana Sameeh, Mostafa Gabr, and Sherine Aly

Abstract The city is one of the greatest products of human civilization that has been built to provide services; safety and comfort. However, uncontrolled urban growth caused some anonymous, and unsightly images of the cities among which are underused, abandoned, or deserted urban space. Public space in cities reflects social life, and hosts community interaction; the absence of social interaction changes the public space to wasted and lost spaces. Wasted urban space leads to the discontinuity of the urban fabric creating meaningless unstructured landscapes within the city's urban fabric. Wasted space is the unrecognized areas of land that are in need of redesign; their value is derived from their potential in vitalizing and connecting their surrounding urban context.

The research significance lies in recognizing the importance of community urban open spaces, their value and impact. The research also addresses the reuse and the regeneration of lost urban spaces in order to enhance the physical and social quality of life in urban open space. In addition, the reuse of in-between left over space is an incremental process that is addressed in building totally new cities which follow phasing development plans; as well as vitalizing the land of already existing cities.

Connecting or stitching the discontinuous urban fabric, represents an exploratory process in the relationship between infrastructure and the urban fabric and seeks to establish an architectural solution to leftover spaces within the city. In doing so, the research establishes a framework (criteria) for reuse of lost urban space by implementing an inductive and deductive analytical methodology applied to relevant examples and case studies of lost urban space.

Keywords Lost urban space · Reuse · Urban open space · Stitching urban fabric · Revitalizing cities · Rehabilitation of open space

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10.1 Introduction

Over the years, the change in economic, industrial, and employment patterns; affected urban centres and disrupted the continuity of urban form. The percentage of green and open urban spaces in dense cities is decreasing dramatically due to the urban sprawl and unplanned rapid city growth. The uncontrolled haphazard extensions over the urban space and green areas fragments the structure of the urban pattern resulting in unexpected leftover space; as well as urban fabric discontinuities.

The aim of the research is to provide a methodological process for reusing lost urban space to create integrated community urban spaces. This process helps to achieve several objectives mainly: (1) to provide more green open space by using existing urban fabric in the city; (2) to provide open spaces that can improve the quality of life in the public realm and enhance the pedestrian experience; (3) to achieve a continuous and connected urban fabric within city centers and in new cities; and (4) finally to emphasize and exhibit the potentials of lost urban space.

Lost urban spaces are considered valuable resources, applying the principles for developing lost urban spaces differs from one context to another. The research hypothesizes that not all principles are applicable in every urban context. In order to achieve its objectives, the researched employed a methodology based on an intense literature review followed by comparative and qualitative analyses. The literature review helps to establish a framework for the study of lost urban spaces. Then, the framework is applied on three international and national case studies.

10.2 Lost Urban Space

Some definitions of lost urban spaces emphasize the emptiness of the space and others emphasize the fact that the spaces are abandoned without urban activity or contaminated. Several planners and architect gave different definitions and descriptions to the term "lost urban space" according to their perception; this is illustrated in Fig. 10.1.

This research will follow Roger Trancik's definition; which provided a general definition inclusive of all the meanings from the other definitions.

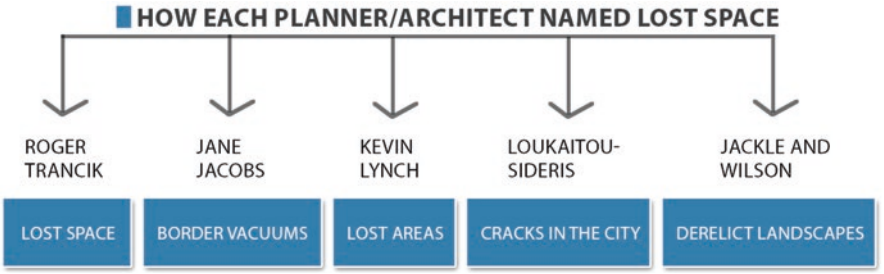


Fig. 10.1 Theoreticians' definitions to the term "lost urban space" (Authors)

"Lost urban space is the leftover unstructured landscape that failed to connect its surroundings; they are the undesirable urban areas that are in need of redesign since they provide tremendous opportunities for redevelopment." (Trancik 1986).

10.3 Historical Background

Historically; the emergence of lost urban spaces is a cumulative process that does not occur suddenly; it takes place during the development of cities throughout the history and until the present time more and more lost urban space are developing in our cities. Generally, the history of lost urban spaces can be related to two phenomena: Firstly, the evolution of city planning and the change in city plans which lead to the emergence of vacant land that was left until the rest of the city was formed, and; Secondly, laces that were originally designed within the urban fabric but became abandoned or underused due to certain historical events or certain changes in their surroundings. (Nefs 2006; Matthew Carmona 2011).

10.4 Factors that Shape Lost Urban Space

Lost urban spaces exist due to five major factors: (1) an increased dependency on automobiles; (2) the attitude of architects of the modern movement towards open space; (3) zoning and land-use policies of the urban renewal period that divided the city; (4) an unwillingness on the part of public and private institutions to assume responsibility for the public urban environment; and (5) an abandonment of industrial, military or transportation sites in the inner city core. (Trancik 1986; Tiesdell 2007; Michael Larice 2013).

10.5 Types of Lost Urban Space

Several planners and architects have discussed different types of lost urban spaces that have emerged within the urban fabric. The research summarized those types in Fig. 10.2.

10.6 Approaches from Different Planners

There are different visions among architects and planners concerning lost urban space, each ~~one~~ discussed a point of view from a certain aspect of the problem as shown in the diagram in Fig. 10.3.

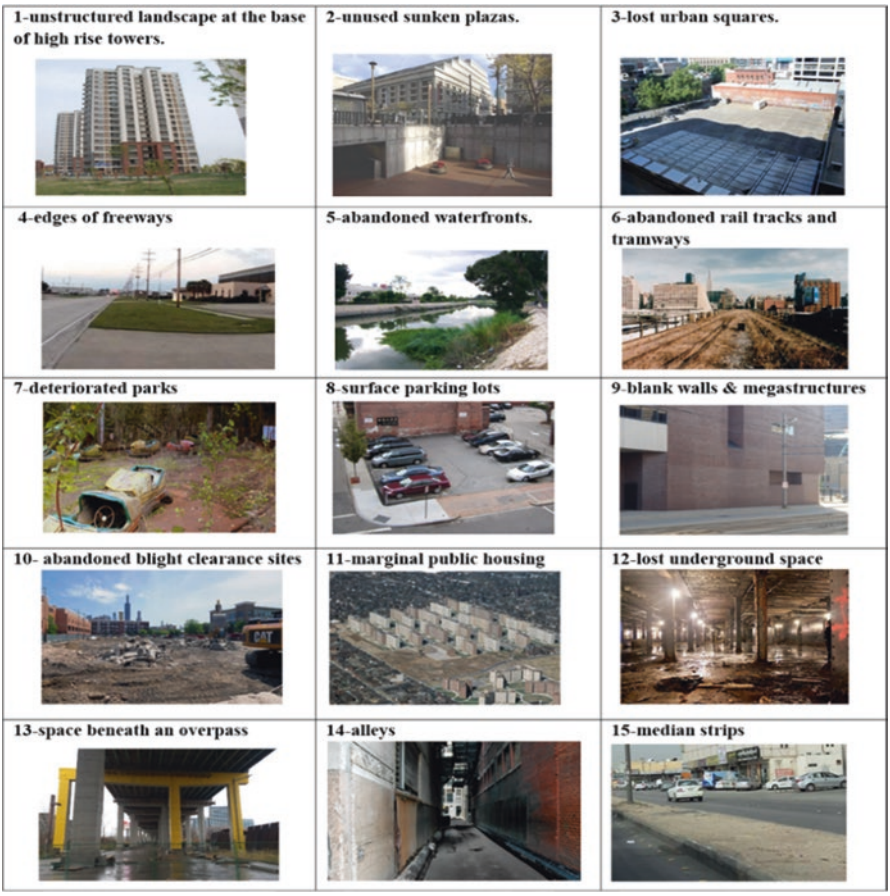


Fig. 10.2 Typology of lost urban space (Authors)

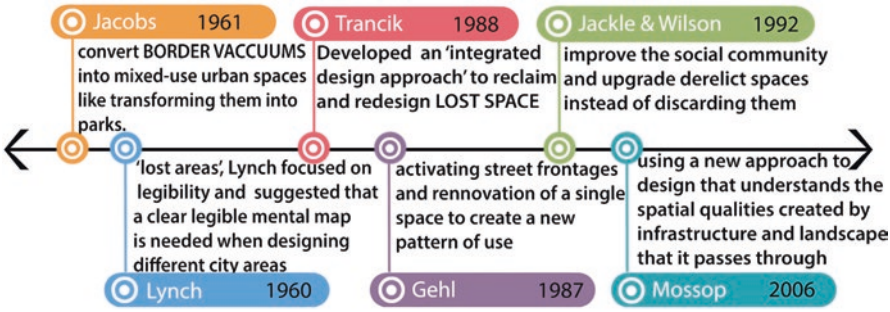


Fig. 10.3 Timeline of approaches addressing lost urban space (Authors)

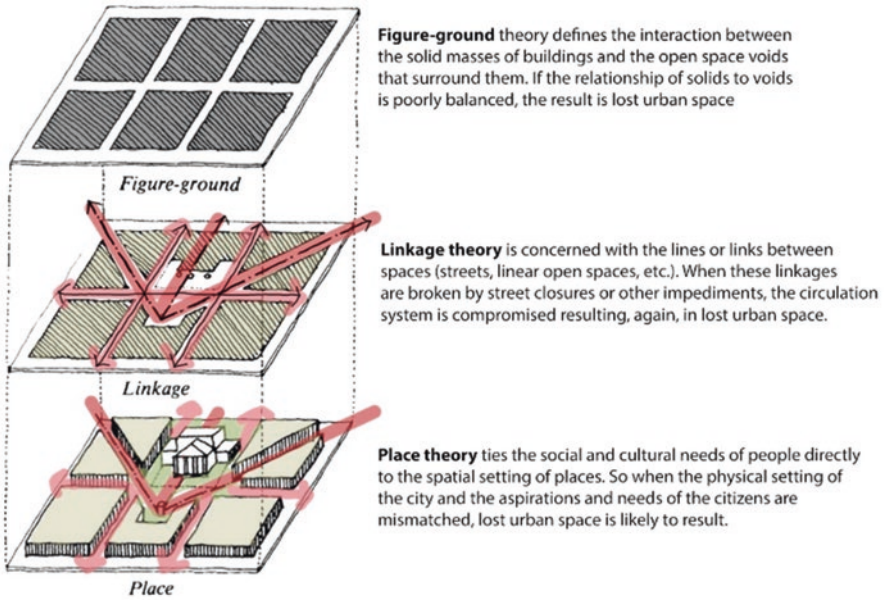


Fig. 10.4 Integrated design approach (Trancik 1986; Matthew Carmona 2011)

10.7 An Integrated Design Approach

The integrated design approach demonstrated in Fig. 10.4 was deduced from theoretical reviews, analysis of case studies and precedents. It is based on three theories first put by Rob Krier (1979) then used by Roger Trancik. The approach combines the spatial definition of **the figure ground theory** with the connective qualities of **the linkage theory** and the social responsiveness of **the place theory.**

(The three theories indicated above need to be elaborated differently and in more detail for the book as well as their illustrative diagrams)

10.8 Proposed Strategy Applied to Lost Urban Space

Infill, repurposing and renewal of existing structures are major strategies for the creation of successful integrated public open spaces, which can be elaborated as follows:

– **Urban infill** is defined as new development that is sited on vacant or undeveloped land within an existing community, and that is enclosed by other types of development. Fig. 10.5) The term "urban infill" implies that most of the existing land is mostly built-out and what is being built is in effect "filling in" the gaps.

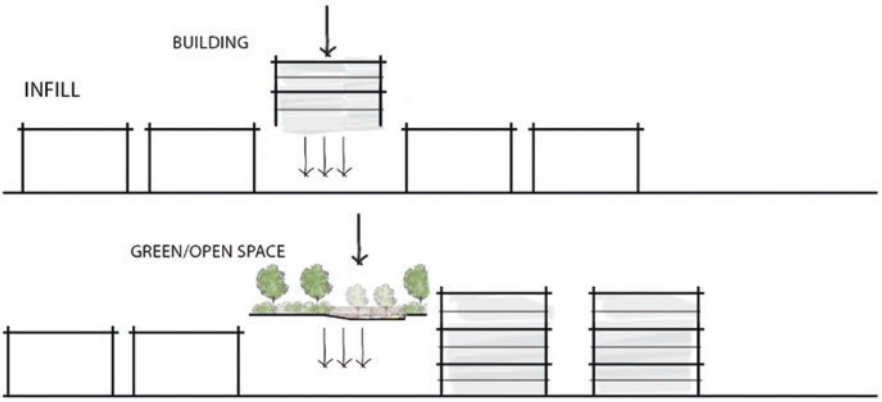


Fig. 10.5 Infill development diagram (authors)

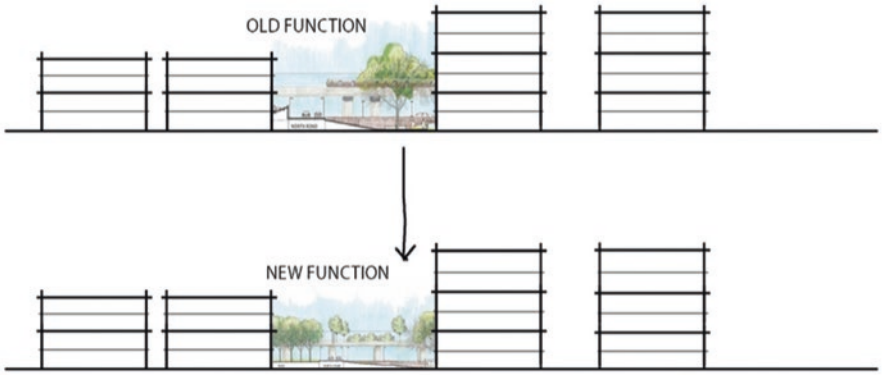


Fig. 10.6 Repurposing diagram (authors)

– **Reuse:** It is the process of reusing (or readapting) an old site or building for a 'purpose' other than which it was designed for. (see Fig. 10.6) (Dara Rourke 2002; Lawrence Perkins 2016).

– **Renewal:** It is the application of several principles resulting in the revitalization of any or all portions of the urban structure which are not fulfilling the functions for which they were designed. (see Fig. 10.7) (Miller 1959). Urban renewal generally applies to inner-city areas, located in historical districts including non-residential as well as residential land uses.

The criteria are drawn from leading urban planners and designers, dense cities comprehensive framework and the project for public space place diagram as shown in Figs. 10.8, 10.9 and 10.10, and the final criteria is shown in Fig. 10.11.

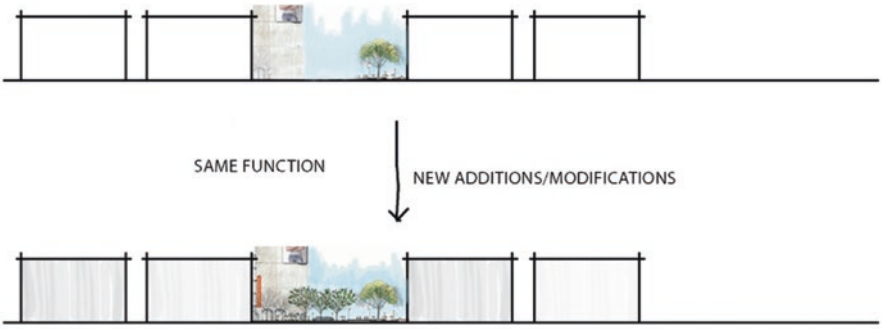


Fig. 10.7 Renewal diagram (authors)

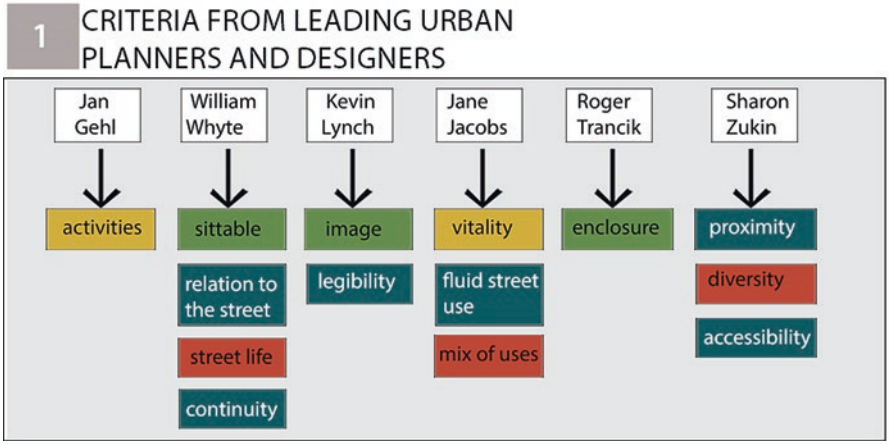


Fig. 10.8 Criteria from different planners (Authors)

10.9 Examples

Three examples were selected to elaborate on the application of the integrated design approach theories at various scales, as illustrated in Fig. 10.12. The Figure Ground theory is best illustrated in Al Azhar Park in Egypt, the Linkage Theorywas best illustrated in the High Line Park in USA, whereas Samir Kassir Square in Lebanon was the best illustration of the *Place Theory*. Important distinctions of use and theme also occur between the prototypes of the examples, since that the use and theme have a direct impact on the redesign of lost urban space. The examples were also selected based on: availability of data, location, type of strategy used (Renewal, Repurposing, Infill), various forms and scales, impact of the reuse, approach to the problem and models of intervention.

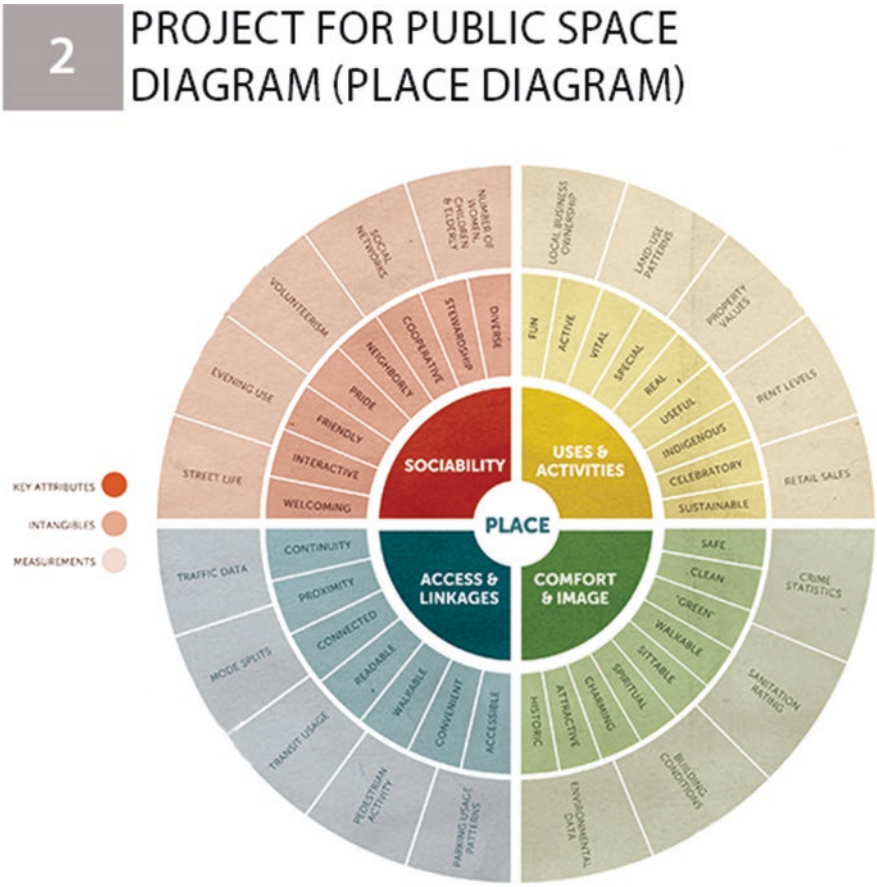


Fig. 10.9 Place diagram (PPS 2016)

10.9.1 The Implementation of Place Theory on Samir Kassir Square, Beirut, Lebanon

Given its location in the recently reconstructed Beirut Central District, Samir Kassir Square or *Square Four*, designed by Vladimir Djurovic, acts as a prominent gateway, welcoming people to the heart of the reborn city of Beirut, Lebanon. Fig. 10.13. Atthe onset of Weygand Street, between ancient ruins, new modern buildings, mosques and churches, Samir Kassir Square emerges. (ASLA 2007). The challenge of this project was to create a quiet refuge on a limited piece of land surrounded by buildings, while addressing the prominent street frontage that it occupies (see Fig. 10.14). (Vladimir Djurovic 2007).

As a result of the civil wars that destroyed many parts of central Beirut, Samir Kassir Square emerged as one of the redesigned spaces among the *SolidereCompany Development Projects*. It was inspired by the existing historic Ficus trees.

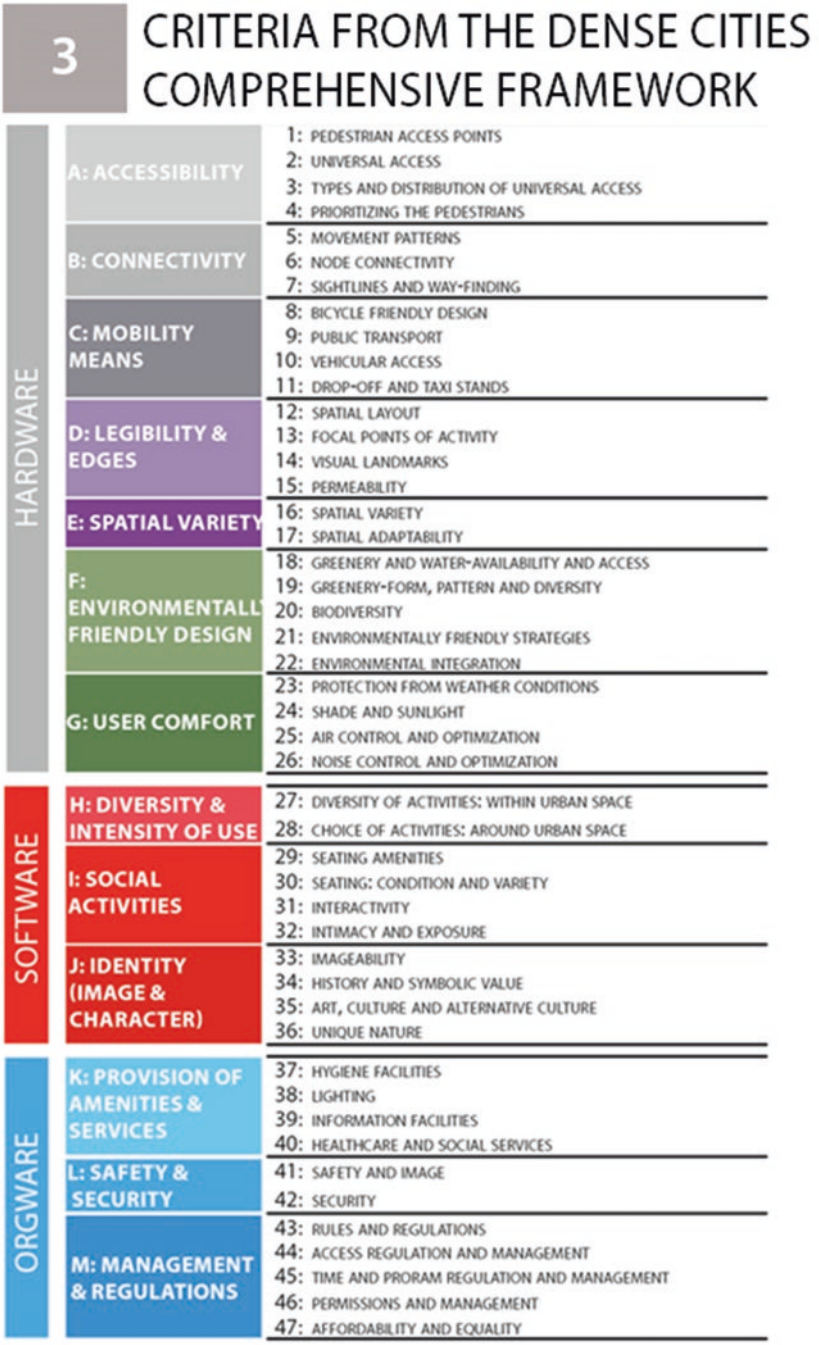


Fig. 10.10 Criteria from the dense cities comprehensive framework (Im-Sik Cho 2016)

After discussing the strategies for reframing lost urban space, there was a need for attributes and detailed criteria in order to apply those strategies. Accordingly, the research referred back to two sources for the attributes and criteria and each source was used for a purpose; the place diagram by the project for public space and it was used to provide with the main attributes and detailed criteria of the framework and the dense cities comprehensive framework was used as a source of the analysis and evaluation methods of the framework. The research will then merge the two sources and come out with the final framework of the study.

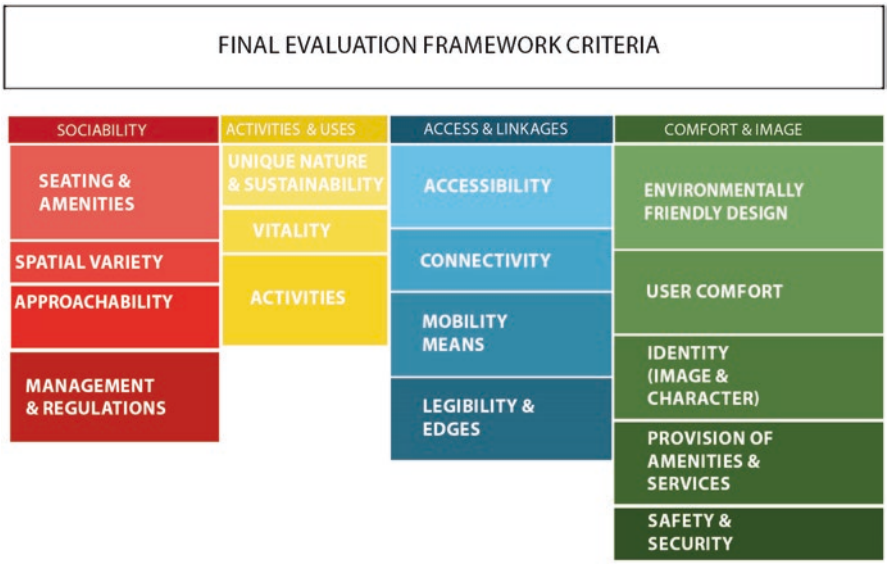


Fig. 10.11 Final criteria diagram (Authors)

Fig. 10.12 The three examples (Archdaily 2016)

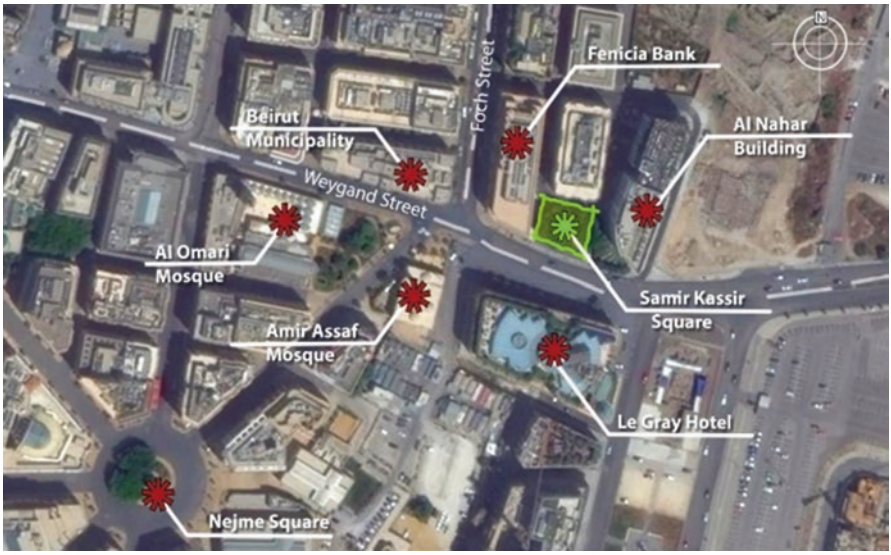


Fig. 10.13 Location of Samir Kassir square (Google earth 2016)

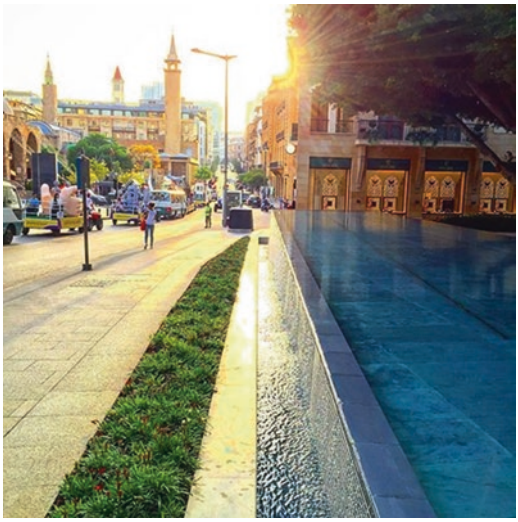


Fig. 10.14 Samir Kassir square (Vladimir Djurovic 2007)

10.9.2 Implementation of Linkage Theory on High Line Park, New York, USA

The High Line is a linear park located on the Lower West Side of Manhattan, New York (see Fig. 10.15). It was designed by landscape architect James Corner Field. It was redesigned to become an aerial greenway and connection corridor; as well as; a rails-to-trails park. No trains have traveled the tracks of the high line

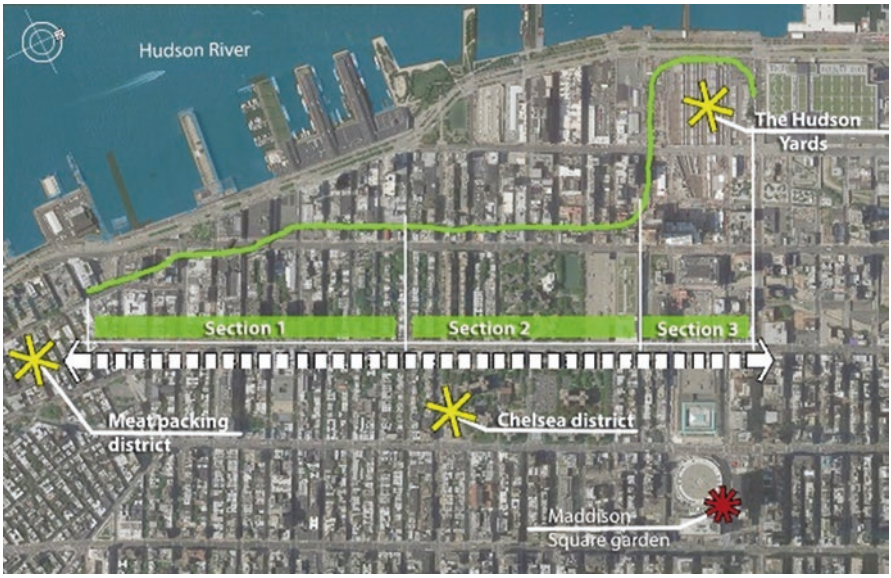


Fig. 10.15 Location of the High line park (Google earth 2016)

since 1980, and it was threatened by demolition. Then the 'Friends of the High Line' was formed to bring the out-of-use viaduct back to function as a walkway and green corridor. The park's design achieved great integration between the users and the surrounding landscape allowing people to enjoy a serene and pleasant experience within the greeneries (Fig. 10.16).

10.9.3 Implementation of Figure Ground Theory on Al Azhar Park Cairo; Egypt

The park was named after the great 'Al Azhar Mosque', it is located to the north of the Al-Darb Al Ahmar area. The aim of the infill of the Azhar Park site was the master planning and landscape design for the environmental rehabilitation of the site and its transformation into a significant public green space in the center of Cairo as in (see Figs. 10.17 and 10.18).

For more than ten centuries the site of the Azhar Park remained untouched by the residents surrounding it and it was used as a dumping ground for rubble. In 1984, Aga Khan announced his plan to reclaim the wasteland and create a public park for the dense populated area that surround it.

According to the previous overview, Samir Kassir Square was the best illustration of the place theory, since that the design of the space was based upon both a historical meaning; the existing historical sculptural trees and a significant memory;

Fig. 10.16 Nodes from the High line park (The High Line 2016)

Fig. 10.17 Left: Site plan of the park (Google Earth 2016); Right: aerial view of the park, (www.akdn.org)

of the late Samir Kassir Professor and columnist in the adjacent building to the park. The linkage theory was best illustrated in the High Line Park, where the park acted as an urban corridor linking different districts and nodes. The *figure ground* theory was best illustrated in Al Azhar Park, where the urban void of the park was shaped by the form of the surrounding condensed buildings and the remains of the old

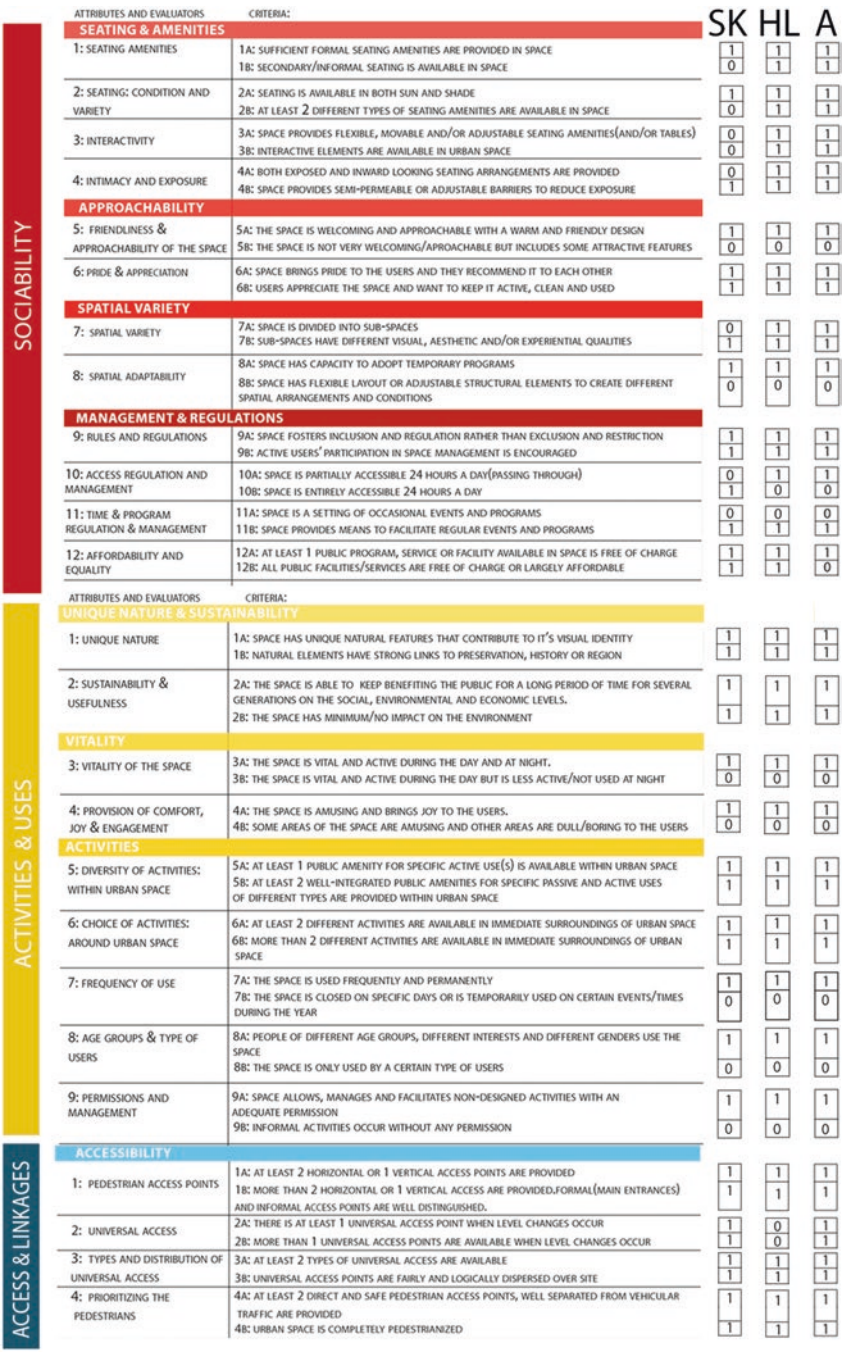
Fig. 10.18 Azhar Park main axis (www.akdn.org)

city walls. Whereas important distinctions of use and theme also occurred between the prototypes of the examples, since that the use and theme have a direct impact on the redesign of lost urban space.

The following checklists (see Figs. 10.19 and 10.20) review the applicability of the literature criteria on the given examples with the following initials for each example; Samir Kassir: SK, The High Line: HL and Al Azhar Park: (The number (0) means that the feature addressed is not present in the case study whereas number (1) means that the design feature is present in the case study addressed).

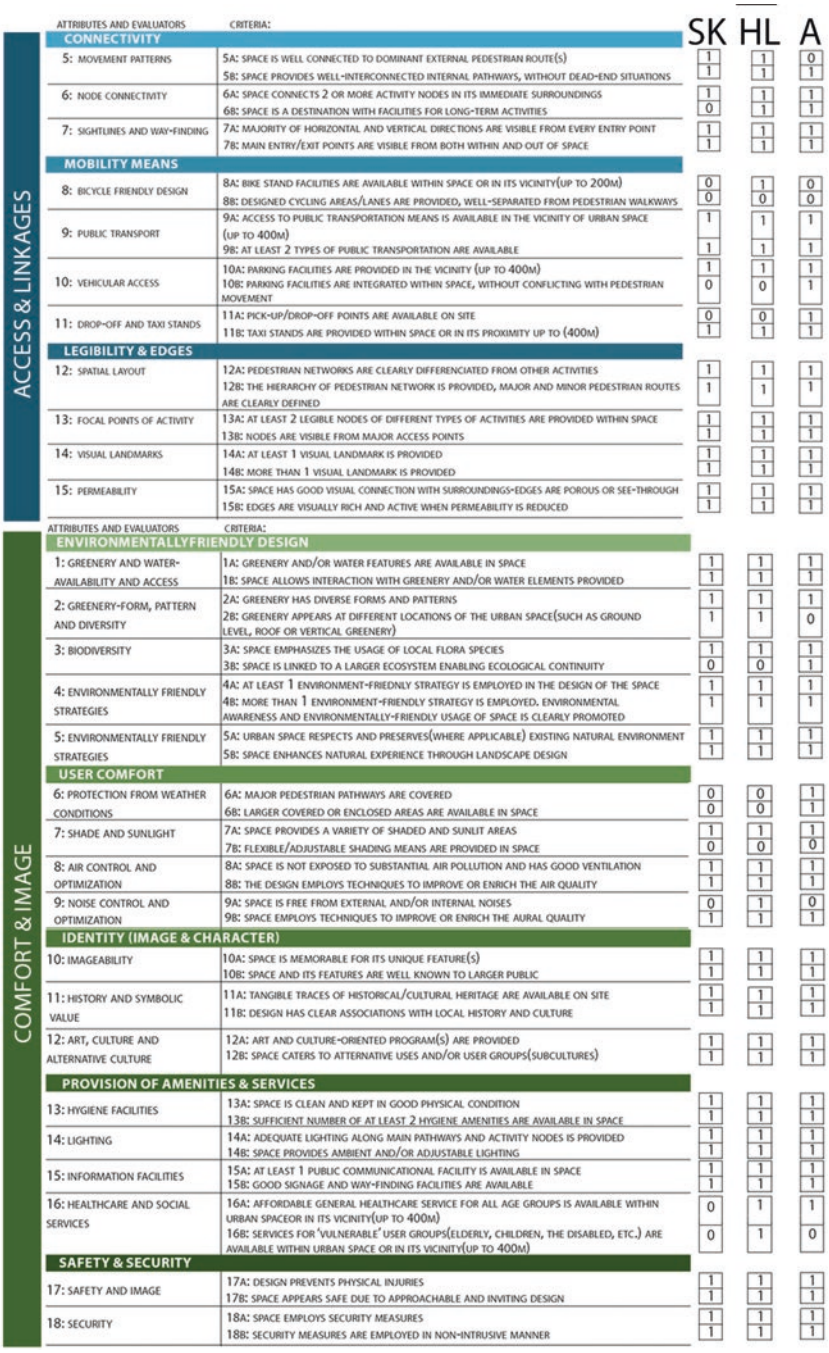
10.10 Discussion of Findings

In Samir Kassir Square, the scale of the project was relatively smaller than the other projects, but the impact of the space on the area was successful. The square made the area more vital and maintained connectivity with its developed new and old surroundings. The High Line Park succeeded in integrating the landscape and users. It provided a completely pedestrianized space that is safe, connects people to other destinations and is well separated from car routes. The Azhar Park had two phases, when the park first opened elements were stolen from the park from the surrounding slums since ~~that~~ the area around the park was not developed and was poorly served. Afterwards the development of Al Darb Al Ahmar area was inaugurated and the park and its surrounding area were successfully maintained.



	ATTRIBUTES AND EVALUATORS	CRITERIA:	SK	HL	A
SOCIABILITY	**SEATING & AMENITIES**				
	1: SEATING AMENITIES	1A: SUFFICIENT FORMAL SEATING AMENITIES ARE PROVIDED IN SPACE 1B: SECONDARY/INFORMAL SEATING IS AVAILABLE IN SPACE	1 0	1 1	1 1
	2: SEATING: CONDITION AND VARIETY	2A: SEATING IS AVAILABLE IN BOTH SUN AND SHADE 2B: AT LEAST 2 DIFFERENT TYPES OF SEATING AMENITIES ARE AVAILABLE IN SPACE	1 0	1 1	1 1
	3: INTERACTIVITY	3A: SPACE PROVIDES FLEXIBLE, MOVABLE AND/OR ADJUSTABLE SEATING AMENITIES(AND/OR TABLES) 3B: INTERACTIVE ELEMENTS ARE AVAILABLE IN URBAN SPACE	0 0	1 1	1 1
	4: INTIMACY AND EXPOSURE	4A: BOTH EXPOSED AND INWARD LOOKING SEATING ARRANGEMENTS ARE PROVIDED 4B: SPACE PROVIDES SEMI-PERMEABLE OR ADJUSTABLE BARRIERS TO REDUCE EXPOSURE	0 1	1 1	1 1
	APPROACHABILITY				
	5: FRIENDLINESS & APPROACHABILITY OF THE SPACE	5A: THE SPACE IS WELCOMING AND APPROACHABLE WITH A WARM AND FRIENDLY DESIGN 5B: THE SPACE IS NOT VERY WELCOMING/APROACHABLE BUT INCLUDES SOME ATTRACTIVE FEATURES	1 0	1 0	1 0
	6: PRIDE & APPRECIATION	6A: SPACE BRINGS PRIDE TO THE USERS AND THEY RECOMMEND IT TO EACH OTHER 6B: USERS APPRECIATE THE SPACE AND WANT TO KEEP IT ACTIVE, CLEAN AND USED	1 1	1 1	1 1
	SPATIAL VARIETY				
	7: SPATIAL VARIETY	7A: SPACE IS DIVIDED INTO SUB-SPACES 7B: SUB-SPACES HAVE DIFFERENT VISUAL, AESTHETIC AND/OR EXPERIENTIAL QUALITIES	0 1	1 1	1 1
	8: SPATIAL ADAPTABILITY	8A: SPACE HAS CAPACITY TO ADOPT TEMPORARY PROGRAMS 8B: SPACE HAS FLEXIBLE LAYOUT OR ADJUSTABLE STRUCTURAL ELEMENTS TO CREATE DIFFERENT SPATIAL ARRANGEMENTS AND CONDITIONS	1 0	1 0	1 0
	MANAGEMENT & REGULATIONS				
	9: RULES AND REGULATIONS	9A: SPACE FOSTERS INCLUSION AND REGULATION RATHER THAN EXCLUSION AND RESTRICTION 9B: ACTIVE USERS' PARTICIPATION IN SPACE MANAGEMENT IS ENCOURAGED	1 1	1 1	1 1
	10: ACCESS REGULATION AND MANAGEMENT	10A: SPACE IS PARTIALLY ACCESSIBLE 24 HOURS A DAY(PASSING THROUGH) 10B: SPACE IS ENTIRELY ACCESSIBLE 24 HOURS A DAY	0 1	1 0	1 0
	11: TIME & PROGRAM REGULATION & MANAGEMENT	11A: SPACE IS A SETTING OF OCCASIONAL EVENTS AND PROGRAMS 11B: SPACE PROVIDES MEANS TO FACILITATE REGULAR EVENTS AND PROGRAMS	0 1	0 1	0 1
	12: AFFORDABILITY AND EQUALITY	12A: AT LEAST 1 PUBLIC PROGRAM, SERVICE OR FACILITY AVAILABLE IN SPACE IS FREE OF CHARGE 12B: ALL PUBLIC FACILITIES/SERVICES ARE FREE OF CHARGE OR LARGELY AFFORDABLE	1 1	1 1	1 0
	ATTRIBUTES AND EVALUATORS	CRITERIA:			
ACTIVITIES & USES	**UNIQUE NATURE & SUSTAINABILITY**				
	1: UNIQUE NATURE	1A: SPACE HAS UNIQUE NATURAL FEATURES THAT CONTRIBUTE TO IT'S VISUAL IDENTITY 1B: NATURAL ELEMENTS HAVE STRONG LINKS TO PRESERVATION, HISTORY OR REGION	1 1	1 1	1 1
	2: SUSTAINABILITY & USEFULNESS	2A: THE SPACE IS ABLE TO KEEP BENEFITING THE PUBLIC FOR A LONG PERIOD OF TIME FOR SEVERAL GENERATIONS ON THE SOCIAL, ENVIRONMENTAL AND ECONOMIC LEVELS. 2B: THE SPACE HAS MINIMUM/NO IMPACT ON THE ENVIRONMENT	1 1	1 1	1 1
	VITALITY				
	3: VITALITY OF THE SPACE	3A: THE SPACE IS VITAL AND ACTIVE DURING THE DAY AND AT NIGHT. 3B: THE SPACE IS VITAL AND ACTIVE DURING THE DAY BUT IS LESS ACTIVE/NOT USED AT NIGHT	1 0	1 0	1 0
	4: PROVISION OF COMFORT, JOY & ENGAGEMENT	4A: THE SPACE IS AMUSING AND BRINGS JOY TO THE USERS. 4B: SOME AREAS OF THE SPACE ARE AMUSING AND OTHER AREAS ARE DULL/BORING TO THE USERS	1 0	1 0	1 0
	ACTIVITIES				
	5: DIVERSITY OF ACTIVITIES: WITHIN URBAN SPACE	5A: AT LEAST 1 PUBLIC AMENITY FOR SPECIFIC ACTIVE USE(S) IS AVAILABLE WITHIN URBAN SPACE 5B: AT LEAST 2 WELL-INTEGRATED PUBLIC AMENITIES FOR SPECIFIC PASSIVE AND ACTIVE USES OF DIFFERENT TYPES ARE PROVIDED WITHIN URBAN SPACE	1 1	1 1	1 1
	6: CHOICE OF ACTIVITIES: AROUND URBAN SPACE	6A: AT LEAST 2 DIFFERENT ACTIVITIES ARE AVAILABLE IN IMMEDIATE SURROUNDINGS OF URBAN SPACE 6B: MORE THAN 2 DIFFERENT ACTIVITIES ARE AVAILABLE IN IMMEDIATE SURROUNDINGS OF URBAN SPACE	1 1	1 1	1 1
	7: FREQUENCY OF USE	7A: THE SPACE IS USED FREQUENTLY AND PERMANENTLY 7B: THE SPACE IS CLOSED ON SPECIFIC DAYS OR IS TEMPORARILY USED ON CERTAIN EVENTS/TIMES DURING THE YEAR	1 0	1 0	1 0
	8: AGE GROUPS & TYPE OF USERS	8A: PEOPLE OF DIFFERENT AGE GROUPS, DIFFERENT INTERESTS AND DIFFERENT GENDERS USE THE SPACE 8B: THE SPACE IS ONLY USED BY A CERTAIN TYPE OF USERS	1 0	1 0	1 0
	9: PERMISSIONS AND MANAGEMENT	9A: SPACE ALLOWS, MANAGES AND FACILITATES NON-DESIGNED ACTIVITIES WITH AN ADEQUATE PERMISSION 9B: INFORMAL ACTIVITIES OCCUR WITHOUT ANY PERMISSION	1 0	1 0	1 0
ACCESS & LINKAGES	**ACCESSIBILITY**				
	1: PEDESTRIAN ACCESS POINTS	1A: AT LEAST 2 HORIZONTAL OR 1 VERTICAL ACCESS POINTS ARE PROVIDED 1B: MORE THAN 2 HORIZONTAL OR 1 VERTICAL ACCESS ARE PROVIDED.FORMAL(MAIN ENTRANCES) AND INFORMAL ACCESS POINTS ARE WELL DISTINGUISHED.	1 1	1 1	1 1
	2: UNIVERSAL ACCESS	2A: THERE IS AT LEAST 1 UNIVERSAL ACCESS POINT WHEN LEVEL CHANGES OCCUR 2B: MORE THAN 1 UNIVERSAL ACCESS POINTS ARE AVAILABLE WHEN LEVEL CHANGES OCCUR	1 1	0 0	1 1
	3: TYPES AND DISTRIBUTION OF UNIVERSAL ACCESS	3A: AT LEAST 2 TYPES OF UNIVERSAL ACCESS ARE AVAILABLE 3B: UNIVERSAL ACCESS POINTS ARE FAIRLY AND LOGICALLY DISPERSED OVER SITE	1 1	1 1	1 1
	4: PRIORITIZING THE PEDESTRIANS	4A: AT LEAST 2 DIRECT AND SAFE PEDESTRIAN ACCESS POINTS, WELL SEPARATED FROM VEHICULAR TRAFFIC ARE PROVIDED 4B: URBAN SPACE IS COMPLETELY PEDESTRIANIZED	1 1	1 1	1 1

Fig. 10.19 Urban design criteria checklist part I (authors)



	ATTRIBUTES AND EVALUATORS	CRITERIA:	SK	HL	A
ACCESS & LINKAGES	**CONNECTIVITY**				
	5: MOVEMENT PATTERNS	5A: SPACE IS WELL CONNECTED TO DOMINANT EXTERNAL PEDESTRIAN ROUTE(S)	1	1	0
		5B: SPACE PROVIDES WELL-INTERCONNECTED INTERNAL PATHWAYS, WITHOUT DEAD-END SITUATIONS	1	1	1
	6: NODE CONNECTIVITY	6A: SPACE CONNECTS 2 OR MORE ACTIVITY NODES IN ITS IMMEDIATE SURROUNDINGS	1	1	1
		6B: SPACE IS A DESTINATION WITH FACILITIES FOR LONG-TERM ACTIVITIES	0	1	1
	7: SIGHTLINES AND WAY-FINDING	7A: MAJORITY OF HORIZONTAL AND VERTICAL DIRECTIONS ARE VISIBLE FROM EVERY ENTRY POINT	1	1	1
		7B: MAIN ENTRY/EXIT POINTS ARE VISIBLE FROM BOTH WITHIN AND OUT OF SPACE	1	1	1
	MOBILITY MEANS				
	8: BICYCLE FRIENDLY DESIGN	8A: BIKE STAND FACILITIES ARE AVAILABLE WITHIN SPACE OR IN ITS VICINITY(UP TO 200M)	0	1	0
		8B: DESIGNED CYCLING AREAS/LANES ARE PROVIDED, WELL-SEPARATED FROM PEDESTRIAN WALKWAYS	0	0	0
	9: PUBLIC TRANSPORT	9A: ACCESS TO PUBLIC TRANSPORTATION MEANS IS AVAILABLE IN THE VICINITY OF URBAN SPACE (UP TO 400M)	1	1	1
		9B: AT LEAST 2 TYPES OF PUBLIC TRANSPORTATION ARE AVAILABLE	1	1	1
	10: VEHICULAR ACCESS	10A: PARKING FACILITIES ARE PROVIDED IN THE VICINITY (UP TO 400M)	1	1	1
		10B: PARKING FACILITIES ARE INTEGRATED WITHIN SPACE, WITHOUT CONFLICTING WITH PEDESTRIAN MOVEMENT	0	0	1
	11: DROP-OFF AND TAXI STANDS	11A: PICK-UP/DROP-OFF POINTS ARE AVAILABLE ON SITE	0	0	1
		11B: TAXI STANDS ARE PROVIDED WITHIN SPACE OR IN ITS PROXIMITY UP TO (400M)	1	1	1
	LEGIBILITY & EDGES				
	12: SPATIAL LAYOUT	12A: PEDESTRIAN NETWORKS ARE CLEARLY DIFFERENCIATED FROM OTHER ACTIVITIES	1	1	1
		12B: THE HIERARCHY OF PEDESTRIAN NETWORK IS PROVIDED, MAJOR AND MINOR PEDESTRIAN ROUTES ARE CLEARLY DEFINED	1	1	1
	13: FOCAL POINTS OF ACTIVITY	13A: AT LEAST 2 LEGIBLE NODES OF DIFFERENT TYPES OF ACTIVITIES ARE PROVIDED WITHIN SPACE	1	1	1
		13B: NODES ARE VISIBLE FROM MAJOR ACCESS POINTS	1	1	1
	14: VISUAL LANDMARKS	14A: AT LEAST 1 VISUAL LANDMARK IS PROVIDED	1	1	1
		14B: MORE THAN 1 VISUAL LANDMARK IS PROVIDED	1	1	1
	15: PERMEABILITY	15A: SPACE HAS GOOD VISUAL CONNECTION WITH SURROUNDINGS-EDGES ARE POROUS OR SEE-THROUGH	1	1	1
		15B: EDGES ARE VISUALLY RICH AND ACTIVE WHEN PERMEABILITY IS REDUCED	1	1	1
COMFORT & IMAGE	ATTRIBUTES AND EVALUATORS	CRITERIA:			
	ENVIRONMENTALLYFRIENDLY DESIGN				
	1: GREENERY AND WATER-AVAILABILITY AND ACCESS	1A: GREENERY AND/OR WATER FEATURES ARE AVAILABLE IN SPACE	1	1	1
		1B: SPACE ALLOWS INTERACTION WITH GREENERY AND/OR WATER ELEMENTS PROVIDED	1	1	1
	2: GREENERY-FORM, PATTERN AND DIVERSITY	2A: GREENERY HAS DIVERSE FORMS AND PATTERNS	1	1	1
		2B: GREENERY APPEARS AT DIFFERENT LOCATIONS OF THE URBAN SPACE(SUCH AS GROUND LEVEL, ROOF OR VERTICAL GREENERY)	1	1	0
	3: BIODIVERSITY	3A: SPACE EMPHASIZES THE USAGE OF LOCAL FLORA SPECIES	1	1	1
		3B: SPACE IS LINKED TO A LARGER ECOSYSTEM ENABLING ECOLOGICAL CONTINUITY	0	0	1
	4: ENVIRONMENTALLY FRIENDLY STRATEGIES	4A: AT LEAST 1 ENVIRONMENT-FRIEDNLY STRATEGY IS EMPLOYED IN THE DESIGN OF THE SPACE	1	1	1
		4B: MORE THAN 1 ENVIRONMENT-FRIENDLY STRATEGY IS EMPLOYED. ENVIRONMENTAL AWARENESS AND ENVIRONMENTALLY-FRIENDLY USAGE OF SPACE IS CLEARLY PROMOTED	1	1	1
	5: ENVIRONMENTALLY FRIENDLY STRATEGIES	5A: URBAN SPACE RESPECTS AND PRESERVES(WHERE APPLICABLE) EXISTING NATURAL ENVIRONMENT	1	1	1
		5B: SPACE ENHANCES NATURAL EXPERIENCE THROUGH LANDSCAPE DESIGN	1	1	1
	USER COMFORT				
	6: PROTECTION FROM WEATHER CONDITIONS	6A: MAJOR PEDESTRIAN PATHWAYS ARE COVERED	0	0	1
		6B: LARGER COVERED OR ENCLOSED AREAS ARE AVAILABLE IN SPACE	0	0	1
	7: SHADE AND SUNLIGHT	7A: SPACE PROVIDES A VARIETY OF SHADED AND SUNLIT AREAS	1	1	1
		7B: FLEXIBLE/ADJUSTABLE SHADING MEANS ARE PROVIDED IN SPACE	0	0	0
	8: AIR CONTROL AND OPTIMIZATION	8A: SPACE IS NOT EXPOSED TO SUBSTANTIAL AIR POLLUTION AND HAS GOOD VENTILATION	1	1	1
		8B: THE DESIGN EMPLOYS TECHNIQUES TO IMPROVE OR ENRICH THE AIR QUALITY	1	1	1
	9: NOISE CONTROL AND OPTIMIZATION	9A: SPACE IS FREE FROM EXTERNAL AND/OR INTERNAL NOISES	0	1	0
		9B: SPACE EMPLOYS TECHNIQUES TO IMPROVE OR ENRICH THE AURAL QUALITY	1	1	1
	IDENTITY (IMAGE & CHARACTER)				
	10: IMAGEABILITY	10A: SPACE IS MEMORABLE FOR ITS UNIQUE FEATURE(S)	1	1	1
		10B: SPACE AND ITS FEATURES ARE WELL KNOWN TO LARGER PUBLIC	1	1	1
	11: HISTORY AND SYMBOLIC VALUE	11A: TANGIBLE TRACES OF HISTORICAL/CULTURAL HERITAGE ARE AVAILABLE ON SITE	1	1	1
		11B: DESIGN HAS CLEAR ASSOCIATIONS WITH LOCAL HISTORY AND CULTURE	1	1	1
	12: ART, CULTURE AND ALTERNATIVE CULTURE	12A: ART AND CULTURE-ORIENTED PROGRAM(S) ARE PROVIDED	1	1	1
		12B: SPACE CATERS TO ATTERNATIVE USES AND/OR USER GROUPS(SUBCULTURES)	1	1	1
	PROVISION OF AMENITIES & SERVICES				
	13: HYGIENE FACILITIES	13A: SPACE IS CLEAN AND KEPT IN GOOD PHYSICAL CONDITION	1	1	1
		13B: SUFFICIENT NUMBER OF AT LEAST 2 HYGIENE AMENITIES ARE AVAILABLE IN SPACE	1	1	1
	14: LIGHTING	14A: ADEQUATE LIGHTING ALONG MAIN PATHWAYS AND ACTIVITY NODES IS PROVIDED	1	1	1
		14B: SPACE PROVIDES AMBIENT AND/OR ADJUSTABLE LIGHTING	1	1	1
	15: INFORMATION FACILITIES	15A: AT LEAST 1 PUBLIC COMMUNICATIONAL FACILITY IS AVAILABLE IN SPACE	1	1	1
		15B: GOOD SIGNAGE AND WAY-FINDING FACILITIES ARE AVAILABLE	1	1	1
	16: HEALTHCARE AND SOCIAL SERVICES	16A: AFFORDABLE GENERAL HEALTHCARE SERVICE FOR ALL AGE GROUPS IS AVAILABLE WITHIN URBAN SPACEOR IN ITS VICINITY(UP TO 400M)	0	1	1
		16B: SERVICES FOR 'VULNERABLE' USER GROUPS(ELDERLY, CHILDREN, THE DISABLED, ETC.) ARE AVAILABLE WITHIN URBAN SPACE OR IN ITS VICINITY(UP TO 400M)	0	1	0
	SAFETY & SECURITY				
	17: SAFETY AND IMAGE	17A: DESIGN PREVENTS PHYSICAL INJURIES	1	1	1
		17B: SPACE APPEARS SAFE DUE TO APPROACHABLE AND INVITING DESIGN	1	1	1
	18: SECURITY	18A: SPACE EMPLOYS SECURITY MEASURES	1	1	1
		18B: SECURITY MEASURES ARE EMPLOYED IN NON-INTRUSIVE MANNER	1	1	1

Fig. 10.20 Urban design criteria checklist part II (authors)

In conclusion, even though the three examples did not achieve all the criteria in the checklist but they proved to be successful reuses of lost urban space and they also proved that reusing lost urban spaces not only depends on the condition of the space itself but on its surroundings and how the reuse impacts those surroundings.

10.11 Conclusion

This chapter demonstrates the transformation of lost space into integrated community open space either by renewal, repurposing or infill. The transformation might be successful and maintain its function, or it might need to extend and impact the surroundings of the given site. The three previous examples were originally different types of lost urban spaces but in spite of their varying scale and different design approaches, they became focal nodes of attraction in their districts and managed to link their surroundings coherently. Through an integrated design process, lost urban spaces that are formed by infrastructure, landscape, and architecture can be treated as sites that promote urban activity. With visible reminders of the past problems of urbanization, it will be important to maintain focus upon integrated design. As the urban population grows, the transformation of lost urban spaces into desirable sites of urban activity should continue to be a top priority among designers.

The research recommends the implementation of an integrated approach combining the spatial definition of the figure ground theory with the connective qualities of the linkage theory, and the social responsiveness of the place theory, whicn can be summarized as follows:

- The approach should integrate new elements with old in order to express the concept of time.
- The integrated approach could also be achieved by increments or phasing, as in using small scale steps like the renewal, repurposing or selective infill of a certain landscape instead of a complete redevelopment that could often segregate the patterns of the urban space.
- Finally, the quality of design on the urban space should be integrated in the decision making process to balance between functional and economic considerations.
- **In the concluding remarks you should try to link the findings to the design of urban space in new communities and new settlements. How will this research benefit planners and designers and decision makers in new cities?**

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Chapter 11
Operational Risk Model Managing Urban Safety in Real State

Indjy M. Shawket

Abstract The study presented in this chapter aims at deducing a new operational framework model for safety existence in urban real estate grounded on risk management. This expanded vision is based on the concept of 'Man' as the core of study, his aspirations, needs and his relation with the surrounding communities. As real estate deeply affects communities, and enclosed urban spaces physically and psychologically, security is also a key aspect among that domain, that can also affect its life quality. Here comes the role of project management widely, that incorporates risk management specifically.

Social Protection's view emphasizes the double role of risk management, as it should particularly support poor societies, against all expected risks. The study in this chapter focuses on safety risk management through the project operation stage, to build up an operational model manipulating different safety risks (high/low probabilities, and impacts) affecting different stakeholders in urban spaces of real estate.

Furthermore, safety elements should be integrated within the design of the different urban spaces, which are included in the operational model, as measuring indicators for safety risks vs. stakeholders' vision.

Empirical study is conducted on residential middle-class compound in Egypt to apply the operational model, in an attempt to explore safety risks in spaces. Accordingly, this model shall act as an effective tool in decision making during project management phases, to ensure safety and thus enhances life quality inside these urban spaces.

Keywords Risk Management · Safety, · Real Estate · Project Management · Community Urban Spaces

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11.1 Introduction

Housing is considered to be a fundamental human right; that constitute one of the important life quality, and healthy context determinants. Deteriorated housing conditions might lead to different levels of environmental risks. The real estate project is usually interdisciplinary, integrating tools and techniques for the design, implementation, and evaluation of indoor and outdoor environments, and targeting many developmental goals.

Urban renaissance is concerned with managing our existing assets, while controlling our future ones as well. Poor management and insecurity in environments are main reasons that urge many inhabitants to relocate from their communities. Such unplanned movements could be reduced by ameliorating the different physical, cultural, economic and social aspects.

Nevertheless, security is one of the most demanding aspects. Therefore, it became a major necessity to study safety risks, that may affect different stakeholders of any of the real-estate projects, through its different stages; and to figure out a suitable process to discover these risks. Thus, the study in this chapter mainly aims to deduce a model, to be used by decision makers, that helps in identifying different safety risks in middle –class urban spaces' residential compounds during the project operation period. The chapter starts with demonstrating the main argument, based on literature review covering aspects of urban design, and safety risk management, and then moves to the empirical study. Stakeholders' questionnaires are used as a tool to apply the extracted model on a middle-class residential compound, based on investigation of safety risks and their categorization to overcome safety risk management; and thus contributing to establishing better environmental contexts.

11.2 Urban Real Estate

Buying and selling of land, whether it is developed or not, is a major force in the production of space. Consequently, urban land acquires its value through society/community.

The collective component of metropolitan real estate's value is privately expropriated in a capitalist society/community (Gottdiener et al. 2016: 113). The meaning of term 'community' can be elusive even within academic discourse. Liepins (2000a) recognizes communities to be 'social collectives of great diversity'. A model developed by her represents a community as an entity comprising four elements: people, meanings, practice and spaces/structures (Woods 2011: 92–93).

Further, security is the main key to lead a happy healthy life. As insecurity affects us all, we regularly look for individual salvation from different shared troubles. This strategy is unlikely used to deliver results we are looking for – since it leaves the roots of insecurity intact-. Moreover, precisely falling back on our individual resources, and wits, which inject most regions with the insecurity we wish to control

and escape from (Bauman 2013: 72). Urban neighborhoods should be livable places, and incorporate points of attraction. This target would be achieved by improving the design's quality, and movement creating compact developments (Force et al. 1999: 5).

The 'cultural turn' takes hold in geography. There is a turn from focusing on the economics and politics of class. Tim Butler has been at the forefront of attempts to conceptualize middle classes- which will be presented in this chapter- they are fractured along identity lines, usually associated with lifestyle, value system, and income; and they seek out place (neighborhoods) that contain 'people like themselves' (Paddison and McCann 2014: 42).

The quality of the built environment, in our settlements, extensively impacts the way they function. Well-designed streets, buildings, compounds, and districts are fundamental for successful economic, and environmental regeneration, as well as socially in all.

New developments on urban brownfield or Greenfield land must be designed with higher standards, if they are likely to attract people back into their projects, with emphasis on urban developments; required to be integrated within their surroundings. Thus, they should optimize the access to the public transport, and maximize their potentials by increasing their density in appropriate conditions. Developments should seek diversity; through encouraging activities' mix, variation in services, incomes, and tenures within neighborhoods. Land-use must be efficiently planned, local respected traditions and negative environmental impacts are required to be taken into consideration in development strategies. Priority should be given to architectural standards, and to the design of public spaces between buildings, where people meet, and move around (Force et al. 1999: 6).

According to design guidelines by Marcus, and Francis (Marcus and Francis 1997: 9–10), after reviewing all studies, they established a set of criteria for successful people place. Points related to safety will be used in the empirical study presented in this chapter. These criteria include:

1. Easily accessed, and can be seen by common users;
2. The place clearly conveys the message that is meant to be used for;
3. The place should be beautiful and engaging, on both the outside and the inside;
4. Furnisher should support most likely and desirable activities;
5. Provides likely users with the feeling of security and safety;
6. Offer relief from urban stress, and enhance the health, and emotional wellbeing of most common users;
7. Fitting the needs of the most common user groups;
8. The space should encourage different subgroups to use it, without any group's activities disturbing the other's enjoyment;
9. Offers a physiologically comfortable environment, regarding sun, wind, and shades;
10. Takes into consideration children, and disabled people accessibility;
11. Supports the management's philosophical program;
12. Consolidates components, which users could change;

13. Motivates individuals or members of a group user, to become attached to the place, through getting involved in its design or/and construction or/and maintenance;
14. According to what is expected to that type of space, it should be easily and economically maintained, and;
15. When designing the space; equal attention should be paid to space as a social setting and expression of visual art.

Accordingly, from the previous list, only the following nine points, related to safety will be applied through the empirical study.

1- Easily accessed (Safely accessible);
4- Be furnished to support the desirable activities safely (Safely furnished);
5- Provide common users with the feeling of security, and safety (Safety feeling and secure);
7- Fitting the needs of the most common user groups. (Safely geared to needs);
9- Offer a physiologically comfortable environment, regarding sun, wind, and shades (Physiologically safe);
10- Safely accessible to children, and disabled people. (Safe to children/disabled);
11- Support a safely philosophical program espoused by the managers of the space. (Safe managing);
12- Safely incorporate components, which the users can manipulate or change. (Safe for user changes), and;
14- According to what is expected to that type of space, it should be easily and economically maintained (Safety pertained, during any maintenance procedures).

11.3 Safety and Risk Management

The project management's role is to use the resources available in an effective way to accomplish a set of goals within specific criteria. The role of project management needs to be placed within a wider project context.

A model of project's life with its six stages has been provided (Munns and Bjeirmi 1996: 84–85) as follows;

1. The conception phase: where the idea for the project is generated, within the client organization, and its feasibility determination;
2. The planning phase: it is the method to achieve all goals of the original idea-planned and designed;
3. The production phase: plans are converted into physical reality;
4. The handover phase: when the finished project is handed over to the client for use;
5. The utilization phase: when the client makes use of all the setting, and;
6. The closedown phase: the project is disposed of, and dismantled at the end.

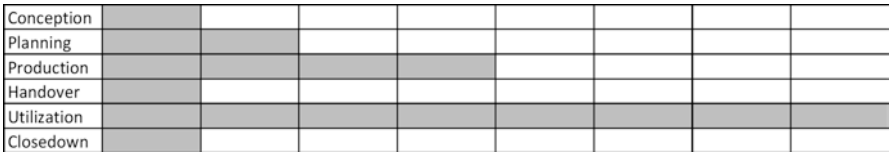

Fig. 11.1 The project life cycle's stages, and the parties' interest in each stage (Author based on: Munns and Bjeirmi 1996: 84)

The client is then left to cope with the outcome, which must be effectively utilized, until it reaches the last stage. Throughout this process, the project performance can be assessed in one of following three ways:

1. Implementation: this is completed in stages (two – four), and is concerned with the 'project management techniques', and their implementation;
2. Perceived values: this is the users' view, which will interact with the project during the utilization phase, and;
3. Client satisfaction: at project closedown, when the client can examine different influences on the project, and can make assessments to measure the satisfaction of the original goals.

As mentioned above (see Fig. 11.1), utilization phase is the longest, and most important phase, as it is the phase were users interact with the project delivering positive or negative views of users. At this point the research will work on building up an operational risk model managing urban spaces of real state at this period to guarantee the successful completion of projects.

Risk mainly deals with the 'uncertainty of events' that may affect the project. Some negative events have a high likelihood of occurring on certain projects, examples are as follows:

- Safety risks; which are common in construction projects.
- Changes in the value of local currency -during a project affect purchasing power and budgets on projects- with large international components.
- Some projects that mainly depend on good weather (such as road construction or coastal projects) face risk of delays due to exceptionally wet or windy weather.

These previous examples are of known risks. ***'Known risks'*** are events that have commonly been known/identified, and analyzed for which advanced planning is possible. Other risks are unknown or unforeseen till now (Wiley and et al. 2016:11.1). On the other hand, attitudes to risk are measured by studying commonly assumed categories of risk: reverse risk, natural risk, and risk seeking. In addition, for most business and scientific decisions there are mainly four categories of risk, as follows;

High probability: High impact (H-H) or Low probability: High impact (L-H), or High probability: Low impact (H-L), or Low probability: Low impact (L-L).

Many empirical studies have shown that it is overwhelmingly the case that decision makers are highly risk averse. In fact, they spend a lot of effort, and time to minimize risks that they do take (Raftery 2003: 9)[1].

There are three pillars of assessing the quality of life which are: the safety level of the neighborhood and park, health issues -related to housing environment, and park-, as well as the satisfaction for the housing amenities, and park facilities. (Bakar et al. 2016: 00083).

Giving a high priority to safety, it was defined by the IAEA as being indicative of a safety culture, the IAEA (1988) defined safety culture as; *"that assembly of characteristics, and attitudes in organizations, and individuals, which established that, as an overriding priority, safety issue receive the attention warranted by their significance"*.

For safety and risk professionals, (Glendon et al. 2016: 340–364), safety auditing could be a mean in achieving the following;

- Compose a priority list of items, which require attention (a particular and important function).
- Getting line management, to think about health, and safety issues (related to the awareness that generate function of the safety audit).
- Getting line management, to own their health, and safety responsibilities (takes the mission, which is a stage further by helping to locate responsibility, where it belongs, hopefully leaving the safety, and risk aspects in an advisory role).

Studying and analyzing safety techniques of documentation reviewing its risks are; Expert interviews, analogy comparisons planning meetings, SWOT analysis, brain storming, risk practice methodology, documentation reviews, checklists, plane valuation, Delphi technique, Crawford slip method, and risk breakdown structure (Pritchard 2014: P63). From which, reviews will combine brain storming to form a checklist through valuation, as will be seen in the empirical study section.

11.4 Model Formatting

To format a model that targets 'the operation of safety risk management in urban spaces of real state', deductions from previous sections will be involved; the set of urban elements for a safe successful people place (from urban real estate section), Categorization of risks (from safety and risk management section), different stakeholders, and the stages chosen for the study 'utilization stage' will all combine to form a matrix of relations, that produces the model (which the study in this chapter targets), as shown in Fig. 11.2.

[1] All previous risk divisions will be involved in the operational model, and applied to the empirical study as well

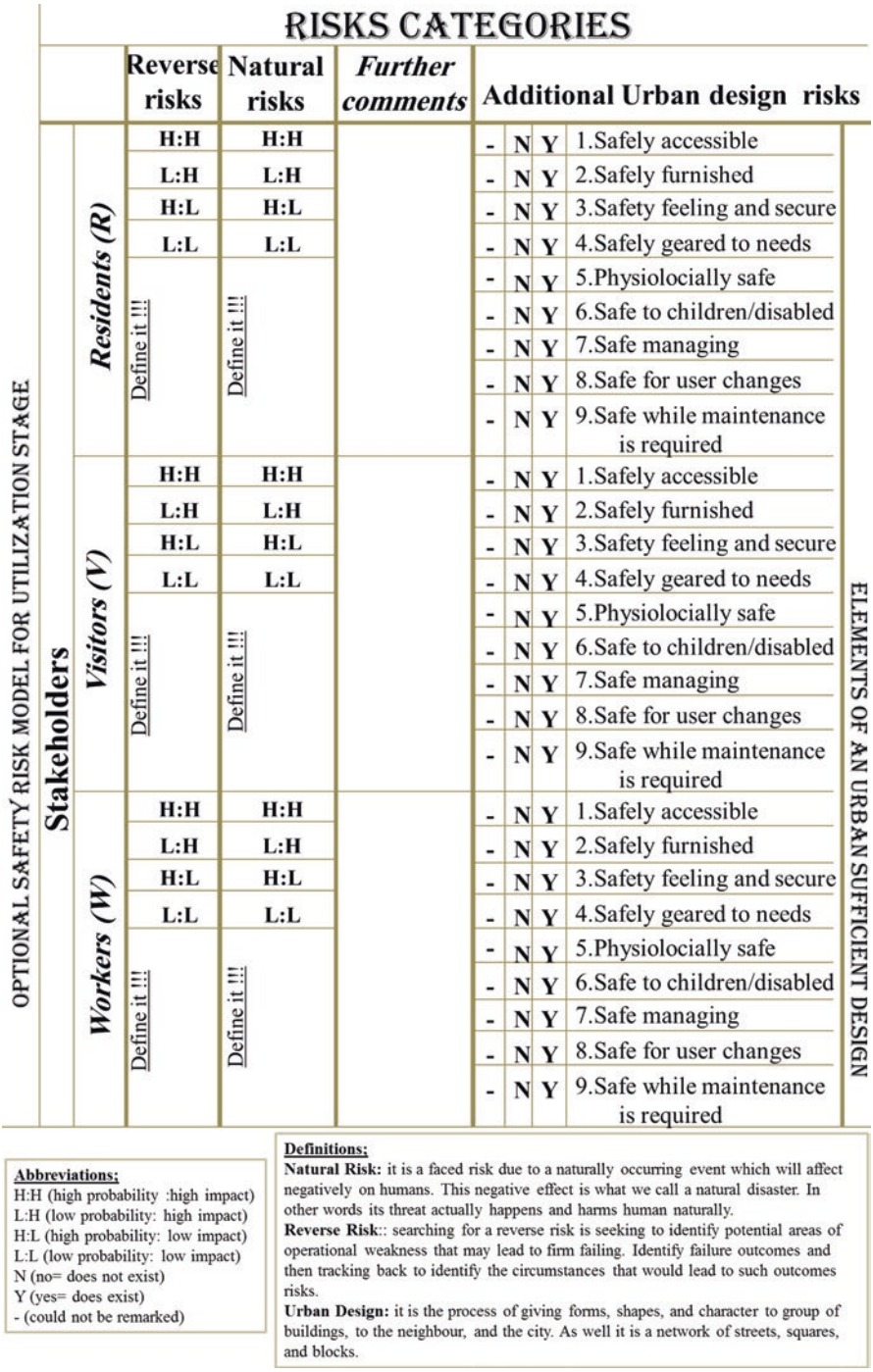

Fig. 11.2 The operational safety risk model for utilization stage in real estate (Author)

11.5 Empirical Case Study

A case study is selected to examine the 'Operational risk model managing urban safety in real estate', to figure out safety risks in real estate, contributing to a better, and safer environment. Egypt is one of the countries that have been witnessing dramatic changes; as well as its capital 'Cairo', suffering from radical changes in real estate requirements. Nowadays, although management is taking a great role in tackling lots of challenges, but, pertaining safety measures in residential compounds is still missing.

Baron City Project is one of the projects owned by (OUD) "Orientals Urban Development", which is located along Cairo's Ring Road near Maadi Carrefour. The project is part of the OUD's mission to assist in alleviating the housing shortage in Greater Cairo, and to encourage people to move away from the city center, by providing affordable housing in the suburbs.

The project is mainly constituted of 80 high-rise buildings, each of 11 standing floors. The residential compound aims to accommodate middle-income household. The project facilities include parking, open recreational spaces, water features, Baron Home Center, kindergarten, and a mosque, with a total built up area of 30,000 m^2. (OUD. 2016) (see Figs. 11.3 and 11.4).

Interviews were held with different stakeholders (residents, visitors, workers, management, and project consultants) to fill up a questionnaire (see Fig. 11.5), which is divided according to risks' types (using the operational model Fig. 11.2)).

Questionnaire form will obtain basic information about the stakeholder e.g., the date of his residence, in order to determine his capability in identifying risks. Filling in questionnaires will help in finding out an answer to 'What are the safety risks that face the stakeholders during the utilization period?'

The answers will be analyzed, to end up with specific results. The below form was filled up by 80 different stakeholders as follows;

The biggest percentage goes for the inhabitants, constituting about 62.5%, as they are the categories, who are mostly in contact with the real estate (divided equally between males and females with 25 forms for each). Visitors and workers come next, by12.5% for each (the workers form was filled by 5 security guards and 5 housekeepers). And the least were the management responsible, and consultants, where each filled 5 forms with the percentage of 6.25%.

11.6 Results

The research focuses on one of our country's major challenges: 'Safety risk management in urban residential compounds', where many stakeholders suffer from lack of security in their residential open spaces. Questionnaires have been conducted in the study presented in this chapter, as a tool attempting to figure out, and resolve security challenges.

Fig. 11.3 Baron City compound (Author)

It is evidently clear that there is a lack of binding 'urban spaces' design', with 'safety risk management' in urban residential compounds. Consequently, the research worked on building-up an operational risk model to manage the feeling of security in open residential spaces. From previous questionnaires, results are deduced, from which an overall safety risk list could be identified clearly. Decision

Fig. 11.4 A satellite image for Baron City compound (Author, based on Google map, October 2016)

makers could use these results to tackle challenges resulting in safety risks, and thus contributing to a better environment. Results will be divided into three parts, in accordance with the questionnaire, which includes three divisions (reverse risks, natural risks, and additional urban design risks).

11.6.1 Data Analysis for 'Reverse Risks'

The questionnaires revealed that there are a number of reverse risks, which varies in probability of existence, and impact on its surroundings. Below is a list of extracted reverse risks, and a graph showing identified risks, with its probability and impact, shown in Fig. 11.6.

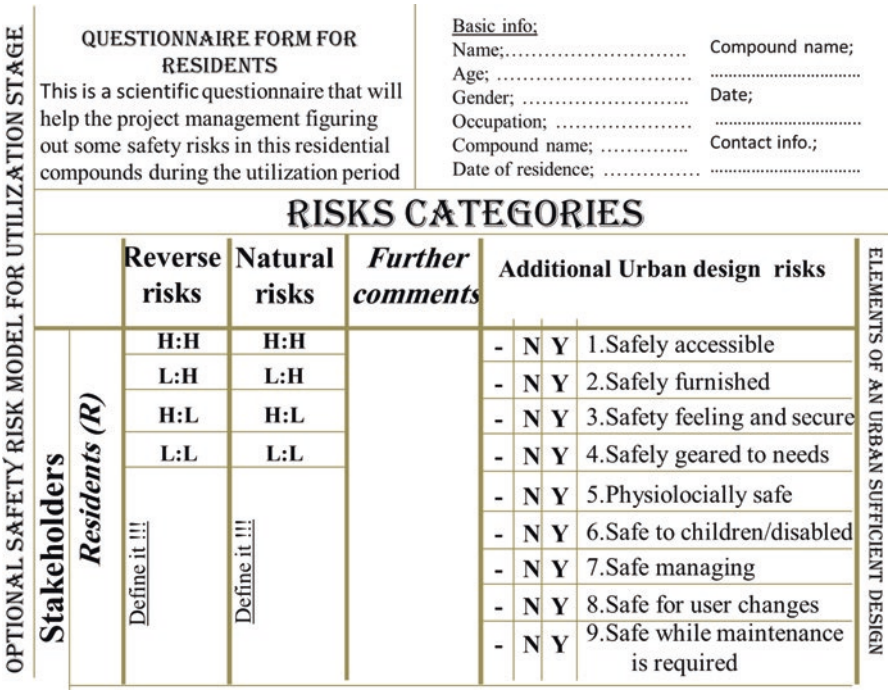

Fig. 11.5 Resident Questionnaire from Extracted from the Operational Safety Risk Model for utilization Stage in Real Estate (Author)

List of Reverse Risks:

1. Stray animals -dogs- cause the feeling of insecurity in the urban spaces of the compound;
2. Non-shaded paths cause an unsecure walk for pedestrians inside the compound;
3. The circulation of the vehicles causes unsecure walks inside the compound;
4. The existence of mod garbage by the backside of the compound, which produces bad odors, that harms the health safety of the compound residents;
5. The cars' parking location design is not well connected to the entrances of the buildings, which gives the feeling of insecurity for stakeholders after parking while reaching the buildings' entrances, especially if they have children with them;
6. Entrances and gates don't offer a complete secured feeling from the outsiders;
7. Area of open spaces is not enough for the residents of the compound; this over capacity gives the feeling of social insecurity;
8. Non-fenced borders give the feeling of insecurity from the surroundings;
9. Crossing roads are not designed safely for pedestrians;

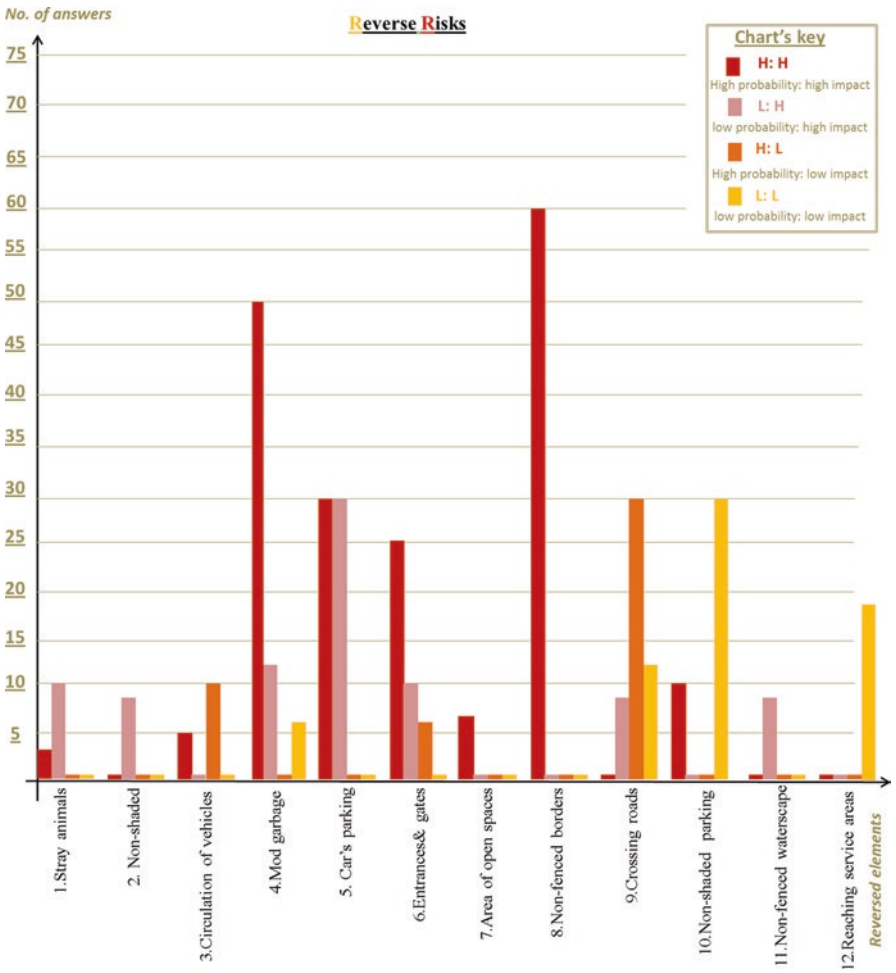

Fig. 11.6 An analytical chart for the reverse risks' answers (Author)

10. Non- shaded parking's raise worries about residents' cars, and make them feel that their cars are not safe from high temperatures;
11. Non-fenced water-escapes give the feeling of insecurity for parents about their children, and;
12. Reaching the service area (Baron Mall) requires the exit of the compound, and the re-entrance from another gate, as there is no direct accessibility to the mall from inside the compound, which decreases the feeling of security to the pedestrians.

11.6.2 Data Analysis for 'Natural Risks'

The questionnaires also highlighted the fact that there are a number of natural risks that varies in probability of existence, and its impact on surroundings. Below is a list of extracted reverse risks, and a graph showing identified risks, their probability and impact (see Fig. 11.7).

List of Natural Risks:

1. Strong rains, which may cause the feeling of insecurity inside the urban spaces of the compound, as well as the negative effects it may cause to the open spaces of the compound;
2. Strong winds –may be accompanied with sand-, which may cause the feeling of insecurity inside the urban spaces of the compound, as well as the negative effects it may cause to the open spaces of the compound, and;
3. Dusty winds from surrounding hills are not prevented by any landscape elements, which cause the feeling of insecurity, while sitting in plazas, in case of windy weather.

11.6.3 Data Analysis for 'Urban Design Elements' Risks

This part will present the statistical data from the questionnaire (Table 11.1)), and this is represented graphically in Fig. 11.8.

11.7 Results' Discussion

Statistical results of the study case highlight some challenges that should be tackled by decision makers as follows;

- Security men should not be changed a lot, and they have to be recognized in urban spaces for residents' security;
- Green areas used by children as a play area, should be fenced for their security;
- No safe paths for pedestrians, or bicycles;
- Maintenance staff should be under supervised by the management authorities to guarantee safety inside the compound;
- The compound management should fence the borders of the compound;
- The mod garbage should be removed totally;
- Cars' parking should be redesigned and shaded;

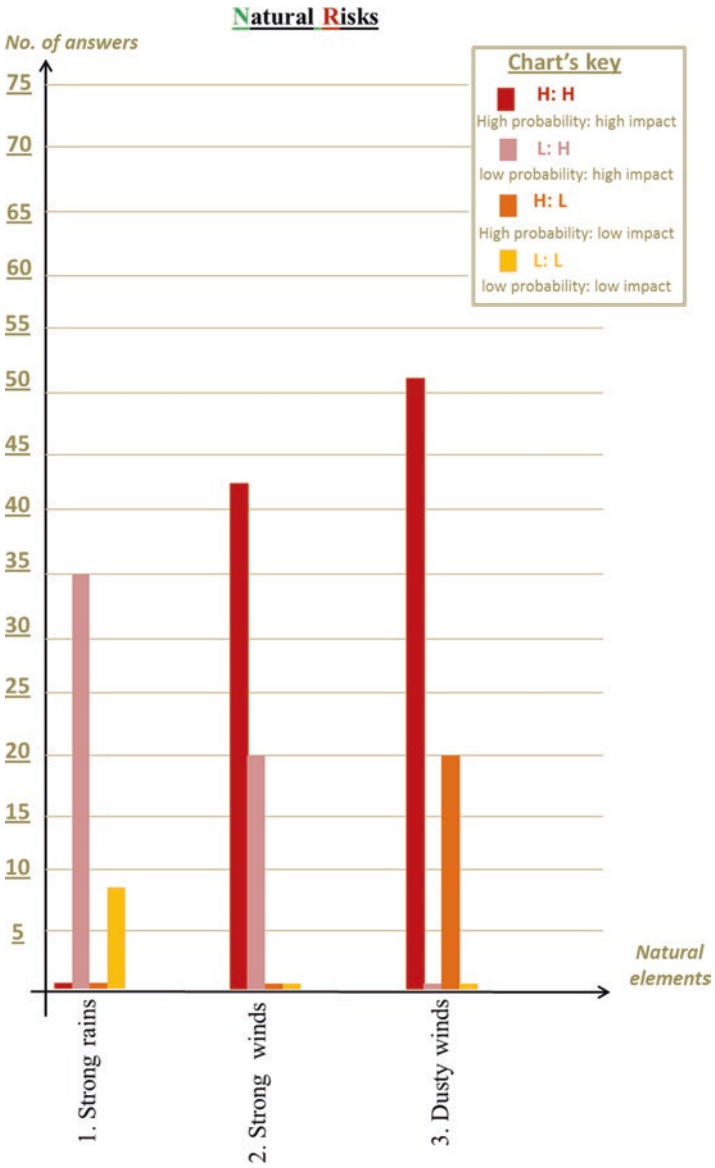

Fig. 11.7 An analytical chart for the natural risks' answers (Author)

- Entrances and gates should be more secured;
- 'Crossing roads' should be taken as a design aspect that needs development;
- 'Wind breakers' should be added to open sitting spaces of the compound;
- Rain drainage systems should be developed inside the compound;

Table 11.1 Statistical data from questionnaires, part of: 'Additional urban design risks

Questions & stakeholders	Yes (Y)	No (N)	Not determined (−)	Questions & stakeholders	Yes (Y)	No (N)	Not determined (−)
Q. no.1				Q. no.3			
Residents	40	10	0	*Residents*	45	5	0
Visitors	5	5	0	*Visitors*	8	2	0
Workers	2	8	0	*Workers*	0	0	10
Experts	8	2	0	*Experts*	2	8	0
Total	55	25	0	Total	55	15	10
Q. no.2				Q. no.4			
Residents	35	5	10	*Residents*	18	20	12
Visitors	6	0	4	*Visitors*	1	9	0
Workers	5	5	0	*Workers*	5	5	0
Experts	8	2	0	*Experts*	2	8	0
Total	54	12	14	Total	26	42	12
Q. no.5				Q. no.8			
Residents	0	50	0	*Residents*	0	43	7
Visitors	10	0	0	*Visitors*	2	8	0
Workers	8	2	0	*Workers*	0	10	0
Experts	5	5	0	*Experts*	0	2	1
Total	23	57	0	Total	2	70	8
Q. no.6				Q. no.9			
Residents	0	50	0	*Residents*	3	30	17
Visitors	3	7	0	*Visitors*	5	0	5
Workers	0	10	0	*Workers*	8	2	0
Experts	1	9	0	*Experts*	5	3	2
Total	4	76	0	Total	21	35	24
Q. no.7							
Residents	5	40	5				
Visitors	2	5	3				
Workers	3	7	0				
Experts	4	3	3				
Total	14	55	11				

Source: Author

- Spaces should be developed, taking into consideration safety of children and disabled;
- Spaces' components should be more flexible, in accordance with each target user to guarantee his safety;
- Managing system of the compound should consider 'safety' a significant element when taking any decisions;
- Maintenance should be operated with higher safety precautions;
- A new and safer accessible method should be developed to provide ease of access to the compound;

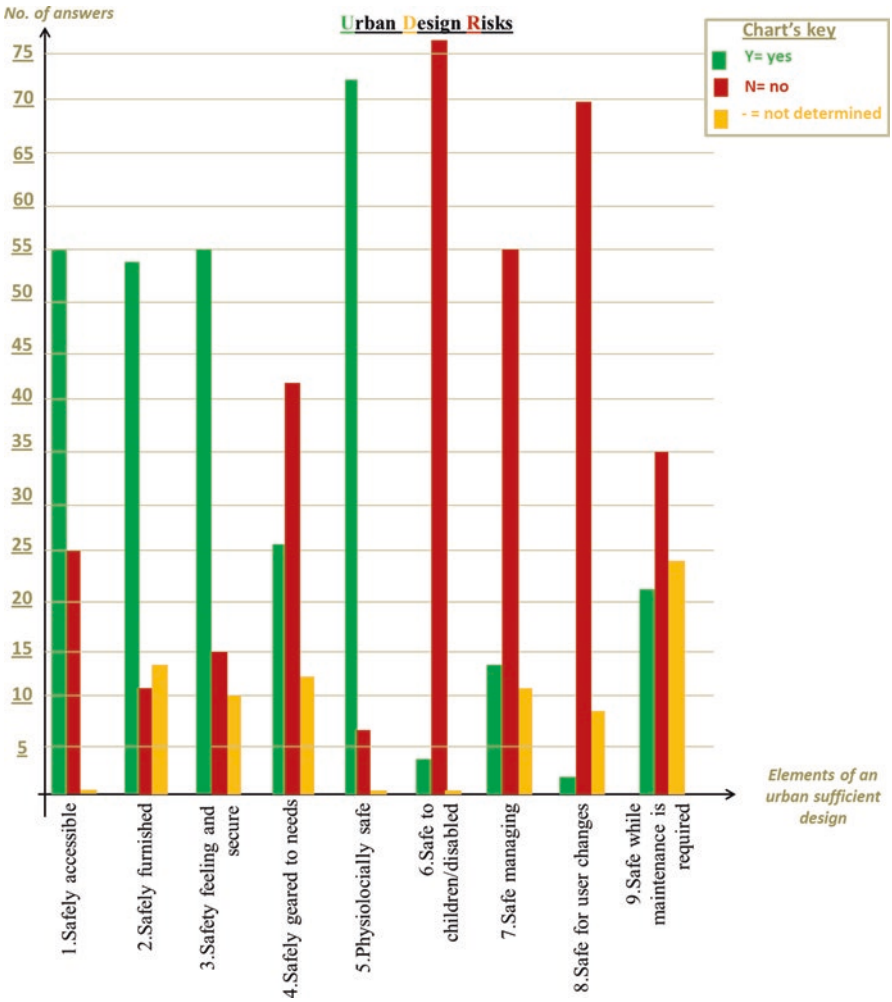

Fig. 11.8 An analytical chart for the urban design elements' risks' answers (Author)

- Differentiation between paths should be integrated in the compound (pedestrian, bicycle, etc.), and;
- Controlling entering people from outside to inside.

11.8 Recommendations

This chapter has ended up with a number of recommendations on both of the scales of urban design and risk management that can be presented as follows:

On the Scale of Urban Design:

- Enable Urban, and housing regeneration companies to coordinate with different stakeholders;
- Develop detailed planning policies for neighborhoods' regeneration, to accommodate safer residential compounds, and;
- Simplify determined local development plans, with an emphasis on strategies to create safer urban spaces in real estates.

On the Scale of Risk Management:

- Develop an action plan to develop safety risk plans in urban real estate spaces during the operation period over a settled time scale;
- Develop a network of regional centers for safety risk development, promoting innovation and good practice;
- Establish a five-year program of capacity building for training staff on international basis, to acquire the required skills, and benefit from the exposure to some international practical models;
- Employment in local development sites should give safety plans contributing different housing development strategies, and;
- Establish a national framework that would help in identifying, managing and communicating the safety risks, that are arise throughout the utilization process of the project, and the different tools and methods that can be utilized to tackle their resulting impacts and challenges.

Acknowledgment I would like to acknowledge my colleague/ sister's soul – Arch/ Reham Mosaad – for her contribution in elaborating the scientific concept, and in investigating the scientific argument. She was supposed to co-operate with me to conduct this study till the end. All gratitude and honor goes to her kind self.

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Chapter 12
Branding the City: Questioning Mega Malls as New Magnets of Socio-economic Vitality in New Cities Around Cairo

Mennat-Allah Elhusseiny and Karim Kesseiba

Abstract In accordance with the urban expansion taking place around Greater Cairo since Sadaat's open economy policies, questions have been raised related to the sustainability of the new settlements. Ranging from New Cairo City to the East and 6th of October to the West the same urban design strategies of low density and horizontal expansions have been applied. However, those urban design strategies did not fulfill the need for alternative independent communities and the vast open spaces are either privatized by real estate companies, mega malls or left vacant. Mega malls- investigated in this research- play the role of the public space in several cases to be investigated here. From one point of view, the mega mall provides services both social and commercial to its customers who can afford to use the facilities. However, this leads to a great dilemma of privatization and branding of public space in new cities. The question raised here is the validity of branding new cities via mega shopping malls. This debate re-questions Jacobs' theories applied to the Cairene case. The methodology is based on qualitative analysis of two selected case studies for mega malls focusing on the urban setting of the mega malls within the new expansion and its architectural character. Following that, Jacobs' theories will be briefly reinterpreted according to the urban setting surrounding the mega malls in addition to contemporary theories of social resilience. The conclusion is a group of recommendations to enhance the social vitality of new cities.

Keywords Branding-cities · Mega malls · Social resilience · Controlled environments · New developments around Cairo

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12.1 Introduction

In accordance with the urban expansions taking place around Greater Cairo since Sadaat's open Door economy policies, questions have been raised related to the sustainability of the new developments. Ranging from New Cairo City to the East and 6th of October to the West the same urban design strategies of low density and horizontal expansions have been applied. However, those urban design strategies did not fulfill the need for inclusive independent communities and the vast open spaces are either privatized by real estate companies, mega malls or left vacant. Mega malls played the role of the public space in several of the case studies to be investigated here. From one point of view, the mega mall provides services whether social or economic to users who can who can afford to use the facilities. However, this leads to a great dilemma of privatization and branding of public space in new cities. The question raised here is the validity of branding new cities via mega shopping malls.

The focus here is mainly relevant to the role mega malls play in the new urban expansions around Cairo to the East and West as shown in (Fig. 12.1). The aim is to examine the duality of the roles of mega malls, being from one point of view, the services providers to the new expansions whether social or economic, while from another point of view they create a dilemma of privatization, branding and consumption of public space in new cities, resembling the fantasies of the Dubai architectural extravaganza. This is the main debate in the hereby context, using case studies from the two far ends of the expanding Greater Cairo, connected by the ring road.

The questions raised are related to the validity of branding new cities via mega shopping malls, which aim to provide spaces of consumption along with accesscontrolled environments and activities. This debate thus re-questions Jane Jacobs's theories regarding the death and life of cities, however applied on the Cairene case.

Fig. 12.1 The new urban expansions around Cairo (Authors)

In order to achieve this, the methodology is based first on the literature review of the Life and Death of Cities in relation to Cairo's urban expansions, followed by a qualitative analysis of the two selected case studies, the first is Cairo Festival City located in New Cairo city, and the second is Mall of Arabia located in 6th of October city taking into account in the analysis the dominant urban features and architectural qualities. The qualitative analysis will focus on twofold aspects, first the urban setting of the mega malls within the new expansion; the second is the architectural character depending primarily upon branding and advertising products. Following that, Jane Jacobs theories will be briefly reinterpreted according to the urban setting surrounding the mega malls in addition to contemporary theories of social resilience. The analysis will thus focus on the duality between the possibilities of creating vital streets versus the branding of the city via mega malls. Finally, the conclusion is a series of recommendations to enhance the social vitality of new cities.

12.2 Re-visiting the Life and Death of New Cities in Accordance to New Urban Expansions' Policies in Cairo

The new expansions around Cairo have to be regarded in the shadows of several theories due to their vitality in creating a better built environment. According to Nassar (2013), the absence of sustainable principles in the urban expansions for instance "Green Urbanism", have affected the livability of the expansions, public space and the Sustainable model of the city of Cairo. Nassar (2013) also advocates the importance of paying attention to principles of Green Urbanism especially in cities as important and as expanding as Cairo. Stemming from that, the definition of the term "Green Urbanism" has to be explored. According to Beatley (2000), green urbanism is the term that captures both urban and environmental sustainability. Lehmann (2010) added to that a proactive vision of what might be

our zero-carbon, fossil fuel free future: overlapping mixed-use activities, living and working building typologies explored on the urban scale, infrastructures systems for renewable energies, public transport and individual energy-efficient building designs.

This adds an important dimension related to social integration and the value of paying attention to emerging theories in the 1960s, in which notably Jane Jacobs (1961), called for the "Livability" in cities in accordance with specific urban design attributes, most importantly the significance of the sidewalk, the role of parks, the identification of the city neighborhood, the balance between the formal and informal. Based on the previous debate, the following table summarizes the main aspects to balance social sustainability in the new developments which represent the focus of the study (Table 12.1).

In relation to the low livability of the new expansions, Fahmi (2013) explains that the new expansions have failed to attract the targetedmiddle income and low income

Table 12.1 Key aspects for enhancing livability in new expansion

Key aspects for enhancing livability in new expansion									
Mixture of building types	Informal meetings	Street life	Market square	Street vendor	Shop frontage	Sidewalk cafe	Identity	Narrow streets	De-commoditized public space

Source: Authors

classes resulting in cities which apparently seem empty. This is because of the low rates of inhabitants in the new cities due to mainly the limited proximity between work spaces and housing units and the insufficient public transportation. Accordingly, the middle-income classes prefer to remain in the condensed city in a near proximity to their work and public schools. From another side, he argues that since 2000 New Cairo City was established as a result of merging Greater Cairo Master Plan's eastern new settlements, creating a large suburban community. Initially the area was inhabited by 1992 Cairo's earthquake victims officially relocated to public housing units in settlement which were later regarded incompatible neighbor tothe development of golf gated communities. However, this resulted inthat the New Cairo City encapsulates most of the features and problems of Greater Cairo's urban situation, in terms of a hybrid mixture of decayed public resettlement housing for the poor and up-market private gated resort communities for wealthy expatriate groups, (Fahmi 2013). And due to the lack of homogeneity between the two communities, issues of social disintegration and separation have been observed.

The role of transportation was crucial is bonding the two far ends together as well as tocentral Cairo. The ring road contributed to transportation and communication which connected New Cairo to downtown, the 26th July road axis, introduced on Giza's western outer fringes, has encouraged linkage within 6th October New City including Sheikh Zayed. Whilst the state was forced to re-house thousands of victims of the 1992 Earthquake within Eastern New Cairo City (Sutton and Fahmi 2001) and within Badr New Town (El-Noshokaty 2002), the Ministry of Housing, Utilities and Urban Communities (MHUUC) has recently handed over the management of some of these new towns to private promoters and speculators who constructed villa complexes, enclosed elite compounds, and gulf funded mega malls, (Denis 2006).

In addition to the previous and tackling the issues of livability and vitality of new expansions, Stewart (1996) argues that poor basic services and lack of social and educational infrastructure have also discouraged middle and low income families from settling in new towns. Middle and low income families preferred to remain in familiar even if crowded neighborhoodsin Greater Cairo rather than relocate to remote desert cities with unattractive monotonous architecture. As new town housing proved to be too expensive for workers, it eventually attracted higher income classes and investors rather than middle and low class residents, as in New Cairo City.

The above mentioned debate ranging from issues of livability, social sustenance and resilience of new expansions recall Foucault's (1997) concern with the power of space in terms of how a place is open or closed to public entrance, how it maintains boundaries, barriers, gateways and disallows thoroughfare, loitering or anonymous entrance. Stemming from that, the next part will analyze the two selected cases on the East and West of Greater Cairo.

12.3 Mall of Arabia Versus Cairo Festival City: Architectural and Urban Similarities of Mega Malls' Branding

As El-Sheshtawy (2011) emphasized, traditionally; Cairo had a strong cultural, social, and architectural influence on the Arab world. However, currently this influence is weakened and even inverted. To justify this, one has to regard the series of projects which emerged in Cairo, that respond to Dubai's new urban fantasies. Among which as El-Sheshtawy (2011) explains the Smart Village Project on Cairo-Alexandria road, initially planned to be occupied by the major ministries of the state, which is a replica of Dubai Internet City; Ma'adi City Center which is a replica of Dubai *City* Center, a retail chain; and the various gated communities emerging in New Cairo, which are an echo of similar ventures in Dubai. These parallels do exist and in many instances references are made directly to Dubai.

El-Sheshtawy (2011) further implies that examining these projects would shedsome light on changing notions of Egyptian architectural language and identity in which its own heritage whether its Muslim and pharaonic incarnations as well as those of others, like Dubai's architectural language are repetitively used as 'branding' devices to attract multinationals and in turn "globalize". This will be studied in more details below, to examine the architectural qualities of branding mega malls. As a matter of fact, the scale of those projects could be considered as urban projects, due to the horizontality and multi-functional use of the projects. Nevertheless, architecture in many instances is used to create eye-catching impressions, aiming to achieve the aura of the Guggenheim museum in Bilbao. Such projects are the means to revitalize an otherwise stagnant city-a process sometimes called "the Bilbao effect", (El-Sheshtawy 2011).

12.3.1 Analysis of the Urban Features in Cairo Festival City Mall and Mall of Arabia

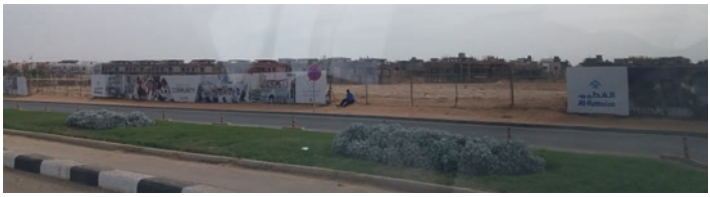
The following part represents the core analysis according to two-fold aspects. The first explained in (Table 12.2) is the main similarities as to urban setting of the two selected case studies, while the second explained in (Table 12.3) are the

Table 12.2 Urban features analysis of the mega malls

Surrounding urban context	**CFCM:** Cairo Festival City Mall is surrounded by notably the Police Academy to the North, which marks an important security landmark in New Cairo. From the East, South and West CFCM is surrounded by housing plots for higher middle income class of the 1st settlement in New Cairo. Adjacent to the Mega-mall lies a gated housing compound still under construction; with villas and apartments reflecting a luxurious lifestyle; matching that of the customers and clients of the neighboring mega mall; and implemented by the same developer "Al Futteim".
	
	Mall of Arabia: Mall of Arabia is located in a strategic plot which marks the major traffic node in 6th of October city, which is El-Obour square. This node is considered the entrance gate the new expansion, upon which lies one of the major universities, The Nile University, still under construction and gated housing compounds mark the south corners of the urban node. The node also is a major transportation hub which accommodates the stops of most public and informal transport systems accessing the new city. This location provides the mall with easy accessibility which is an important advantage to its operation and functionality.
	

(continued)

Table 12.2 (continued)

Surrounding roads network	**CFCM:** The exit from the Ring-road linking New Cairo to downtown represents the main access to CFCM. The Ring Road is a heavy traffic road, especially during the peak traffic hours, where students of schools and universities and residents move back to their destinations. Private cars, school and university buses along with public microbuses that transport workers and employees who reside in considerably far places form their workplaces such as the mega mall represent the most dominant mode of transportation. Access to the Mega mall is also possible from the adjacent streets of the first settlement.
	
	
	Mall of Arabia: Access to mall of Arabia is from the main 26th of July axis which link 6th of October City to downtown. The other entrances are located on the parallel axis of Gamal Abdel-Nasser road. Both roads again mark high traffic roads, and dependency is mainly on private cars or microbuses. Pedestrian access is not possible due to the urban features such as width of road, number of lanes, absence of traffic lights of the roads, even from nearby gated communities.
	

(continued)

Table 12.2 (continued)

	
Mass plan	**CFCM:** The mass plan of CFCM is extending horizontally with a low density built up area, consuming the horizontal expansion to provide vast parking spaces and featuring landscape. This marks the long travel distances between the shops, department stores and parking zones. Thus, experiencing the whole mega mall in one visit is considered impossible.In light of this fact customers deal with the mall as an entertainment and commercial city with different attractions to be targeted in each different visit. Stemming from that, mobile apps started targeting this horizontal expansions to provide way finding techniques within the same project.
	
	Mall of Arabia: The same strategy of horizontal expansion applies to Mall of Arabia, which also marks a large scale experience for users due to the long distances that separate the different entrance gates from each other and from the parking plots as well. This horizontal expansion resulted in adaptable patterns of use where internal valet services are provided for users who aim to facilitate their trip.

(continued)

Table 12.2 (continued)

	
Heights	**CFCM:** The heights in this case extend up to 4 stories in most of the complex. This provides enclosure within the central spaces, and enabled the presence of more dominant branding techniques on the elevations.
	
	Mall of Arabia: Heights are limited to a single storey in this case, except for the furniture complex which marks a landmark by extending for 4 levels with a cylindrical form. Thus, from the vistas of the axes around, the mega mall doesn't provide a strong visual image.
	

Source: Authors

Table 12.3 Architectural Features Analysis of the Mega Malls

Central space	**CFCM:** The central space represents the core gathering and socail interaction node in the mega –mall. Although there is no clear impact of the central space on the external image of the mega mall, yet, the inner elevations, setting, landscape and activities make it the real heart of the project. The water feature "dancing fountain" plays an important role in creating a favorable view for the tens of restaurants and cafes surrounding it. However, access is not limited only to the users of the cafes, but extends to all users of different socio-economic levels. This is because of the proximity of the entrance to the dancing fountain to the main street and the free entrance to the facility. This encouraged the residents of the nearby Zahraa Al-Maadi to use the space inside the mall as a free of charge public space especially in the weekends and public holidays.
	
	

(continued)

Table 12.3 (continued)

	Mall of Arabia: The central space in this case is also an outdoor space that embodiesthe heart of the project, where again a dominant water feature has been added to provide attraction in the vast space. However, the main difference here is that the access to the water feature has been limited to the users and customers of the restaurants and cafes, after being open to the public. The next two images refer to the alterations before and after the access to the central water feature has been limited. Certainly the main goal here was to maximize the economical profit, however, disregarding the possibility of creating a new typology of urban forums. The branding and consumption values have been maximized in this case.
	
	
Architectural Language	**CFCM:** The architectural language in this case provides a minimalistic tribute to patterns and materials. The main player in the mega mall was to provide a background for the elevations of the commercials and branding features. The selection of colors is also based on the suitable choice for each department store. This provides a new sort of International Style, where the branding of the elevations is the new trend, regardless of the physical context of the city.

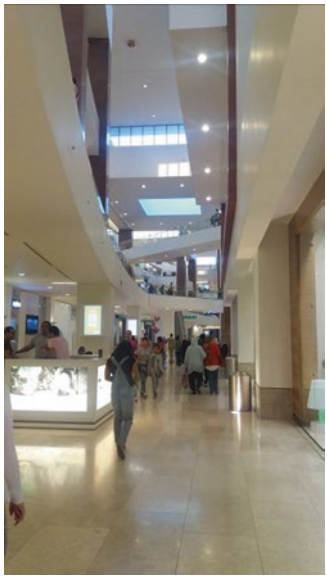
(continued)

Table 12.3 (continued)

Mall of Arabia:
The same strategy is applied on the elevations of Mall of Arabia. The entrances are the only highlighted design features through mass and materials; however, the remaining of the elevation is another background for branding. Notably to mention here, that the same architectural language has been borrowed from the Mall of Arabia in Jeddah, by the same holding company, which re-emphasize the emergence of a new trend of International Style based on branding and consumption aspects.

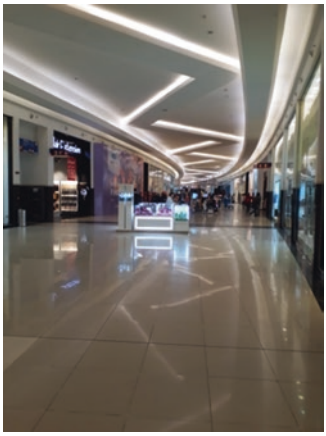
(continued)

Table 12.3 (continued)

Circulation	**CFCM:** The circulation elements in this case is mainly linear, however, sub-divided by several nodes and atria which provide vertical connectivity of the different levels. The inner nodes are again used to provide entertaining features for the users and act as magnets to attract users from one node to the other through the different settings and displays.
	
	
	

(continued)

Table 12.3 (continued)

	Mall of Arabia: In the case of Mall of Arabia, the circulation is mostly linear to the horizontality and loop shaped circulation. However, the main player here was to provide a vast circulation space amid the two rows of the shops to enable the circulation elements to contain commercial and social activities as well.	
		

Source: Authors

architectural features dominant in both cases. The analysis here will pinpoint the surroundings of each mega mall, the main roads leading to each, the mass-plan of each mega mall and finally the heights.

12.3.2 Analysis of the Architectural Features in Cairo Festival City Mall/Mall of Arabia

In the next part, the qualitative analysis will focus mainly on the architectural features of both mega malls, (Table 12.3). The aim is to address points of similarities and differences in the emerging trend of mega-malls. The analysis will cover the features of centralspace, architectural language and circulation inside the facility.

12.4 Cross-Analysis of the Role of Mega Malls in Creating Livability in Cairo's New Districts

After the previous analysis of the mega malls as islands of consumption and branding in the new extensions around Cairo, it is important to re-read the mega malls in their outer context, in relation to the nearby residential neighborhoods and traffic

arteries. In this section, the cross analysis will be conducted on the effect of the mega malls on the livability of the peripheral streets nearby.

According to Momtaz and El-Semary (2015), definitions of livability include an array of different issues that are underpinned by a common set of guiding principles. Those include accessibility, equity, and participation that give substance to the concepts of livability. The quality of life experienced by citizens in a city is tied to their ability to access infrastructure (transportation, communication, water, and sanitation); food; clean air; affordable housing; meaningful employment; and green space and parks. The differential access of people within a city to the infrastructure and amenities highlights questions of equity. The livability of a city can be also determined by the access that its residents have to participate in decision-making to meet their needs. Thus, the livability indicators used in this paper will be combined with reference to the previous literature review as, access to suitable transportation, the right to public space, local products produced by local small based vendors in public space and the balance between the formal and informal activities.

In addition to this, Momtaz and El-Semary (2015) add on that a livable city is a city where common spaces are the centers of social life and the foci of the entire community. A livable city must be built up, or restored, as a continuous network; from the central areas to the more distant settlements, where pedestrian paths and bicycle-paths don‘t cross and mix together, each has its own path in all the sites of social quality and of community life. Those indicators will be examined in the direct context of the two mega malls selected for the study in the Figs. (12.2, 12.3, 12.4, 12.5, 12.6, and 12.7). It has to be noted that the images below were taken in the same time duration as the images used in the previous analysis. This gives a strong indication that the livability has been mainly directed to the mega malls, while being missing in the streets, nodes and squares of the surrounding neighborhoods.

As apparent in the figures above, the planned open space in the neighborhood is left vacant due to its nature of no man’s land. Only private entrances of the houses are maintained, however, none of the indicators of livability studied above are present.

The same problem of the lack of livability is indicated in the above figures adjacent to Mall of Arabia. Open public space is left unmaintained, no possibilities for walk-ability or the presence of social interaction in the streets. Adding to that the new fly-over under-construction in El-Obour street adds even more to the lack of social vitality in the neighborhoods. In addition to that, the left over undersigned space started to re-adapt informal activities and dwellings by the porters of the adjacent houses.

Figs. 12.2, 12.3, 12.4 6th of October neighborhoods adjacent to Mall of Arabia (Authors)

Figs. 12.5, 12.6, 12.7 First settelment neighborhoods adjacent to Cairo Festival City Mall (Authors)

12.5 Discussion

The problem tackled here was the emergence of the new trend of mega malls in the new urban extensions around Cairo. The main aim is to study the current state of the mega malls as islands of branding and consumption, and the cross-effect this has on the livability of the surrounding neighborhoods.

The study resulted in demonstrating that the new trend of mega malls is certainly changing the social spaces of socio-economic vitality into consumption and branding tools. Although in Cairo Festival City case, it has created a social vital node in the fountain area which is open to the public; nevertheless, it is not connected to the city.

The strong presence architecturally and on the urban scale of the branding tools de-saturated the new expansions from opportunities of creating spaces of social and economic vitality elsewhere. The mega malls have been acting as magnets to attract the users to the central space.

In a parallel note, the architectural significance of the mega malls in Egypt are more or less replicas of the featuring mega malls in Duabi and the gulf area. This in addition to demolishing the layers of identity and architectural primacy of Egypt emphasizes more and more the global architectural transitions to branding and consumption. The brand is thus emerging via mega malls to become the new International Architectural Language.

To conclude, the relevant literature related to the life and death of cities was applied on the cases of new expansions around greater Cairo. After that, qualitative analysis has been implemented on two selected case studies of mega-malls, Cairo Festival City Mall and Mall of Arabia. The main outcomes of the study can be summarized as a group of recommendations and lessons learnt. First, it is crucially important to pay attention to the decaying and unmaintained public space in the new extensions and to provide opportunities of economic and social vitality to avoid the presence of unsafe spaces in new developments, or leave the space for further informalities. This is also important for the social sustainability of the new developments around Cairo, which is an emerging trend in this period as a political will in Egypt. Those issues are in need to be addressed before becoming an unsolvable phenomenon.

Second, it is important to re-insert a local character and an appropriated architectural language to emphasize the identity of local spaces. This will add a distinction to the place instead of merely duplicating similar mega-malls in the region. Finally, public transportation should play a better role in the new expansions to link the districts together. Also the design of functional pedestrian and bike lanes in the new development linking the districts to the lively nodes is a very important outcome. Walk-ability can be used also as linking tool between the districts to avoid the prevailing lack of livability in the streets of the new developments.

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Chapter 13
Towards an Innovative Community: Rethinking the Urban Configuration of the University Campus Within New Cities

Mohamed Shokry Abdelaal and Doaa Abdelaal

Abstract Within the context of Knowledge-Based Economy, many cities around the globe are working on magnetizing the global talents of professionals, students, academic staff and researchers for joining their local markets. Numerous studies revealed that university campuses could play a substantial role in boosting the innovation within communities and reinforcing the mission of developing human resources aligned with fostering competitive technological advantages. In new cities, societies tend to maximize their competitive benefits to attract more talents and investment. Thus, reconstructing the relationship between campus and the new city is becoming more substantial for the survival and foolishness of these new communities. Therefore, this study is organized based on two premises, the first straightforward is, hypothesizing that both, urban and spatial characteristics and configurations of university campus may increase or decrease the possibilities of innovation to take place within the city. The second attribute is more holistic, assuming that there is a kind of correlation between community or campus-scale planning, and space-scale setting in fostering interaction and thriving innovation. Accordingly, the research is a trial to articulate the design framework which may control the efficiency of this relationship to promote innovation within a broad ecosystem. In this chapter, the authors used qualitative research tools to consolidate the final findings and planning consideration of new innovative communities by deploying a target group questionnaire and analyzing a distinctive case study of MIT University Campus, USA.

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Keywords Campus planning · Academic spaces · Innovative university · Social innovation · Metrics

13.1 Introduction

Many cities, regions and corporates around the globe are working on developing several projects, trends and concepts to magnetize the global talents for joining their local markets. At the micro level of the worldwide talent pool, this generation of innovators is drawing higher attention to their work environment, providing facilities for them and their families and offering incentives to encourage moving to these innovation magnets.

Moreover, policy makers, stakeholders, and prominent innovation firms are seeking more precise and measurable indicators for evaluating the ability of their economies, regions, and universities to attract the world's best innovators. (Imperative 2008)

With the more significant role of urban communities, comes the greater contribution of universities within these areas. Universities have a long history of thriving the social, cultural and economic competitive advantages of cities. The relationship was always mutually supportive. Today, universities can act as testbeds for generating more innovative and vibrant communities and attracting international businesses and researchers (Ransom 2015).

In response to this invaluable bond, this chapter focuses on establishing a design framework to articulate the urban design premises that provide exclusive distinction for the university campus of the future of new cities.

This goal can be achieved by engaging the disciplines of city planning, urban design, and architecture more actively in two broad scopes: The first frames the relation between University and City. The University's physical interaction with the new city plays a major role in providing reciprocal benefits that support both town and gown. The second scope within the boundaries of the campus: a vibrant environment that combines buildings and open spaces in a harmonious setting that metaphorically expresses the unpredictable character of modern Education (Turner 1984).

The principal aim of this chapter is thus to influence the thinking of innovative managers, architects, and university campus planners by broadening their consideration when planning and designing both the organizational settings and the physical configurations of innovative spaces within new cities. A research is conducted trying to establish a universal language that brings these disciplines together in the context of the innovation process to avoid perceiving the organizational structure, and physical environment of innovation in isolation from one another.

The authors are using the qualitative research method while investigating the premises of innovation-boosting space and the parameters of designing an innovative campus. A case study for a successful role model of innovative campus in MIT will be applied to conclude the learned lessons and emerging trends from a success story of an innovative university campus.

13.2 Literature Review: About Innovation

Precedent studies navigated literature on the conception of innovation in both business enterprise and technological innovation and their applications; considering how to match technology to the market need. However, the architectural characteristics and parameters of innovative spaces were only oriented towards the arrangement of workspace or study classroom to foster collaboration and innovation holistically.

13.2.1 Economic Innovation

Innovation is related to business development for new products and processes. Thus, the metrics of economic innovation depends on the mechanical parameters of inputs and outputs. Historically, Innovation was viewed linearly. Accordingly, economic innovation measurements focused on production systems with the input-development-output mode (Atun et al. 2007). However, today, innovation is a multidimensional process that cannot be measured with a single indicator. While the knowledge economy is unfolding around us, the currently available measurements reflect products and artifacts rather than ideas and processes.

The extensive research on the relationship between innovation economies and high-tech clusters focuses on the critical role that universities play in driving progressive urban change in new cities. O'Mara stated:

> Universities are critical anchors for many of these communities – from San Francisco to Boston, Barcelona to Tel Aviv, Munich to Melbourne, Sao Paulo to Shanghai. Through commercialization of research, creation of jobs, and education of students, universities drive economic dynamism and regional competitiveness. The extensive research on innovation economies and high-tech clusters points again and again to the critical role that universities play not only in seeding research, but in driving positive urban change in the cities in which they are located. At the same time, universities have gained strength when they integrate the talents and resources of people, firms, and institutions in the community to find innovative ways to teach, to perform research, and to create professional opportunities for their students. (O'Mara 2012)
>
> Planning of innovative districts and workplaces:

Zundel (2013) densely researched this topic in finding a comprehensive framework for developing innovative communities. His research project tried to find some answers to the question of: "What role(s) and degree of confidence can be planning, and design professionals play in the development of regional innovation economies, especially considering the lack of evidence tying urban sites to the larger system?" The most interesting findings of Zundel's study determined the role of places in innovation systems and how to use urban redevelopment to foster innovation and the roles planning/design professionals play in the process of cataloging new tactics for land development. About regional innovation system, Zundel's study helped in linking between the understanding of regional innovation systems and the value of

land development projects in improving those systems. Also, it concluded that favorable developments increased innovation in their local economy via urban planning and design tactics.

The organizational structure and built environment for innovation:

The work of Thomas Allen and Gunter Henn (2007) about The Organization and Architecture of Innovation was focusing on bridging the gap between the business organization of workplaces and architectural space planning of office spaces. Their extensive study concluded that these two management tools—organizational structure and physical space—are partners in moving the innovation process forward. This mission requires the clever combination and use of physical space and organizational structure. Neither by itself is sufficient.

It was one of the earliest design-based studies that go well beyond the observation of "best practice" or separate case studies as it includes the issue of the appropriate organizational structure for innovation and the product development process, which can be designed on a rational basis. (Coleman et al. 2012).

Campus –City relationship as a generator for innovation:

Goddard and Vallance (2013) demonstrated that the relationship between the campus and the city is:

> a multifaceted one of distinct but interrelating physical, social, economic and cultural dimensions. Universities are physical sites and regeneration projects that 'connect economic and community engagement.

Also, it is proven that city size matters for a successful campus-city integration the more powerful is the university campus within an average size city, the more it contributes to the 'agglomeration economies' that drive city growth. There is a strong correlation between cities with more skills and higher levels of human capital, and local employment growth. (Shapiro 2005). The Centre for Cities adds that medium-sized cities are the most innovative, leading pioneering work in different industries.

13.2.2 Examining the Campus-Downtown Relationship

The morphological configuration for the relationship between the university and the city centers were examined in Adhya study (Adhya 2009). This study covered four university campuses in different cities and stated that there are some commonalities among the four cases in the following typical spatial patterns: the first pattern that emerges in all the four cities is the presence of an active center composed of highly integrated lines. The second trend was the secure connection between the historic core and the periphery; this center-periphery link has helped to sustain the downtown in these cities as an attractive location for entertainment, retail, and other public amenities. The third pattern inherent in the studied cases is the location of the university campus is vital to the cities. The campus defines the urban form, attracts activities and people, and creates an identity of the town. The universities have

played an essential role in influencing the shape and direction of the urban expansions. University campuses are significant generators of activities and movement, creating opportunities for enhanced public experience.

13.3 Theoretical Framework- Understanding Innovation

The most confusing thing about innovation is its definition and its organization. Simply, innovation can be recognized as a magical mix of creativity, knowledge, spark with imagination and fuel with data. To understand innovation as an idea, it is essential to demystify it into conception, organizational structure, and process.

The understanding of innovation:

The architects who create buildings for organizations engaged in innovation must go far beyond their traditional programming process. They need to understand the role of different types of innovation, communication and the desired patterns of interaction within their clients' organizations. Christensen stated that there are two categories of innovation:

- Sustaining innovation: as an improvement mode to something already existing. Also, it is the ability to use resources in a new, bright or unexpected way to solve a specific problem in a context. Which is creativity?
- Disruptive Innovation: is the second category of innovation, which is opening new frontiers of imagination for creating entirely new products, services or even a whole new market. (Christensen 1997)

To facilitate innovation, Communication is a mandate. The more integrally communicated are the innovative team(s) the more ideas might be mingled to retain the organization's efforts to hatch, incubate and develop innovative products, services or processes.

There are three types of communications for better innovation (Allen and Henn 2007):

- Information communication: This is more related to fundamental knowledge and references. This sort of connections is occurring within the same discipline or department to discuss a technical expertise.
- Coordination Communication: this type of communication is required among team members from closely related specialties or disciplines who are working on the same project to assure that their separate pieces of the mosaic will be assembled safely as a final product.
- Inspiration Communication: the most challenging level of innovative communications is built on gathering a vast variety of minds from different backgrounds (science, art, and engineering) to think imaginatively to interweave radically new ideas. The organizational structure of innovation

Historically, the Ancient Greek Agora; the eighteenth-century teahouses where the Enlightenment developed; or early twentieth century Paris cafés, where modernism

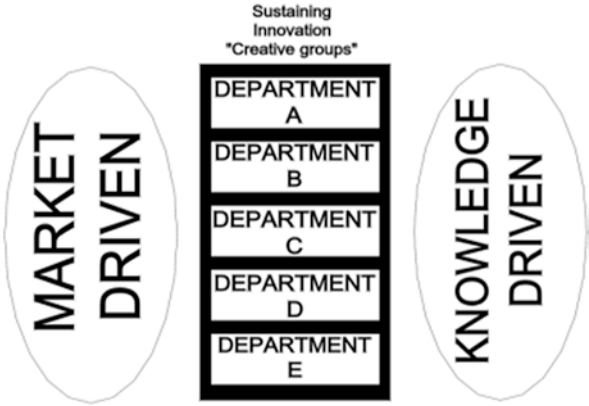

Fig. 13.1 The technical department organization (Author)

was born, are excellent examples of discourse-driven areas and fostered generative interactions between people. The sociologist Ray Oldenburg calls these spaces the "third place," which are environments separate from home or work where people gather and, more importantly, collide.

From the organizational point of view, innovation has evolved, organically, as a process through four generations:

13.3.1 Generation One: Department-Based Innovation

By the mid of last century, organizations tended to control the flow of innovation process as an industrial mass production line. Dividing the institution into a group of departments with different, but related, specialties who are working together to create the final product along with a technology stream of activity. At that time, production mode was more oriented towards creativity or sustaining innovation. (see Fig. 13.1) Positively, technical departments' staff can keep in close contact with new developments within their specialties. However, the limitations of this model lay in the mere fact that industry has not had the luxury of avoiding cross-disciplinary work. Information communication is the dominant mode of exchanging ideas among departments' staff.

13.3.2 Generation Two: Project Team-Based Innovation

Due to the complexity of market demands, the idea of project teams emerged from companies' desire to satisfy the market needs by creating products and services without being aligned with a single technological speciality or discipline (Dspace 2012).

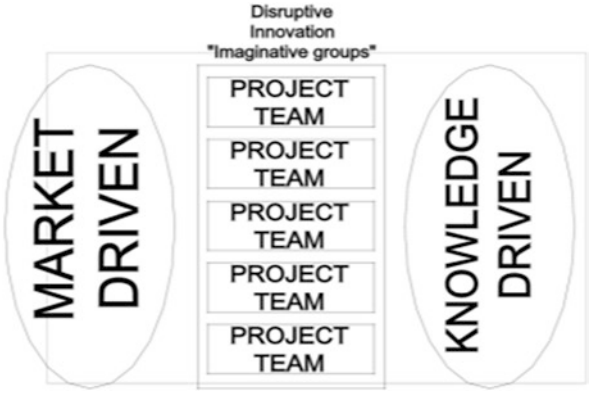

Fig. 13.2 The project-team organization (Author)

Tracking the market's demand in a proactive fashion leads to more predisposition towards creating interdisciplinary teams centered on a project. This model allowed coordination communication and imagination or disruptive innovation to flourish among the multidisciplinary team members to an absolute limit. (Fig. 13.2).

On the other hand, this trend had a price of extracting the team members away from their original bases of knowledge-technological departments. They are more likely to lose updates about "state-of-the-art" in their respective specialized areas of knowledge. This dilemma creates a problem in reassigning the resulting prematurely "obsolete" staff to new projects which lead, consequently, the organization to be lagging.

13.3.3 Generation Three: The "Matrix"-Based Innovation

The matrix organization is developed to resolve the previous concerns, as project teams, while making intense focus and coordination possible, could not meet the challenge of keeping well contacted with new developments within their specialties. Typically, this trend uses functional supervisors and project directors to manage the same people. Lines of liability go in at least two directions. The Matrix setting generated a highly competitive environment to let both sustaining innovation (creativity) and disruptive innovation (imagination) to thrive. (see Fig. 13.3).

Meanwhile, testifying such a model proved its organizational inefficiency as people could not work for multiple bosses—the project leader and the department head. This managerial conflict may cause brutal competition among different managers to fight for grabbing the most talented resources for their projects or departments.

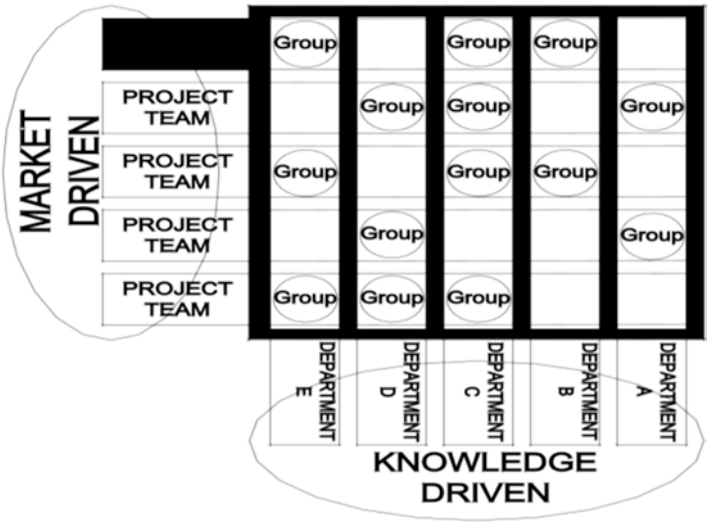

Fig. 13.3 The matrix organization (Author)

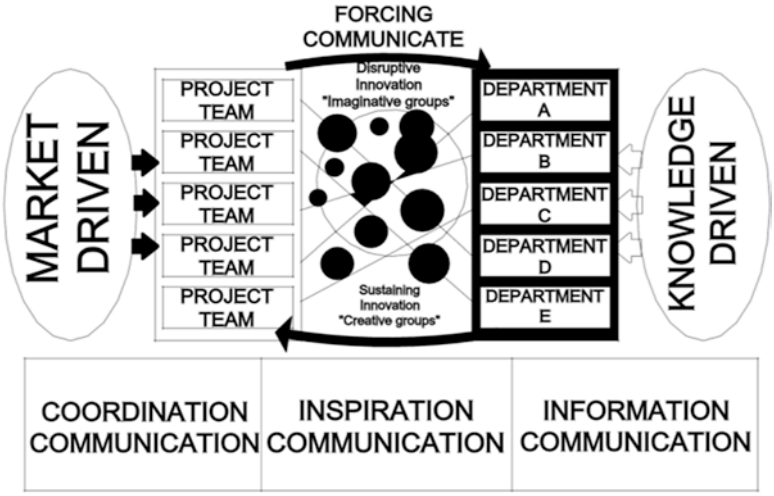

Fig. 13.4 The center of gravity organization (Author)

13.3.4 Generation Four: Centre of Gravity-Based Innovation

Evolutionally, a refined edition of "the matrix" model is developed by adding a third layer of interaction as follows (see Fig. 13.4):

- A center of gravity is added to a central area of collision between technically oriented talents (department based) and market-oriented skills (project based) within a fully flexible space for chaotic and messy but mentored innovation. The com-

posed teams within such a center are highly independent with freedom of location, communication, and integration with other bases (technological and project).
- The technological departments remain as the resource of knowledge update and revising the validity of proposed ideas by the center of gravity.
- The project-based teams are acting as moderators between both centers of gravity and technological knowledge based departments. Also, these teams will be responsible for revising the novelty of proposed ideas by the talented groups in the center of gravity.

13.4 Study Hypothesis: The Multi-dimensional Ecosystem of Innovation

This research assumes that there are interrelated bonds within different scales of innovation: the city, district, building, and individuals. Such complex interwoven connections create an ecosystem for innovation within the city. The stronger is the bond among these factors within mentioned four levels; the more likely innovation may flourish and expand (see Fig. 13.5).

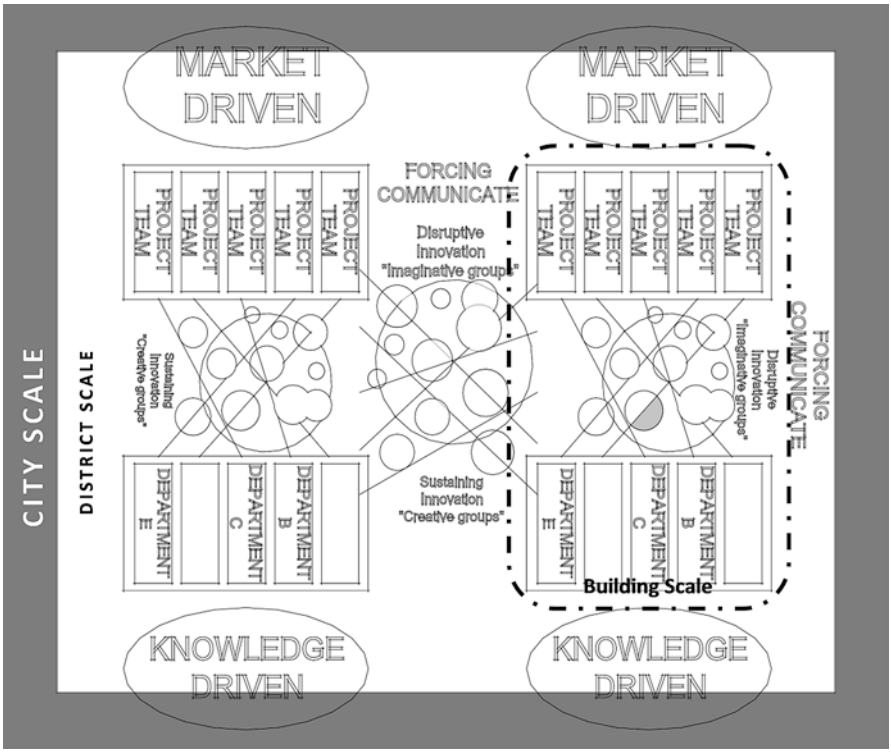

Fig. 13.5 The physical framework of innovation ecosystem (Abdelaal 2016)

These hypotheses are supported by the findings of secondary and primary research on innovation conducted by Steelcase company. It was retained by a survey of more than 200 corporate real estate practitioners and observation studies with clients that helped to identify innovation behaviors and processes in actual work settings (Steelcase 2016).

In fact, the study revealed that some design elements of buildings reduce the opportunities for thriving and innovate. Hence, the importance of physical space in the innovation process is profound; it becomes more important to understand the different types of communication and their impact on innovation (Coleman et al. 2012).

Another study conducted by Gensler design research team navigating through a group of case studies for innovation generation spaces, one of the its critical findings is that one size does not fit all, as each type of change within a certain culture is a unique environment. Each situation needs a set of multiple, overlapping design strategies for its spaces to support a mode of innovation (Coleman et al. 2012).

The proposal of innovation ecosystem is constructed on earlier thoughts, theories, visions and practically learned lessons from different models. This chapter presents some proper answers for the major raised questions in a sequentially structured approach to reach this comprehensive framework. The levels of applying this framework are attributed within four hierarchical scales: Individual/interpersonal scale, Campus /building scale, District/vicinity urban scale and City/regional scale.

Still, this concept is flexible enough to match various modes of innovation for different innovative industries. Table 13.1 shows that not all industries are equally related to the four levels of this ecosystem. For example, Digital applications, education, fashion, and architecture are more enclosed professions which are linked to the institution and the talented workers more than being related to the city or the adjacent context.

13.5 Case Study: MIT, the Leading Global Campus of Innovation

Finally, after years of being the global runner-up innovative university, MIT managed in 2016 to surpass its traditional rival, Harvard, which is scrambling to catch up from the institutional point of view.

> At MIT, there's no pretense, and everyone is very humble and lets the work speak for itself. At Harvard, it is much more structured and formal, but that same level of energy is missing. (Vogel 2012)

Although MIT, Cambridge-USA was considered one of the most dynamic innovative campuses worldwide over the past decade, a little research focused on revealing the secrets of MIT booming. In this section, the research will work on applying the evaluation parameters of innovative campus on MIT case.

Referring to the few studies which analyzed the built environment of MIT, researchers and stakeholders (MIT 2016) of the campus revealed a secret ingredient behind the stunning success of MIT campus in generating innovation on three levels, as shown in Table 13.2.

Table 13.1 The correlation between innovative industries and the four level of innovation ecosystem [a]The scale of correlation (*L* Low, *M* Medium, *H* High) was derived from an extended matrix includes 18 variables that relates innovative industries to the four levels. (Facilities, type of space, size of space, relation to adjacent supporting services, relation to city center, etc.) (Abdelaal 2016)

Innovative industry (Berg and Hassink 2014)	City[a]	District[a]	Building[a]	Individual[a]
Aerospace	L	L	H	M
Architecture	M	M	H	H
Art & crafts	H	H	M	M
Automotive	L	M	H	H
Digital application	M	H	H	H
Education	L	M	H	H
Fashion	M	L	H	H
Film & music	H	H	H	M
Healthcare	L	M	M	M
Industrial design	L	L	M	H
Information technology	L	L	H	M
Media	L	M	H	H
Publishing	M	M	M	H
R & D	H	L	M	H
Telecommunication	H	L	M	H

Table 13.2 Levels of generating innovation in MIT campus

Space/Building	Campus/Immediate context	Campus/city
Building 20	Kendall square	MIT/Cambridge

Source: Author

13.5.1 Space/Building Scale

Some of MIT buildings have been ranked as creative environments of all time; inspite of their simple shapes and unimpressive ambiance. For example, the old, outdated looking Building 20 was referred to as "the magical incubator." (Lehrer 2012) (see Fig. 13.6).

These buildings are an unplanned ingredient for developing innovation-driving spaces:

- **Theme-based entities or clusters** to foster teamwork spirit, a problem solver building should replace disciple/department based unit;
- **The horizontal setting of space planning** provides more chances for collaboration than vertical buildings. As the vertical layout with small floors limits research

Fig. 13.6 Building 20, MIT Campus, Cambridge (www.mit.edu)

variety on each level. Thus, Chance meetings in an elevator tend to terminate in the lobby, whereas chance meetings in a corridor managed to lead to technical discussions." The urban theorist Jane Jacobs described such incidental conversations as "knowledge spillovers." (Lehrer 2012);

- **Temporariness:** Building 20, for instance, was planned to be occupied for few years. This sense of temporariness encouraged researchers to manipulate the building's walls, floors and roofs to fit their needs;
- **Transparency:** visual connection to support the idea that one has the freedom to make one's decisions—that is, within the realm for which one is responsible—but also to influence the decisions of others seen through the glass walls;
- **Shared spaces:** In the less-formal setting of a comfortable couch or a coffee bar, the company benefits from the chance conversations, sharing of ideas, and overall interaction that was far less likely to have taken place with the old, closed space configuration;
- **Possibility:** Organizations need space where things can happen, where it is possible for the unexpected to unfold. It is in the less formal, open spaces where the chance encounters that are so essential to the innovation process can take place;
- **Flexible communication modes:** despite its chaotic behavior, innovative spaces should provide ample flexibility for exploiting the three modes of communica-

tion: coordination, information, and inspiration; either within different spaces or in one room, and;

- **Physical proximity:** regardless how is the organizational structure of the institution, physical proximity between talented innovators from different-even contradicting-disciplines, such as engineers and artists are mandatory for more innovativeness.

13.5.2 Campus/Immediate Urban Context-Kendall Square

The new development of Kendall Square initiatives is an ideal example of Building a collaborative leadership network within campus, block or district scale (innovation districts) (Coleman et al. 2012).

For decades this square acted as colossal parking space for MIT Campus with under mark use. After 7 years of active community dialogue, finally, Kendall Square Initiative was approved by the city council in 2016. The plan to alter the old surface parking spaces with a vibrant mixed-use district featuring six new buildings of research, retail, academic and residential uses.

The Kendall Square Association has described This corridor as "the densest square mile of innovation on the planet" (Hoban 2011).

In general, some lessons can be learned from the substantial transition of Kendall Square for the plan of developing the immediate context of MIT Campus:

- **Centers of gravity:** building design can promote collaboration by rearranging space and flow so that the activities of individuals and groups unfold dynamically. One of the proper techniques is to centralize social spaces to urge people within varies, groups and teams, to travel to them; this would have a profound influence on traffic patterns and on the possibility, that people/groups who rarely communicate might run into each other and interact;
- **Setting a vision for growth**: by providing actionable guidance for how an innovation district should grow and develop in the short-, medium- and long-term along economic, physical and social dimensions. (Katz and Wagner 2014), and;
- **Pursuing talent and technology**: given that educated and skilled workers and sophisticated infrastructure and systems are the twin drivers of innovation.

13.5.3 City Scale

Regarding the relationship between the campus and the city, MIT was founded a century and a half ago to serve the technological needs of the industrial age, it has managed to transform itself into an incubator for the digital age. This kind of dramatic self-reinvention is almost unheard of for a major university. (Vogel 2012)

Thus, the open campus setting transformed the university to be an "Innovation spinoff" hub the city of Cambridge, Thrilling the ecosystem of innovation to spread all around the city. Two learned lessons can summarize the MIT/Cambridge's dichotomy:

- **Promoting inclusive growth** by using the city's innovation districts as a platform to regenerate adjoining distressed neighborhoods as well as creating educational, employment and other opportunities for low-income residents of the city. (Katz and Wagner 2014), and;
- **Integrating arts & culture combinations in facility centric** (arenas, cultural centers, incubator space or creative district), people oriented (supporting art centers, creating cooperative marketing opportunities, commissioning artworks, program-based (gardening, mural making, public art displaying, local art festivals, exhibitions or plays (Zundel 2013).

13.6 A Practical Framework: Multidimensional Design Criteria for Innovative Environments

The outcome of a prior research by the author (Abdelaal 2016) strongly support the findings of case study and research literature in earlier sections.

Both studies recommend that the measurement of campus's innovation capacity should not be limited to one scale (city, campus, building) or one scope (architectural style, space planning, organization,..). It should be perceived within multilayered and real-time design criteria. (see Fig. 13.7)

The proposed criteria reflect the new paradigm shift of the knowledge-based networked economy to guide innovation policies and illuminate the uncertainties. The architecturally based indicators can be roughly categorized into four interweaving 'pillars,' progressively becoming more complex and meaningful as illustrated in Table 13.3 (Abdelaal 2016).

13.6.1 Spatial Parameters

The physical structure and the layout of the facilities in which the work is performed, bring us into the realm of architecture. There are eight spatial indicators to measure the capacity of the city, the district, the building and the individual space to host innovation effectively. The mentioned signs include:

- Compliance (Availability of supporting facilities);
- The frequency of collaboration;
- Flexibility (Alone & Together) (Steelcase 2016);
- Reflection of culture and brand (Showcase & Workspace);

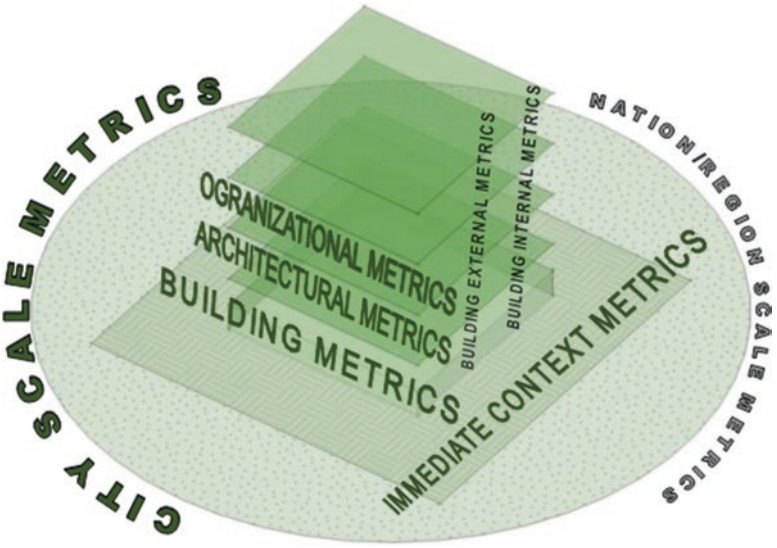

Fig. 13.7 The parameters of innovation ecosystem metric within different environments (Abdelaal 2016)

- Inspiration/challenging (Risky & Safe) (Coleman et al. 2012);
- Social connectivity (internal/external). (Augustin and Coleman 2012);
- Continuation (Designed & Undefined), and;
- Comfort.

13.6.2 Organizational Parameters

Seemingly, the structure of the formal organization governs the technical communication process among teams and groups within the same organization and other supporting/competing organizations. In the previous section, this study proposed a developed model for "the matrix" model by increasing the layers of interaction and mentoring within and around work environments. Based on the proposed mode in section two of this paper, the attributes of measuring organizational success may include the followings:

- The efficiency of communication center of gravity;
- Quality and productivity of knowledge drivers (technical departments), and;
- Quality and productivity of market drivers (project-teams).

Table 13.3 Multidimensional metric for evaluating the innovation capacity spaces

	PARAMETERS	City-Scale	Immediate Urban Context	Building/ Campus-Scale	Individual/ Group-Scale
A. Spatial Indicators	Compliance (Availability of Supporting facilities)	1	2	5	3X
	Frequency of collaboration (3 types of communication)	1	3	5	4
	Flexibility	-	2	5	4
	Reflection of culture and brand(contextual)	3	3	5	3
	Inspiration/challenging (hard-working tool)	3	4	5	2
	social connectivity (internal/external)	2	3	4	5
	Continuation	3	4	5	2
	Comfort	2	3	5	3
B. Organizational Indicators	Efficiency of communication center of gravity	1	1	3	5
	Quality of knowledge-driven departments	1	1	3	4
	Productivity of departments (quantitative)	1	1	3	4
	Quality of market-driven project teams	1	1	3	4
	Productivity of project teams (quantitative)	1	1	3	4
C. Socio-Cultural Indicators	The cultural diversity of local community	3	4	3	2
	The average educational level of residences (% of college and post-graduate degrees holders)	2	3	4	5
	% of creative class of total population	2	3	4	5
	Density of Public art within lively streets/spots	3	4	5	1
	Number of annual Art and culture activities (conferences, festivals, exhibitions, shows, concerts.)	4	3	3	2
	Availability of art and culture assets (entertainment, education, personal development)	5	5	3	1
D. Technological Infrastructure Indicators	Availability of latest technology	3	4	5	5
	Research and development expenditure (% of GDP)	2	3	4	3
	Telecommunication capacity	3	3	4	5
	Capacity of Transportation infrastructure	4	4	1	1

Scale from 1 to 5 (1 = Poor, 2 = Low, 3 = Average, 4 = Mostly, 5 = High
Source: Author

13.6.3 Socio-cultural Parameters

The cultures that continually produce innovation have visionary leadership, organizational commitment to breakthrough thinking and a place that support the work of innovation (Fedorowicz 2001). Moreover, socio-cultural shared norms and interests create a simple organizational structure within and between individuals, groups, companies, and regions. This bond which develops among any set of people working in the same part of an organization or proximity of one another can act as a charger for innovation. The quality and concreteness of these socio-cultural attributes can be measured by:

- The cultural diversity of local community (Hospers 2006);
- The average educational level of residences. (Micek 2016);
- Percentage of the creative class in the total population (Florida 2004);
- The density of Public art within lively streets/spots;
- Some Art and culture activities annually (conferences, festivals, exhibitions, shows, concerts...) (David 2011), and;
- Availability of art and cultural assets (entertainment, education, personal development).

13.6.4 Technological Infrastructure Parameters

The dispersion of knowledge has been greatly aided by the ability to communicate information and knowledge via the Internet and by other rapid means. However, these technological tools do not themselves resolve the challenges of managing the innovation process. Thus, technological readiness is densely notable in many nations, regions, and cities around the globe; regardless the economic level of development of these communities. The following indicators represent the most influential factors that affect attracting talented innovators worldwide: **Availability of latest technology (products & services), Research and development expenditure (% of GDP), Telecommunication capacity, Capacity of Transportation infrastructure.**

Finally, Table 13.3 summarises the connection of the mentioned above criteria with the four different dimensions of perceiving the relationship between the university campus and the city in a matrix format. Whereas, this relation is scaled from 1 to 5 (1 least relevant up to 5 most relevant).

13.7 Conclusion

The primary interest of this chapter is answering the common question by policy-makers and stackholders: is there an excellent reference or guideline for designing a thriving university campus within a spot of our world for the next century?

Answering this question requires a multidisciplinary research effort that combines various approaches and scales: regional innovation systems, urban settings of innovative cities, the psychology of change and the characteristics of innovative spaces.

Apparently, the research tackled in this chapter, concluded that innovation as a process, target, and organizational model has never been linear. Along with history, it kept on evolving as an organic entity. However, this organic evolution continued in growing through a consistent pattern that can be detected, tracked and mapped.

More important, this mapping resulted in proposing a multidimensional framework for developing an innovative community.

Also, the research concluded that the readiness of innovation varies dramatically from case to another. What fits a particular type of innovative industry within a specific context may not apply to others. The research set a matrix of horizontal parameters affects innovativeness in different scales (city/region, District/community, Building/Campus and individual/group space).

Still, further justification and testing should take place to enhance the outcomes of the proposed metric. In further research, the findings of this metrics will be aligned with other qualitative and quantitative results for a group of case studies. Some of the most significant cases to be examined are the Crane Building, North Philadelphia. This building is located within a unique, innovative context in Philadelphia's University City (science center). Also, Googolplex is one of the most successful campus-like cases that need to be tested in this metric.

For the less developed and developing regions, such as Egypt and the Arab World, although they might host a set of promising innovative institutions within new cities, such as the Smart Village and Nile University campuses in Egypt and KAUST campus in Saudi Arabia.

However, this study indicates that the development should be comprehensive at all mentioned scales. It is almost impossible to achieve any progress in constructing an innovation driven environment without tangible political, socio-economical and institutional amendments. The pillars of innovative spaces all over the world are mainly consolidated by a serious political willingness by the decision makes at the four levels of innovation: the city, the urban district, the building and the institution.

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Chapter 14
Approaches and Factors Affecting Healing Environment in Health Care Facilities for New Cities

Laila M. Khodeir and Tasneem Gamal

Abstract Design facilities for new cities is a mission with a responsibility towards both human resources and advancing the quality of life in these cities. Healthcare facilities (HCF), in particular, are regarded as a necessity in a rapidly developing world of new communities and cities. The main target of (HCF) is healing; failing to achieve this target is a crucial predicament that needs to be investigated. To attain healing, a design that cares about the welfare of occupants must be provided. To successfully create an effective healing environment, public participation of occupants, specifically cancer children, is required to accommodate their psychological, physiological and emotional needs- or needs that are necessary for their healing and recovery. According to the International Agency for Research on Cancer (IARC), an increase from 14.1 million to 21.7 million new cancer cases from 2012 to 2030 respectively is estimated. Three times increase in cancer incidents relative to the year 2013 was estimated in Egypt. Therefore, healing design approaches for the physical environment of such facilities play a major role in patients' well-being and health. The objective of this article is to identify the basic approaches and factors affecting healing environments in existing health care facilities through literature review and the analysis of case studies. The utmost aim is to deduce lessons learned in order to assist in creating HCF that are adaptable and suitable for the future. The study concluded a number of guideline criteria for the design of efficient health care facilities that are user-friendly and that would fit within new cities.

Keywords Healing interior design · Health care facilities · Cancer · Pediatric · New cities

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14.1 Introduction

Each New Situation Requires a New Architecture. (Nouvel 2017)

Design facilities for new cities is a mission that bears a responsibility towards both human resources and advancing the quality of life. Architects and engineers are among other professionals who have a great responsibility in preserving human resources while advancing the quality of life for people. New cities pose great challenges; with the exceeding vitality of the quality of life; the great advances in technology; as well as the stressful lifestyle many people experience nowadays.

In Egypt, a proposed Vision "2030" aimed at developing and progressing the old Egypt to a new Egypt characterized by an innovative and knowledge-based society. The purpose is to improve Egyptians' life quality and achieve sustainable development by possessing a balanced, diversified and competitive economy depending on knowledge and innovation, having a balanced ecological collaborative system, based on social justice and community participation. Egypt is categorized among the top 30 countries in the global competitive indicator based on its innovation and determination and also on its 60% youth population. (Egypt Economic Development Conference 2015).

The strategic visions of 2030 for health care development aims that all Egyptians should enjoy a healthy, safe and secure life through an integrated, accessible, high quality and universal healthcare system capable of improving health conditions through early intervention, and preventive coverage, ensuring protection for the vulnerable and achieving satisfaction for citizens and health sector employees. This will lead to prosperity, welfare, happiness, as well as social and economic development, which will qualify Egypt to become a leader in the field of healthcare services and research in the Arab World and Africa. One of the main objectives of the SDS in health pillar is the improvement of the health of citizens within a framework of justice and equity. This means to study all factors affecting the health of Egyptians including social factors, sector resources, general awareness and lifestyle. (Ministry of Planning, Monitoring and Administrative Reform 2016).

In general, Health Care Facilities (HCF) are places were provision of healthcare, maintenance of health, or its restoration takes place. Such facilities include small clinics, doctors' offices, care centers, hospitals, trauma centers, etc. HCF, in particular, are considered a necessity in a rapidly developing world of new communities and cities. This is due to increased rate of population growth, emerging illnesses, psychological conditions, and longer life expectancy of citizens. In Egypt alone, the population is estimated to grow to 92 million people by 2020. Thus, Health Care facilities are a major concern in this generation (Ministry of Health and Population 2003). New Cairo Capital, East of downtown Cairo will be a hub of 270-square-mile occupying 21 new residential districts suitable to house 5 million persons. New Cairo Capital, as a new city will have over 600 medical facilities alone highlighting the importance of efficient healthcare facilities giving identity to the city (Garfield 2017). Health Care is a crucial contributor to a developed economy. It is worth mentioning that an NXT 2020 prototype for single-inpatient room has

been established to fulfill needs and wants of patients and staff in the new communities. It was specifically tailored to meet technical international advancements in the field of medicine and medical services alongside the social and psychological needs of people.

Healing environment in health care facilities, represent the physical setting which supports mainly patients and their families in coping with the imposed stresses and undesirable psychosocial effects due to hospitalization, illness, medical visits and even bereavement at times. This in return promotes occupants' health: occupants of temporary stay as patients and their families as well as the staff working there on a regular basis. Spaces, design elements, materials, noise and social aspects induced by design are all examples of factors impacting the Healing Environment (White 2006).

14.2 Pediatric Cancer Care Facilities

According to The American Academy of Pediatrics (AAP), "Pediatrics is the specialty of medical science concerned with the physical, mental and social health of children from birth to young adulthood." This encompasses age range from birth to 18 years old; this range exceeds to reach 21 years old in the U.S. and sometimes it is limited to the completion of secondary education. Pediatric care has a broad range of health services ranging from "preventive health care to the diagnosis" to treatment of diseases, acute and chronic (American Academy of Pediatrics 2016). Cancer is a mischievous, chronic disease that in many cases can be fatal. Psychologically coping with cancer diagnosis and its rigorous treatments can be a burden to the patients, leading them to experience stress, anxiety, or even depression. This in return can affect their recovery by reducing the effectiveness of cancer drugs on tumor cells, cause immune suppression, increase rate of tumor growth, and increase tumor cell invasiveness (metastatic activity). Moreover, behavioral aspects arise due to stress during cancer treatment and even after survival and curing through the inability to cope with the losses, discrimination and fears of reoccurrence of cancer tumors (Lawenda 2012).

Healthcare facilities target healing; failing to achieve their purpose is a crucial predicament to be investigated. To attain healing, a design that cares about the welfare of occupants must be provided. Environment can provoke occupants and cause discomfort. Disregarding the healing environment aspect in health care facilities does not allow them to efficiently serve their purpose. This in return affects not only the society on level of welfare and productivity, but also affects health care facilities as businesses with a deficit of managerial success. Therefore, interior healing design and physical environment of such facilities play a major role in users' well-being and health (see Fig. 14.1).

Cancer, in specific, is a very sensitive illness that requires a special design for healing (American Cancer Society 2016). Curing the illness is not enough, healing the patient regarding their acceptance and adaption to the tedious illness and its rigorous therapies is mandatory. Healing should be provided as an integral part in

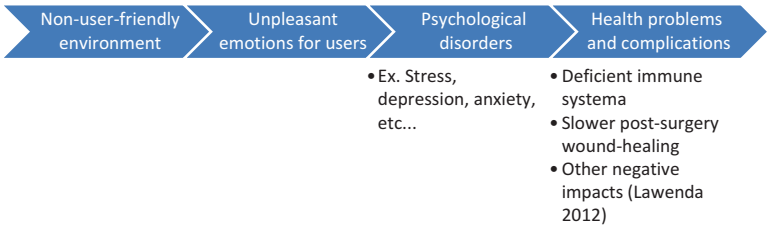

Fig. 14.1 Impact of physical environment on user (Authors)

cancer curing process, and not as a detached therapy post curing. The essence of Architecture or Interior Design is customer satisfaction. Yet, customer satisfaction in its pure form is ironically not achieved in many cases and thus positive health outcomes cannot be achieved with the deficient healthcare service provided by the environment of the medical facility. Accordingly, Health Care Facilities cannot be automatically termed as successful projects.

Whatever Good Things We Build End Up Building Us, *Jim* Rohn (2017).

The main objective of this research is to identify the basic approaches and factors affecting healing environment in health care facilities through literature review and the analysis to several case studies. The utmost aim is to deduce lessons in order to assist in creating HCF that are suitable and adaptable to the needs of cities in the future. The study concluded a number of guideline criteria for the design of efficient health care facilities that are user-friendly and that would fit within new cities.

To achieve the objectives of this study, qualitative methods by means of literature review and analysis of documented case studies in literature by various authors were implemented. The literature review tackled the definition of Healing Environment; the factors and approaches involved in creating healing environments; and the scientific knowledge that relates healing environments to the roots of the problem of stress. An online survey was conducted on children using ethnography approach through different social media means to introduce the term 'healing environment' from the children's perception to help in reaching the paper objective.

14.3 Introduction to Healing Environment

Despite the fact that the term healing environment is quite uncommon, relevant assumptions can be made on its definition. Google Images search engine directly present images involving greeneries and nature when healing environment is typed. The literature sources that highlight the concept of healing interior design used for this paper included different specialized categories, from general healthcare facilities (HCF) to Post Occupancy Evaluation (POE) of cancer centers, all of which dated from the year 2000 and later. In addition, some other sources of information are dated from the 1900s which enrich the literature of this research allowing it to

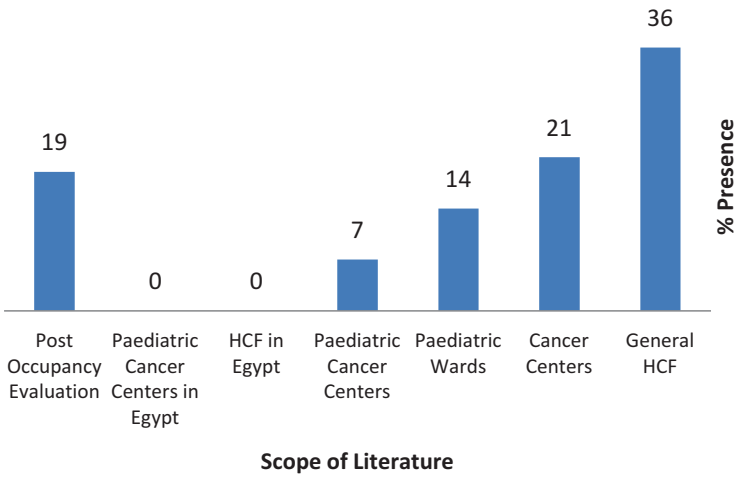

Fig. 14.2 Paper categorization of literature according to scope (Authors)

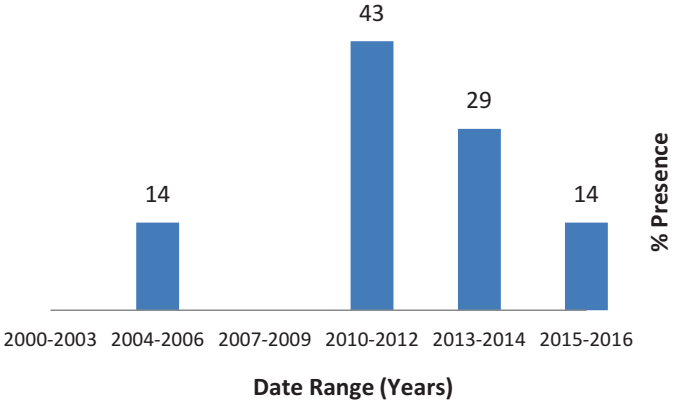

Fig. 14.3 Paper categorization of literature according to their dates (Authors)

be holistic and comprehensive. Figures 14.2 and 14.3 present literature analysis through inclusion of authors of extant number of published papers, such as (Cullinan and Wolf 2010; Galvin 2012; Geffen 2004; Ghazali et al. 2013; Harris et al. 2006; Huisman et al. 2012; Kotzer et al. 2011; Larsen et al. 2013; Miller 2010; Sherman-Bien et al. 2011; Wang et al. 2011; Woo and Lin 2016; Young 2013; Ziegier 2015). Results show that approximately 7% of available literature targets healing interiors of pediatric cancer centers, as most literature on healing environments of HCF were carried out in years 2010–2012 (see Figs. 14.2 and 14.3) respectively.

14.4 The Concept of Healing Environment

The theoretical concept of healing environment focuses on three aspects, firstly: the emergence of the concept of healing environments historically; secondly: emergence of evidence-based design and its relation to healing environment, and thirdly: the consequences of lack of application of healing environment.

14.4.1 Emergence of Healing Environment

According to Huisman et al. 2012, a healing environment is a place or a physical environment where positive health outcomes result from interaction between staff and patients. In 2016 Woo added that healing environment is a holistic environment which aids patient rehabilitation; this can be done by a variety of hardware and software. Healing environments are considered 'smart investments' due to their positive effects on patients' health, reduction of stress levels of patients and staff, better staff productivity, faster patient recovery and shorter stay in hospitals etc. In the 1990s, the term evidence-based design was given to design solutions for HCF which were based on scientific research and scientific reliable data. This has become "the theoretical concept" of healing environments (Huisman et al. 2012).

14.4.2 Emergence of Evidence-Based Design

The emergence of Evidence-based design (EBD) in HCF started with Professor Roger Ulrich's experiment comparing the effect of natural scenery and a simple brick wall on patients. The research results indicated that patients with tree views had shorter post-operative stays after surgery. They also took fewer strong and moderately strong medication, showed lower scores of postsurgical complications, and had less negative comments from nurses. Ever since, physical environment started getting academic attention and the creation of new spaces emerged, called healing environments.

14.5 Consequences of Absence of Healing Environment

Huisman et al. 2012 emphasized that health is a broad term not only encompassing physical wellbeing and mere absence of infirmity or disease, but also encompassing social and mental wellbeing. Woo and Lin 2016 stated that health's psychological concept is defined as healing. Interior design can largely affect health of occupants and is not a luxury. Sick Building Syndrome (SBS) is a syndrome of many

symptoms as dry skin, headache, lethargy, and symptoms related to mucous membranes as irritation nose, throat, and eye all to which are related to indoor environments of buildings. Thus in Healthcare Facilities (HCF), indoor/interior environment can have a large effect of health, wellbeing and recovery of occupants (Huisman et al. 2012).

14.6 Approaches and Factors Affecting Healing Interior Design in Healthcare Facilities

This section tackles both the generic approaches and factors of creating a healing environment in healthcare facilities and pediatric cancer centers specifically.

Factors affecting Healing Environment in healthcare settings include a variety of range, of which some are confirmed to be or are proved to be evidence-based design and some are simple empirical data with low reliability. Only one source by Huisman et al. 2012 measures the reliability of data due to its level of evidence contributing to research. (see Fig. 14.4) and (Table 14.1) illustrate how healing environment was approached differently, either by common EBD or by special, unique approaches. This was based on the literature papers analyzed and previously mentioned in this article.

Regarding cancer patients (including infusion patients), the most prominent, important healing environment factors as Wang et al. 2011 conveyed are:

- Choice and Control
- Privacy and Social Support
- Positive Distractions

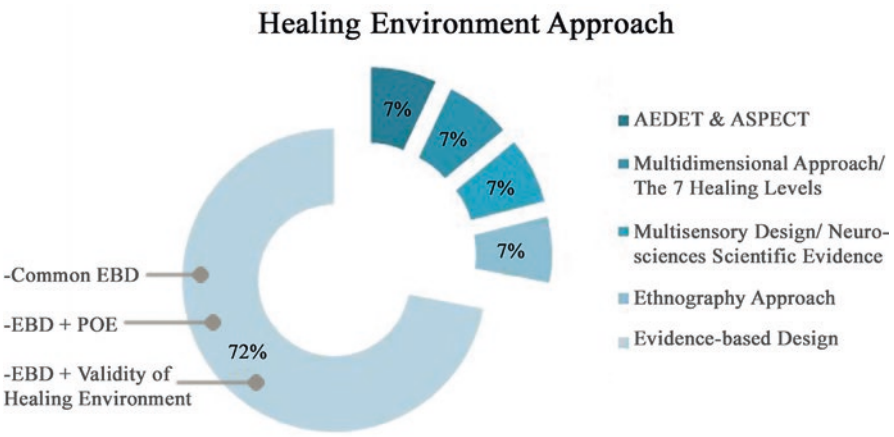

Fig. 14.4 Healing environment up-to-date approaches in literature (Authors)

Table 14.1 Generic healing environment factors of HCF

Healing environment approach	Discussion/factors
AEDET & aspect	AEDET (Achieving Excellence Design Evaluation Kit):
	Character and innovation
	Use and access
ASPECT	(A Staff and Patient Environment Calibration toolkit):
	Patients' need of privacy
	Viewing outside along around building
	Dealing with nature and outdoor
	Comfort and being able to control levels
	Interior appearance of healthcare
	Facilities provided
	(Ghazali et al. 2013)
Multi-dimensional approach	It mostly targeted social relations and psychology of users. The 7 healing levels include:
	Education and information
	Connection with others
	The body as garden
	Emotional healing
	The nature of mind
	Life assessment
	The nature of spirit
	CAM therapies (massage, acupuncture, green tea drinking, etc...) can be introduced as a physical environment related to the 7 healing levels (Geffen 2004).
Multi-sensory design	Its factors are scientifically evidenced by neurosciences. Acoustic, tactile, optical, and olfactory parameters are the parameters with guaranteed effectiveness (Ziegier 2015).
Ethnography approach	The root of ethnography is understanding how people we are trying to understand and perceive events and actions that happen and how they feel about them; thus, this allows one to see things from a new perspective and target them in the best way possible. This approach was used to understand patients' experience in single and multi-bed rooms (Larsen et al. 2013).

(continued)

Table 14.1 (continued)

Healing environment approach	Discussion/factors			
Common EBD (Integrated Design by Ulrich and Rutten)	**Users**	**Building system**	**Performance**	
			User outcomes	Building system outcomes
	Patients	Materials	No errors	Safety and security
	Family	Space-plan	Safety and security	Production support
	Staff	Interior	Control	Compliance with laws
		Services	Privacy	Energy and sustainability
		Site	Comfort	Adaptability
		Skin	Family support	Initial and operational costs (Huisman et al. 2012)
		Structure	Organization and functionality	
			Technical support	

Source: Authors

Despite research tackling the psychological aspect of occupants' wellbeing or wellness and the occupants' needs regarding activities and wants, the provision of the spaces suitable for such activities are not discussed; for example, a space for doctors to discuss medical status of patients with families, etc. The crucial healing environmental factors for pediatric cancer patients (see Fig. 14.5).

14.7 Analysis of Case Studies

The case studies analyzed were carefully chosen as they elaborate the most effective impact factors in healing environment, art and daylight, in different, special applications.

14.7.1 CARTI Cancer Center/Little Rock, Arkansas

The winning "Design Excellence Award – Gold" is a cancer care destination centrally located providing comprehensive oncology care, and characterized by its spa-like environment reflecting its rocky woodland landscape setting. The spa-like

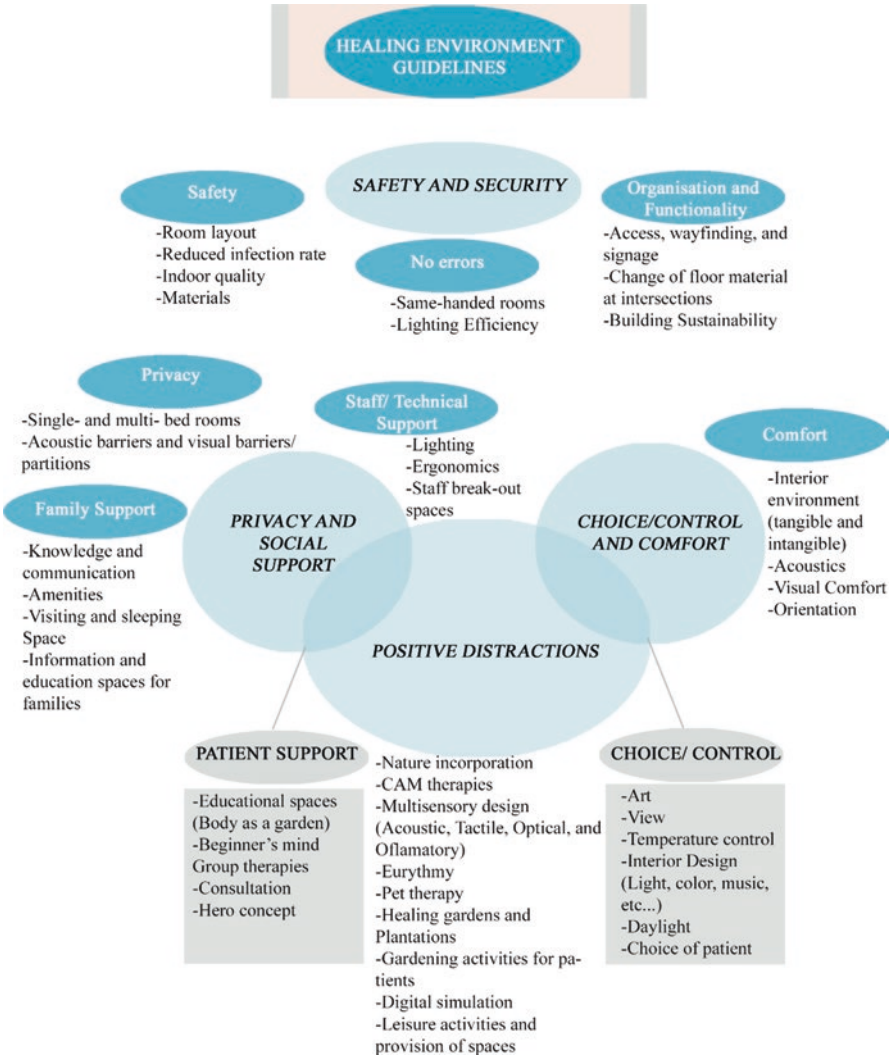

Fig. 14.5 Key factors of healing environment in pediatric cancer centers (Authors)

Table 14.2 Healing environment factors in case 1

Healing environment factors		Case study application
Privacy and social support	Family support	Curved structures, especially in lobby
		Communal meeting spaces
	Staff/technical support	Ample daylight levels
		Communal meeting spaces
	Privacy	Infusion chairs not facing one another for privacy
	Patient support	Ample daylight levels
		Private and communal meeting spaces
		Nature incorporation and great views provided to "downtown Little Rock" and surrounding mountains by the North and South glass facades.
Positive distractions		Visual aspects on wall with faded lights and calming colors incorporating numbers as steps of healing with happy, inspiring quotes. For instance, number 2: Hope, and number 4: Heal etc.…
Choice/control and comfort	Choice/control	–
	Comfort	Has curved, spacious, relaxing visual interior
		Uplifting and calm environment supporting the cancer support program
Safety and security	Safety	–
	Organization and functionality	Cladding is local limestone- sustainable and provides landmark from main road for the HCF
		Easy way-finding and navigation by large font writings on wall for departments, rooms etc.
	No errors	Ample daylight levels

Source: Authors

environment supports and restores health of patients, families and staff. Polk Stanley Wilcox Architects were associate architects for the CARTI Cancer Center project that was completed in year 2015. (Table 14.2) illustrates the healing environment of CARTI Cancer Center.

14.7.2 Children's Hospital Concept (Pediatric Hospital)

The basis of the concept of pediatric healthcare presented in Children's Hospital Concept is comprised in its valuing of children and trying to create a welcoming, engaging environment that enhances child imagination, not losing sight of functionality of healthcare and the medical innovations. This case study is quite unique with respect to its given attention to details and psychology of children along their experience at every stage in the hospital. Positive distractions supporting patients and choice/control factors were highlighted in the hospital's concept. This is a successful example of design according to ethnographic approach in healing interior design. Healing environment factors are illustrated in (Table 14.3) (Cloudberry Studio 2017).

Table 14.3 Healing environment factors in case 2

Healing environment factors		Case study application
Privacy and social support	Family support	"The Healing Tree" which is the star attraction of the healthcare lobby when first accessed
		Has curved interiors for family-friendly space rather than sterile interiors.
	Staff/technical support	Ample daylight levels and calming interiors
	Privacy	–
	Patient support	Due to hallways being a typical place of high anxiety when children move from their room's security to carry out tests or procedures, this healthcare concept integrated sensors in hallways that react to a child's presence and thus sets off "an interactive light display, surrounding the patient in a cascade of leaves on the walls, floors, and ceilings."
		"The Healing Tree" has a hide-away part and a musical instrument part. It also features a variety of animals and flowers. A winking owl appears if the tree is touched in the right time.
		In the healing tree lobby, the "sky" above can change its theme and lighting from cheerful, bright day to a calming, serene night aided by nearby, glowing "leaves" with LED lights.
		Lobby has columns with a design inspired from trees to extend the natural setting
Positive distractions		
Choice/ control and comfort	Choice/control	Provision of a variety of seating options inkling long play tables that help keep active children engaged.
		Custom LED lighting in in-patient rooms allows children to choose the color of their room.
		Personalized interactive moments in places like hallways and rooms where children spend most of their time to allow the children to engage in space, as if to say, "welcome, don't worry, here's something fun."
		Children confined to beds have advantage of specialty technology that allows them "to control in-room entertainment systems without a remote control." Simply, a voice prompt or hand gesture can summon a nurse from high-concept, near nurse stations, turn the room color, pause or play a video game, etc…
		In the healing garden provided, an arts and crafts space integrated with creative picnic areas allows the creation of engaging and playful spaces bringing "children's camp experience to a children's hospital"
		The healing garden has a central maze for kids to wander
	Comfort	Has curved, smooth, relaxing visual interiors with nature-inspired themes
		Healing garden for both play and rejuvenation for all users
Safety and security	Safety	–
	Organization and functionality	Circling the lobby is a pathway integrating "state of the art information boards" which are programmed in the back wall from the reception desk.
	No errors	Ample daylight levels (Cloudberry Studio 2017)

Source: Authors

14.8 Discussion

"My passion and great enjoyment for architecture, and the reason the older I get the more I enjoy it, is because I believe we – architects – can affect the quality of life of the people." (Rogers 2017).

The objective of this research is to identify the basic approaches and factors affecting healing environment in health care facilities through literature review and reported/documented case studies. This paper provides factors of healing environment affecting pediatric cancer patients; nonetheless provides different approaches to healing environment creating potential for innovation and potential for further research.

The study concluded a number of guidelines or criteria for the design of efficient health care facilities that are user-friendly and that would fit within new cities.

14.8.1 Designing Healing Environments for Pediatric Cancer Centers

"A lot of society tries to put people with disabilities into one cube, and when you think about it, many, many people have different types of disabilities, and you cannot put a code that applies to towards everyone – generally, they can be guidelines, but in the long run, interior designers and architects need more education on the subject." (Perlman 2017).

Design findings focused on the most impacting sub-factors retrieved from literature review and documented/published study analysis: artwork and daylight. The deduced design findings are based on critical analysis of literature sources already discussed; they were specifically suggested for a double-inpatient room for cancer children. The room chosen for cancer children is a multi-bed inpatient room for two patients enabling social interaction, yet avoiding complications and problems associated with large number of patients occupying a room, regarding both user satisfaction and infection control. Artwork is incorporated in a number of spaces to positively attract children and aid them in healing. Daylight is allowed to flood in the room and is enhanced by numerous design approaches. The foundation pillars of design concept are patient healing, family support, accident reduction, infection control, and work performance enhancement (see Fig. 14.6). This chapter focuses on the 'Patient Healing' pillar as it encompasses the two main impacting sub-factors, artwork and daylight.

Fig. 14.6 Foundation pillars of design concept of double-inpatient room for cancer children (Authors)

Fig. 14.7 Shades and tints of cool-down Pink (Authors)

14.8.2 Patient Healing

"The art of medicine consists in amusing the patient while nature cures the disease." (Voltaire 2017).

'Patient healing' pillar highlights that the patient is a child and thus is based on ethnography approach. It encompasses the following healing sub-factors: privacy, patient support, positive distractions, choice/control, and comfort. The 'patient healing' constitutes guidelines for artwork, daylight, interactive amenities, and social interaction.

(a) Artwork

- Children prefer nature imageries incorporating another feature of positive connotation (whether it is a man-made object of high importance to children as balloons and toys, or smiling or happy faces of real or animated characters or objects). Balloons, in particular, mean a lot to children and make them joyful. Literature approved this finding; however, it highlighted that children of age five to seven years old specifically prefer child art. On the other hand, case studies did not provide solid evidence for artwork presence except in mere presence as wall art patterns and colors;
- Ceiling art is a good option for healing as approved by both literature and case studies, and;
- Personalizing space for each patient with their own art work aids healing. This aspect was not tackled intensively in literature; however, some case studies had this as a main design concept for child healing.

(b) Daylight

- Light tints of pastel colors are preferred for better daylight reflectivity. Cool down pink is the most appropriate hue to reduce aggressive behavior and anxiety of children that builds with their illness. Different cool-down pink tints and shades (see Fig. 14.7) respectively. Few literature sources extensively exploited the effect of cool-down pink color shade on cancer patients while case studies lacked the application of research findings, and;
- Window curtains help control daylight admission in rooms. Both literature and documented case studies conveyed the importance of controlling daylight admission through multi-layered curtains and different features in their design.

(c) Interactive Amenities

- Television and Wi-Fi should be provided, and;
- Medical equipment that may be intimidating to children should be installed in the headwall of bed out of sight of patients, or covered. This takes into account the children's sensitivity. Literature review and case studies supported this finding.

(d) Social Interaction

- A double-bed inpatient room choice is preferred as cancer children crave for social interaction, making friends, and do not like being alone. Literature approved this finding while documented case studies lacked the application of research findings.

14.8.3 Establishing HCF in New Cities

> "Architecture is measured against the past; you build in the future, and you try to imagine the future." (Rogers 2017).

Design of facilities for new cities is a responsibility towards both human resources and advancing quality of life. Healthcare facilities (HCF), in particular, are necessities in a rapidly developing world of new communities and cities. The objective of this research was to identify the basic approaches and factors affecting healing environment in existing health care facilities through literature review and analysis of documented case studies. The utmost aim was to extract lessons learned in the form of findings or guidelines in order to assist in creating HCF that are adapted for the future. Healing environment highlights achieving good quality of life by promoting wellbeing and health; which are crucial elements in design of new cities. In light of promoting wellbeing and health, art and daylight are two factors of essential contribution.

Arts along culture strategies aid enhancing and revealing the city's underlying identity in light of its value, unique meaning, and character — of the physical and social form of a community. This identity is reflected through the community's character or sense of place. The community's sense of place is a dynamic concept that requires new cities to be dynamic and flexible which can be achieved through applying healing environment factors as art. Art can be integrated in new cities by depicting Egyptian culture in streets and projects enhancing sense of place and belonging to cities (Hodgson 2011). According to (Schoof 2017), daylight is a crucial contributor to brighter and happy cities promoting wellbeing of the community. Both arts and daylight can be utilized to achieve Charles Montgomery's vision of a happy city. Cities can shape society's behavior and the way it thinks (Montgomery 2013). In light of that, integrating healing environment in cities (from interior scale to city scale) can promote wellbeing and happiness od new cities.

Following those design findings will help establish new, sustainable, advanced cities that care about the environment and the quality of life of people in the

environment as all the facilities perform their functions efficiently working hand in hand with SDS 2030 vision for Egypt. Those design guidelines allow healing interior design to take its share in new communities that need it and they help empower cancer children in their fight against cancer. New cities are not just roads, buildings and empty spaces; new cities are interior spaces, quality of life and communities. New cities are a revolution of thinking as to how Engineering and Architecture can help heal and create life along medicine.

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