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Towards a Sustainable Preservation Approach
To Egyptian Heritage Neighborhoods

The case of Heliopolis

Dissertation for the achievement of the Academic Grade Doctor of Engineering (Dr.-Ing.) at the Faculty of Spatial Planning, Technical University of Dortmund, Germany

Presented by:
Sara Moustafa Gouda
M.Sc. in Urban Design

September, 2015

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Designed by author using the photos of the following sources: Photos of the Heliopolis Heritage Initiative Competition for Photography 2012, from top to bottom: 'Way of life in Heliopolis' by Ahmed Ahmed; Sherif Louis; and Mohamed Reda Morsi.

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Supervisors:

Univ. Prof'in Dip.-Ing. Christa Reicher
Head of the Department of Urban Design and Land-use Planning at the Faculty of Spatial Planning at TU- Dortmund

Univ.Prof. Dip.-Ing. Architect Ulli Meisel
ILS Aachen, Honorary Professor in the Department and Institute of Housing and Design Basics at RWTH Aachen

Examiner:
Univ. Prof'in Dr. Soheir Zaki Hawas
Architecture & Urban Design Professor at the Department of Architecture at the Faculty of Engineering, Cairo University, Egypt

Zum Nachhaltigen Erhaltungs-Ansatz Ägyptischer Denkmalquartiere

Am Beispiel Heliopolis

Dissertation zur Erlangung des akademischen Grades Doctor-Ingenieur (Dr.-Ing.) an der Fakultät Raumplanung, Technische Universität Dortmund, Deutschland

Vorgelegt von:
Sara Moustafa Gouda
M.Sc. in Urban Design

Gutachter/innen:

Univ. Prof'in Dip.-Ing. Christa Reicher
Leiterin des Fachgebiets Städtebau, Stadtgestaltung und Bauleitplanung
an der Fakultät Raumplanung der TU- Dortmund

Univ.Prof. Dip.-Ing. Architekt Ulli Meisel
ILS Aachen, Honorarprofessor an der RWTH Aachen
Lehrstuhl und Institut für Wohnbau und Grundlagen des Entwerfens

Prüferin:
Univ. Prof'in Dr. Soheir Zaki Hawas
Architektur und Städtebau Professorin am Fachgebiet Architektur an der Ingenieur Fakultät der Kairo Universität, Ägypten

Submitted By:

Sara Gouda

Sara.gouda@tu-dortmund.de

Doctoral Committee:

Head of Committee &

Principle Supervisor:	Univ.Prof'in Dip.-Ing. Christa Reicher
Principle Supervisor:	Univ.Prof. Dip.-Ing. Architect Ulli Meisel
External Examiner:	Univ. Prof'in Dr. Soheir Zaki Hawas
Disputation Date:	14. September, 2015

Dissertation, accepted by the Faculty of Spatial Planning, Urban Design, of the Technical University Dortmund, Germany

DECLARATION OF AUTHORSHIP

I, Sara Gouda declare that this thesis and the work presented in it are my own and it has been generated by me as the result of my own original research. Where it is indebted to the work of others, acknowledgements have duly been made.

Sara Gouda,

Dortmund, September 14, 2015

ACKNOWLEDGMENT

Sara Gouda

Dortmund, September 14, 2015

In memory of my father may his soul RIP

AbdelHamid, Omar, Adam & Mom

my beloved ones

ABSTRACT

The Egyptian neighborhoods of the 19th and early 20th century are heritage neighborhoods that have introduced new urban patterns, planning concepts and architectural styles that have a unique character and value worth preservation. These neighborhoods are currently facing different types of encroachments that form a pressure (P) on their state (S) resulting into negative impacts (I) adversely affecting its various qualities. These impacts (I) stimulate responses (R) seeking solutions for a better state (S1).

In the late 90's in Egypt there was a political interest in 19th and early 20th century neighborhoods which resulted in carrying out several studies on these neighborhoods also called recent heritage. Ten case studies were chosen in Cairo including Heliopolis. The study on Heliopolis came up with recommendations mainly focusing on heritage and urban oriented guidelines yet missing economic, social and environmental considerations. These aspects should be by now put into account when dealing with recent heritage neighborhoods. Sustainability as a broad concept encompasses these aspects. Adapting a sustainability approach for heritage neighborhood preservation, would enhance its performance by respecting the different qualities such as the urban, social, and economic ones beside the environmental and cultural.

The research at hand tries to fill the knowledge gap in the field of sustainability within existing neighborhoods through the reconciliation between both sustainability and preservation in a way that suits the Egyptian context. The conceptual framework of the research at hand adopts the DPSIR-framework developed by European Environmental Agency and extends it into a DPSIR$_{(1,2,3)}$-SS aiming to better identify the fragmented problem within the chosen case study of Heliopolis breaking it down into its different elements.

The aim of this research focuses mainly on three issues; 1) to define the sustainable state (SS) criteria within the recent heritage neighborhoods, 2) to determine the state (S) of the case study of Heliopolis, and 3) to investigate and recommend suitable responses (R) aiming to enhance the state of the neighborhood. In order to do so, the research carries out a mixed-method approach based on a single case study using qualitative and quantitative data. In order to know the sustainable state (SS) qualities; a criteria-based catalogue was initially formed from existing literature, determining the important sustainability and preservation principles. This template forms the ground for a semi-structured expert interview based on a questionnaire which asks experts about the importance and the applicability of each criterion.

After analyzing the interviews the research will be able to come up with a preliminary sustainable state (SS) catalogue that will be partially tested on Heliopolis assessing its state (S). Furthermore, possible intervention measures and strategies are proposed for the three responses (R) HHI, NOUH and the governmental decision makers within Heliopolis. The extensive analysis of the respondents' answers has shown that the proposed localized sustainable state catalogue could be a legitimate approach for recent heritage neighborhoods.

As a conclusion, this study has revealed that the HHI as a grassroots has a big role as a response (R) on protecting the heritage and spreading community awareness on the neighborhood scale. The NOUH is a nucleus for a much stronger entity that would be capable of firmly preserving the heritage neighborhoods with distinctive value. Environmental aspects are important for sustainable preservation in Egypt, but there are no enough instruments that encourage energy-efficient approaches in addition to the absence of a political readiness. The catalogue could serve as a guide for assessing heritage neighborhoods which can be utilized by relevant response-bodies. The asked experts agreed on importance of most of the sustainability criteria; however their preferences could vary as seen with NOUH and HHI. Finally, the research findings suggest recommendations addressing the different responses (R) towards a sustainable state for the Egyptian heritage neighborhoods.

ZUSAMMENFASSUNG

Ägyptische Quartiere des 19. und frühen 20. Jahrhunderts sind von einem hohen historischen Wert, da sie für ihre Entstehungszeit ein neues städtebauliches Modell sowie neue Planungskonzepte und Architekturstile repräsentieren. Sie verfügen damit über einen einzigartigen Charakter und einen hohen Erhaltungswert. Diese Stadtquartiere sind aktuell verschiedenen Arten von Übergriffen ausgesetzt, die einen Druck (P) auf deren Ist-Zustand (S) ausüben. Diese sich auf den Zustand (S) auswirkenden Veränderungen führen zu negativen Auswirkungen (I), die die sozialen, wirtschaftlichen, städtebaulichen, kulturellen und ökonomischen Qualitäten der Quartiere beeinträchtigen. Diese Auswirkungen regen Reaktionen (R) an, die nach Lösungen verlangen.

Ende der 1990er Jahre war in Ägypten ein aktives politisches Interesse spürbar, sich mit den Qualitäten dieser Zeit auseinanderzusetzen, und es wurden Studien über die Quartiere des 19. und frühen 20. Jahrhunderts durchgeführt. Eine dieser Studien betrachtet die Siedlung Heliopolis in Kairo. In dieser Studie wurden Empfehlungen für kulturelle und städtebauliche Aspekte formuliert. Wirtschaftliche, soziale und ökologische Aspekte wurden nicht berücksichtigt, was einen Mangel darstellt. Ein unter den Gesichtspunkten der Nachhaltigkeit formuliertes Konzept sollte diese Aspekte mit einschließen.

Die vorliegende Forschungsarbeit setzt an dieser Erkenntnis an und versucht eine Wissenslücke zu füllen, in dem sie den Ansatz der Nachhaltigkeit in Strategien zur Erhaltung der Quartiere berücksichtigt, Aspekte der Nachhaltigkeit implementiert und dabei die Besonderheiten dieser ägyptischen Quartiere berücksichtigt. Das Rahmenkonzept dieser Forschung verwendet das DPSIR-Rahmen entwickelt von der European Environmental Agency und erweitert ihn zu DPSIR(1,2,3)-SS, um die fragmentierten Probleme innerhalb der gewählten Fallstudie von Heliopolis in ihre verschiedenen Elemente zerlegen zu können.

Die vorliegende Forschung befasst sich mit drei Forschungszielen: der Definition der nachhaltigen Zustandskriterien (SS) in Form eines Katalogs, der Bestimmung des Zustandes (S) sowie auch der Untersuchung der verschiedenen Reaktionen (R) innerhalb der historischen Quartiere. Um dies zu erreichen, wendet die Forschung einen Methoden-Mix an, indem sie quantitative und qualitative Daten für die empirische Fallstudienuntersuchung verwendet. Der Kriterienkatalog des nachhaltigen Zustands (SS) besteht in erster Linie aus Erkenntnissen der Literaturrecherche und umfasst grundlegende Prinzipien der Nachhaltigkeit und Erhaltung von Quartieren. Der Kriterienkatalog dient zudem der Methode des Experteninterviews als Grundlage. Ziel der Experteninterviews anhand eines Fragebogens ist es, Einschätzungen zur Relevanz und Anwendbarkeit der einzelnen Kriterien zu erhalten.

Die Analyse der Interviews ermöglicht die Erstellung eines Katalogs, der Aspekte des nachhaltigen Zustand (SS) aufzeigt, und welcher in einem nächsten Schritt teilweise am Beispiel Heliopolis angewandt wird, um dessen Zustand (S) auszuwerten. Darüber hinaus werden mögliche Interventionsmaßnahmen und Strategien für die Reaktionen (R1,2,3) National Organization for Urban Harmony (NOUH), Heliopolis Heritage Initiative (HHI), und die staatlichen Entscheidungsträgern als Grundlage für Interventionsentscheidungen. Die umfangreiche Analyse hat gezeigt, dass der vorgeschlagene Katalog über einen lokalisierten nachhaltigen Zustand (SS) als ein legitimierter Ansatz von den Experten bewertet wird.

Als Fazit hat die Studie gezeigt, dass die HHI als eine Reaktion (R) eine große Rolle für den Schutz von Heliopolis' Quartier und die Verbreitung des Gemeinschaftsbewusstseins spielen kann. Die NOUH ist ein Kern für eine viel stärkere Organisation, die in der Lage sein kann, die Quartiere aufrechtzuerhalten. Weiterhin sind ökologische Aspekte wichtig für die nachhaltige Erhaltung der Denkmalquartiere in Ägypten; jedoch fehlen ausreichende Instrumente und eine politische Bereitschaft für einen umfassenden Schutz und Erhaltung. Der im Rahmen dieser Forschung entwickelte Katalog kann als Leitfaden für die Analyse und Bewertung der historisch bedeutsamen Quartiere dienen. Die befragten Experten zeigten sich in der Bewertung der meisten vorgeschlagenen Kriterien einig, auch wenn ihre Präferenzen variierten. Die im Rahmen dieser Forschungsarbeit entworfenen Empfehlungen für Reaktionen (R) streben einen nachhaltigen Zustand für historische Quartiere in Ägypten an.

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LIST OF ACRONYMS AND ABBREVIATIONS

DPSIR- framework	Driving Force-Pressure-State-Impact-Response- framework
DPSIR-SS-framework	Driving Force-Pressure-State-Impact-Response-Sustainable State-
D	Driving Force
P	Pressure
S	State
I	Impact
R	Response
SS	Sustainable State
NOUH	National Organization for Urban Harmony
HBRC	Housing and Building National Research Center
HHI	Heliopolis Heritage Initiative
GOPP	General Organization for Physical Planning in Egypt
SHNP	Sustainable Heritage Neighborhood Preservation
UNESCO	United Nations Educational, Scientific and Cultural Organization
ICCROM	International Centre for the Study of the Preservation & Restoration of Cultural Property
ICOMOS	International Commission on Monuments and Sites
LEED-ND	Leadership in Energy and Environmental Design for Neighborhood, US
USGBC	United States Green Building Council
CASBEE- Urban Area	Comprehensive Assessment System for Building Environmental Efficiency, Japan
DGNB-NQS	Deutsche Gesellschaft fuer Nachhaltiges Bauen fuer Nachhaltige Stadtquartiere
Estidama	means Sustainability / Abu Dhabi's Sustainability Assessment Tool
SEG	Stadterneuerungsgesellschaft
OECD	Organization for Economic Co-operation and Development
EEA	European Environment Agency
CAPMAS	Central Agency for Public Mobilization and Statistics of Egypt

GROCERY

R1= Agenda controllers =NOUH
R2= Preference Shapers =Grassroots = Community Initiatives = social resistance = HHI
R3= Decision Makers =Governmental entities = Cairo Governorate & Heliopolis local district unit

Chapter (1) Introduction

"*Der Anfang ist die Hälfte vom Ganzen.*"

Aristotle

1 INTRODUCTION

This chapter is an orientation guide that introduces the background for the study, which takes place in Egypt. The research then mentions the research scope, the problem statement, the research objectives, questions and propositions. In addition, this chapter explains the motivation and significance of the study showing the faced limitations and concluding with the research structure.

1.1 BACKGROUND

Egypt is replete with its accumulated architectural heritage layers starting from more than 7 thousand years up till today, which has resulted *into a multi-layered city, with each layer embracing memorable buildings and city icons that shaped the community's collective memory* (see Ouf, 2008). Fortunate to have the rich annual Nile river flood along with the accentuation and natural isolation by the desert from both sides east and west, the ancient Egyptians were able to develop the world's greatest civilization; the Pharaoh-civilization. They have left us a huge treasure of temples, monuments etc. (Goldschmidt, 2004:11). The Greek and Roman ruling have added another rich layer to the Egyptian identity followed by the Byzantines (Goldschmidt, 2004). Later in the year 641 A.D. the Arab Muslims came and introduced Islam and the Arab language in Egypt (egypthistory.net; World Fact book, 2012). Around 1250 the Mamluks had the control over Egypt. In 1517 the Ottoman emperor governed it. With the digging of the Suez Canal[1] in 1869 Egypt became an important international transportation hub, starting the so-called 19th century era (World Fact book, 2012). In this Era there was a strong will for modernizing Egypt to follow European models which were tremendously sculptured through architectural and urban elements reflecting new uses and modes of lives exposed to the Egyptians, especially the upper class ones (Raymond, 2000). In 1922, Egypt was partially independent from the United Kingdom which has seized control on Egypt in 1882 and in 1952 it became totally independent having its own sovereignty away from the British and the Ottomans (World Fact book, 2012; Waly, 2008; Library of Congress, 2013) having the first Egyptian president Gamal Abdel-Nasser. Each of these epochs has a great share that adds a significant layer shaping the Egyptian identity even if sometimes the influence is of foreign origin.

Due to the Egyptian natural environment with the narrow valley and a vast desert, cities were primarily shaped adjacent to agricultural lands along the Nile. The Egyptian city has moved through earlier eras from a simple homogenous city into a composition of different layers (Hesham, 2010; Waly, 2008). Egyptian urban patterns consist of different types of residential settlements, Hesham (2010) distinguishes four different types (Hesham, 2010). The historical spontaneous urban patterns consist of the old traditional urban mass of the city with narrow bent streets suiting the requirements of its time; such as the old Islamic quarter in Cairo and its famous *Muizz* street. The modern and contemporary urban patterns which lie within the scope of the study (see section 1.2) are patterns which appeared in the 19th and early 20th century vis-à-vis to the traditional spontaneous pattern. They are more organized trying to fulfill contemporary needs of the modern city such as the inclusion of cars reflecting a stable

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[1] The Suez Canal is the first canal that directly links the Mediterranean Sea to the Red Sea (http://www.suezcanal.gov.eg/)

urban setting, such as Khedivial[2] Cairo, Zamalek, and Heliopolis amongst others. Referring to the same settlement type there are also pre-planned newly constructed neighborhoods such as 6th of October and New Cairo. Sims (2010) states, that the formal areas are all settlements that were built upon clear plans and with attained permissions following the building code of each zone. The third type is the unplanned random urban pattern which is an informal pattern that usually appears on the peripheries of the existing urban mass. It does not follow any rules or planning codes, thus facing a lot of urban, social and economic problems (Hesham, 2010). These appeared with the exodus of a high number of populations from rural areas to the big cities without a previous readiness of the city to disseminate this number leading to informality of housing forming almost two-thirds of the population of Greater Cairo (Sims, 2010:92). The last type introduced by Hesham (2010) is the rural urban patterns on the outer skirt of the cities or close to their borders having a typical rural composition were the land is fertile and people depend on agriculture (Hesham, 2010).

Figure 1-1 Egypt Map Source:
http://www.lib.utexas.edu/maps/atlas_middle_east/egypt.jpg

Egypt (Figure 1-1) covers an area of 1.002,000 km$_2$, of which 96% is desert and only 2.9% is arable land. Settlement area covers an estimated 78,990 km2 with 7.8 % of the total area which is mostly limited to the Nile valley and Nile delta (Egypt Information Gate). Egypt has

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[2] Khedive is a ruler of Egypt from 1867 to 1914 governing as a viceroy of the sultan of Turkey. Khedivial is the adjective (Merriam-Webster Dictionary) http://www.merriam-webster.com/dictionary/khedive

a total population of 89.18 million (Capmas[3], July 2015) where 16, 86 are in its capital Cairo (Capmas, January, 2015). The population is growing rapidly on a limited arable land depending on the Nile, this overloads the available resources (The World Factbook, 2012). The GDP is 272.0 billion $ and its growth is 2.1 % while the inflation rate stands at 9.5% (World Bank, 2013). The CO_2 emission is 2.6 metric tons per capita staying constant since 2007 (World Bank, 2010) while the climate in Egypt is classified as a hot dry one (Goldschmidt, 2004).

1.1.1   CAIRO, THE CAPITAL

Cairo is located at the confluence of the two branches of the Nile. It was named *al-Qahira* (the victorious) after the Fatimid General *Jawhar al-Siqili* who conquered Egypt for his Master *Al-Muizz li-Din Allah* in 969 (for more read Raymond, 2000). Due to the diverse influences through history, Cairo turned from a homogenous city into a heterogeneous metropolitan city with a rich historic layering, superposition, and transformation, clearly seen in the different urban areas (Amedi; Nagler & Wessling, 2009). Greater Cairo is a city of contradictions. It has old neighborhoods and new neighborhoods, the good and the bad the beautiful and the ugly the clean and the dirty, the rich and the poor, the formal and the informal (Amedi et al., 2009).

Figure 1-2 shows the Greater Cairo region with the different layers and types of settlements where the built up area until 1947 (in grey) is centered on the river Nile then the extensions escorted by a huge wave of informal settlements (in red), and on the fringes east and west the newly constructed cities, which are part of the ever-growing Cairo (in orange).
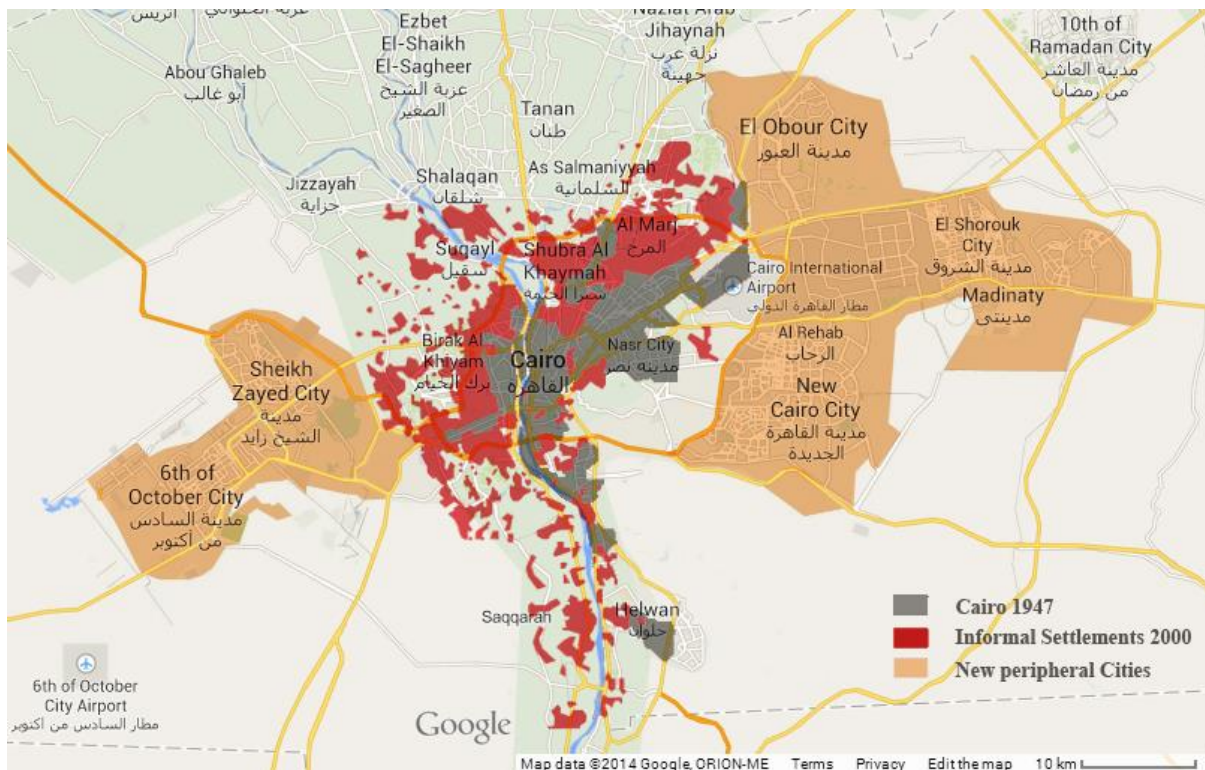
Figure 1-2 Greater Cairo map showing the Cairene built up area till 1947, informal settlements from 1952 till 2000 , (Amedi et al., 2009:8) and the new cities as an extension of Greater Cairo on the fringes (developed by Author)

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[3] Central Agency for Public Mobilization and Statistics (CAPMAS) of Egypt

Egypt has one of the most polluted cosmopolitan cities of the world. Although Egypt has signed different international Agreements concerning the environment, such as climate change-Kyoto protocol, environmental modification, Ozone Layer protection; it did not prove any of the above and thus is not committed to reaching any environmental targets' (Middle East Directory, 2008). As stated in the World Bank Report (World Bank, 2013), the Egyptian government is aware of the problem of air pollution trying to take some actions to reduce the negative impacts on air. Environmental policies are sector specific with no real coordination and the uncollected garbage in the streets of Cairo is a reminder that Egypt's current waste management policy is not viable (El-Gendy, 2010).

1.1.2   EGYPTIAN HERITAGE

Egypt is a repository of irreplaceable and precious heritage of different historic layers reflecting outstanding archaic qualities where in some places a living significance can be perceived up till today. The persisting 19th and early 20th century Egyptian neighborhoods are strong witnesses of a valuable type of architecture that is vibrant and vivid. These prototypal neighborhoods can be found in different cities around Egypt, such as in Cairo, Alexandria, Port-Said and Port-Fuad amongst others (see Figure 1-3, Figure 1-4, Figure 1-5, & Figure 1-6). The bigger the city the more neighborhoods of that era are recognizable making Cairo and Alexandria be on top of the list followed by Port-Said.

Most of these neighborhoods that were built addressing middle class and rich people of the society became nowadays rather mixed areas encompassing people of different societal levels. This is further prone to change as rich people continue to leave the crowded old city and reside in new peripheral compounds on the fringes where they have more access to green areas escaping the congested streets and noisy life (see Sims, 2010). On the other hand, a huge amount of informal buildings apparent as 'red blocks' are spreading all over the empty slots between and around the old neighborhoods (see Amedi; Nagler & Wessling, 2009:6) which hinders its natural growth and development. This exercises an extra pressure on the existing older neighborhoods which requires a conscious and aware plan.

These neighborhoods consist of buildings and urban fabrics that have accumulated a great value over decades. They became part of Egypt's heritage and identity even if their origin and influence is described as 'foreign'. These diverse neighborhoods are worth preservation in a smart and innovative way providing them space for a sustainable development without losing their genuine character and identity that distinguishes each exclusively and without neglecting the needs of its society.

The management of Egyptian Heritage is under the responsibility of two governmental bodies. The first is the Supreme Council of Antiquities (SCA) which became a ministry of Antiquities since 2011 *wezaret el-athar*, which is responsible for the heritage of the Pharaonic, Coptic, Islamic architecture mainly following the law no. 117 of 1983. According to this law buildings of the 19th and early 20th century are not considered heritage. The second responsible body is *al-Tansiq al-Hadary,* the National Organization of Urban Harmony (NOUH) established in 2004 following the newly developed laws; law no. 144 of 2006 to control demolitions and encourage preservation of valuable buildings and law no. 119 of 2008 prohibiting violation on listed distinctive buildings and areas (check NOUH website[4]). These two laws focus mainly on the recent Egyptian heritage of the 19th and early 20th century.

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[4] NOUH website: www.urbanharmony.org

Figure 1-4 Khedivial Cairo satellite picture showing radial urban pattern. Source: Google earth 2015

Figure 1-5 Talaat Harb square, Khedivial Cairo. Source: Author, 2012
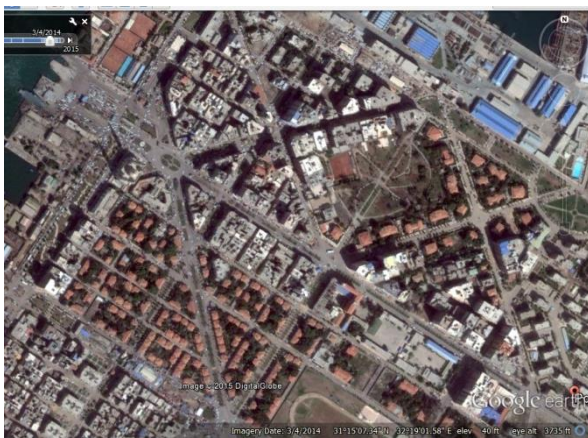
Figure 1-6 Port-Fuad satellite picture showing urban pattern. Source: Google earth, April, 2014

Figure 1-3 Arial shot of Port-Fuad showing the unique building type and street pattern. Source: Waleed Montasser, 2006

Cities and their neighborhoods evolve over time and that is their character and it's unstoppable (Zeiny, 2011). The concern is how to make this growth successful and desirable satisfying the needs of their communities. It becomes more challenging when dealing with existing neighborhoods with valuable buildings and unique urban fabrics that are worth preservation; in that case the development of such an existing neighborhood becomes complex; where two essential concepts collide; *sustainable development* and *preservation*; a twofold challenge. If this inevitable growth and development is not planned-for it leads to haphazard eclectic growth with no clear unifying guidelines or prevailing codes which in the end creates ugly places full of urban, environmental and social deficits. Preserving the recent heritage neighborhoods should encompass not only treasuring specific buildings of outstanding value, but protecting models of a unique pattern of spatial organization such as street plans and building types, that as a whole are capable of defining the distinct qualities of old areas this along with the enhancement of the quality of life for its local community.

1.1.3   PROBLEMS FACING HERITAGE PRESERVATION IN EGYPT

Despite the efforts of NOUH, the distinct architecture of the 19th and early 20th century is apparently in a weak situation. Urban heritage preservation in Egypt faces some problems. They are living heritage where people live, which make any retrofitting intervention not an easy task (Hawas, 2013). Moreover, this intervention requires technical expertise and well-trained and skilled labor. Another major problem is that some heritage owners lack the heritage awareness and the interest in preserving their assets. They are either not interested or not capable of preserving the assets (Hawas, 2013) due to the lack of financial motivation (El-Aref, 04/24/2014). Hawas also mentions in her book the *absence of aesthetic sense* as a general problem within these distinctive areas. In addition to that the high pressure of using vehicular traffic within these areas has a negative impact on the buildings and the areas as a whole (Hawas, 2013:55). Last but not least, Hawas states that the absence of a comprehensive development plan for heritage conservation is a dramatic issue that explains the resulting state of the heritage areas, where urban development plans are formulated in isolation from considering the existing heritage areas as living part of the city (see Hawas, 2013:56).

This described situation motivates a deeper investigation of the state of these neighborhoods and their destined futures in Egypt seeking innovative and comprehensive approaches to solving their problems. In recent years Egypt went through two consequent revolutions; the 25th of January 2011 and the 30th of June 2013 (see Appendix 4), which entailed profound quick changes, instability, lack of security and control and a blunder in decisions clearly crystalized in the built heritage conditions.

1.2   RESEARCH SCOPE

The research study focuses on neighborhoods belonging to the 'modern and contemporary urban pattern' as defined by Hesham (2010) concentrating only on these defined as 19th and early 20th century neighborhoods also called recent heritage (Carabelli, 2006) which comprise of heritage buildings and areas with distinct value, that were formally planned and conventionally growing and recently worth preservation and sustainable up-keep. Some of these buildings and areas are by now listed by NOUH as distinctive ones following certain guidelines (see sections 4.2 & 4.3). This type of neighborhoods is also defined as 'living heritage' as it deals with neighborhoods with heritage buildings that form the basic element for the living community, which they use for living, working, commercial and leisure (see Al-Harithy, 2005). It is architecture mostly with western urban planning concepts and style that was at that time newly injected into the Egyptian cities (see chapter 2 & 3). Apart from debates about the authenticity of these buildings, they became part of the irreplaceable Egyptian identity worth preservation even if with foreign vocabulary.

1.3   PROBLEM STATEMENT

> "*The Greenest Building Is...One That Is Already Built*" (Elefante, 2007)

The current phenomenon under investigation is the oppressive treatment of listed valuable buildings ranging from encroachments, misuse, storey-extension reaching total demolition which moreover leads not only to the complete loss of an irreplaceable building but obliterating an essential part of the neighborhoods identity and its urban fabric. Buildings are left to deterioration, with no maintenance; others can even be totally replaced by new high-rises without considering any environmental and cultural issues. Continuous demolition of

buildings with distinctive value within designated heritage neighborhoods is a retarding factor impeding the way towards sustainable preservation. In addition, a lot of uses have disappeared such as age-old shops, cafes, banks and names of streets has been changed cutting the thread of continuous feeding of history. Moreover, wealthy eager investors buy assets and demolish them destroying its identity (Serageldin, 2007; Hawas, 2013). Despite the existence of the relevant laws; these distinct areas and buildings are still facing a real threat where the laws seem weak and contain loopholes that enable owners and investors to circumvent the laws. Last but not least, a clear vision for the future development of recent heritage neighborhoods is still missing.

Figure 1-7 3 Soumal Street, Heliopolis deliberately deserted villa waiting for an opportunity to tear it down. Photo by author, 2013

1.4   RESEARCH OBJECTIVES

- ✓ The research seeks to identify the different problems in the Egyptian heritage neighborhood setting striving a better understanding of the causal relations of the problem using the DPSIR framework (chapter 7 & chapter 11).
- ✓ It then aims to contribute in constructing a localized sustainable state (SS) vision for the future of Egyptian heritage neighborhoods defining the sustainability-related criteria important to preserve them developing a so called sustainable state catalogue (see chapter 10).
- ✓ The research is also studying the different actors' and stakeholders' responses (R) and responsibilities to evaluate those developing worthwhile recommendations for their functional improvement within the neighborhood seeking a better state (S) (see chapter 11 & chapter 12).
- ✓ Last but not least it aims at evaluating the state of the heritage neighborhood, in that case of Heliopolis, the chosen case study using the developed sustainable state catalogue to help coming up with efficient and relevant recommendations for improvement (see chapter 11 & chapter 12).

1.5 RESEARCH QUESTIONS

Derived from the illustrated problem within Egyptian distinct neighborhoods, the research has developed questions that tackle the broader research issue of heritage neighborhoods and a narrower scope focusing on the case study of Heliopolis

<u>General Heritage Neighborhood level</u>

1. What are the sustainability-related criteria important for preserving the Heritage neighborhoods of 19th and early 20th century Egypt?
2. How can the sustainability-related criteria be translated and applied in order to avoid current encroachments and proceed towards a Sustainable State?
3. Why do heritage owners resort to selling their assets let it demolish and a new huge investment is replacing the old building?

<u>Heliopolis level</u>

4. What is the anticipated response (R) within the prevailing context of Heliopolis to avoid the current encroachments?
5. Why is sustainable heritage neighborhood preservation (SHNP) based on a criteria catalogue beneficial for Heliopolis and similar neighborhoods?
6. How do both actors, NOUH and HHI prioritize sustainability criteria and thus recognize sustainability within Heliopolis neighborhood?
7. What are the measures to be carried out towards sustainability in Heliopolis neighborhood?
8. How did different responses (R) affect Heliopolis since its emergence in the early 20th century?

1.6 RESEARCH PROPOSITIONS

When building and developing within existing neighborhoods it is important to consider social, environmental, economic, urban and cultural qualities to reach a sustainable state of development (Figure 1-8).
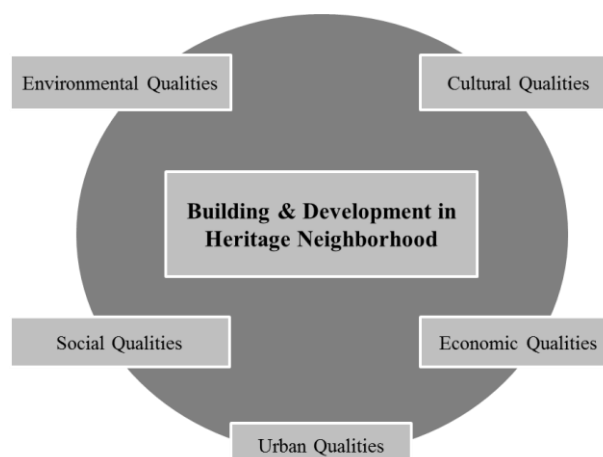
Figure 1-8 The fields of a sustainable development within
existing neighborhood settings (developed from Streck, 2011)

Applying sustainable preservation principles helps to take heritage neighborhoods out of the ever deteriorating vortex.

- The greenest building is one already existing
- Social resistance within heritage neighborhoods is a key driver for heritage preservation, appreciation and recognition
- The establishment of NOUH can be seen as a positive step towards serious holistic preservation of heritage neighborhoods.
- Egyptian heritage neighborhoods suffer from the absence of a serious development plan which automatically lead to current states
- Environmental considerations are important to be included in the planning processes within heritage neighborhoods
- Owners of heritage buildings are seduced by the allure of offers provided by exploiting investors leading to the loss of the building assets

1.7 RESEARCH MOTIVATION

There are marvelous streets in different cities all over Egypt that are aesthetically beautiful and personally pleasant. Every Egyptian including myself, have memories in different places. This can strengthen the ties between the person and his/her surrounding environment, being either natural or built. Losing valuable buildings one after another through encroachment and demolition, one has felt that it is surpassing one's self right destroying his/her memories. Many Egyptian neighborhoods are starting to lose a high number of their valuable buildings and their urban fabric is changing under the umbrella of development and the greed of opportunist Investors, which obliterates the character of a beautiful neighborhood 'used to be'. In fighting against this loss and in wishing for a better planned tomorrow this study is carried out.

1.8 RESEARCH SIGNIFICANCE

Dr. Yehia el-Zeiny, the famous Egyptian architect writes in his book 'The City between Coordination and Rooting[5]' about the danger the Egyptian urban city is facing calling it 'manifestations of jamming on the city's memory' he explains how wonderful valuable buildings are demolished where the opportunists circumvent (El-Zeiny, 2011:16).

In the late 90's and early years of the new millennium in Egypt the political interest has focused for a while on carrying out studies on 19th and early 20th century neighborhoods. Ten different case studies were chosen in Cairo including Heliopolis. The study on Heliopolis came up with thick-line recommendations that mainly focus on heritage oriented guidelines and some planning concepts missing economic and environmental considerations, the Liberalization of rents was also not mentioned. These are aspect that should be by now put into consideration.

The researcher seeks to develop a list of sustainability qualities that respects all the important pillars as a guiding catalogue for Egyptian heritage neighborhood preservation. This criteria list is inspired by the sustainability assessment instruments such as LEED-ND, CASBEE, etc. which focus mainly on newly constructed neighborhoods (see chapter 8). In March 2013, after two years of initiating my PhD work on this topic in 2011; the LEED-ND has released a newer version 'for neighborhood development and historic preservation' that aims to

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[5] *'al-Madina bayn al-tanseeq we al-ta'aseel'*

encourage the consideration of existing historic buildings. The LEED-ND certification system explains that preservation and adaptive reuse are a value-added to any green project by emphasizing on appreciating the past combined with a plan for the future (USGBC, 2013). The new release of LEED-ND was important for strengthening the carried out work seeking a localized sustainability catalogue that would suit more within the Egyptian context. As stated by Haapio (2012:168) the LEED-ND is *strongly directed for the North American market area.* Using the credits of LEED-ND directly for Egyptian Heritage Neighborhoods would not suit as discussed with Egyptian academic Professors of the field in the first fact-finding mission field trip to Egypt in 2012. The LEED-ND which is primarily designed for new neighborhoods with substantial redevelopment (see USGBC, 2009) uses area-specific indicators that are relevant mainly to the American standards which do not necessarily suit in the Egyptian context such as 'mixed uses' e*nabling walking access within ¼ mile to the following number of existing or new land uses…* (see USGBC, 2009). The possible walkable mileage proposed in this criterion respects the American climate which should be less if applied to Egypt respecting its hot climate conditions making walking for longer distances not acceptable as in other places of the world. The indicator-based assessment method with delineated measures is best suitable for its context. Moreover, as the research study at hand focuses only on heritage neighborhoods, it needs a method that is localized and tailored especially for this type of neighborhoods. That is why a contextual criteria-based sustainability approach to heritage neighborhoods was sought in this study.

This research tries to fill the knowledge gap in the reconciliation of both sustainability and preservation contextualized and localized for Egypt's 19th and early 20th century neighborhoods. The importance of a sustainable preservation approach for valuable neighborhoods and their vitality is a compelling rationale for a practical and academic concern.

1.9   RESEARCH LIMITATIONS

The goals are unlimited and the aspirations reach the sky, but like every human piece of work there are always limitations that confine and define the research work carried out. One of the major limitations that face this study is the current political situation in Egypt that is characterized with its instability and quick changes within very short periods of time where data is not easy to obtain.

Revolution and Demolition
The Problem tackled in this research study is concerned with the demolitions and encroachments within the heritage neighborhood and their impact on the urban environment. These encroachments have increased in the post revolution period. Due to the lack of safety and security, people tend to demolish more, despite the laws that prohibit this, however nothing seems deterrent. The research will focus on the essential problems of encroachment, looking at the drawbacks of the law and general influences seeking an approach for promising improvements.

Interviews and Case Study
In this current unstable situation it was not of high significance carrying out thorough interviews with decision makers, however this was sought by the researcher that has carried out a couple of interviews with responsible bodies in the Cairo Governorate and Heliopolis local district unit which will be taken into consideration but no delineated analysis is possible such as with the case of NOUH and HHI.

Due to radical political shifts in Egypt, carrying out the fieldwork in Cairo moving around and talking to people was not always smooth. People are asked about urban qualities and aesthetic dimensions, in addition to values of old buildings in a harsh situation of high 'insecurity feeling' and a deeply collapsing economy that entails the increase of prices of basic goods among other things. This background situation that influences every Egyptian may also influence their answers.

In this research, the society and the social consideration as a basic element of sustainability is presented mainly through the civil society of Heliopolis Heritage Initiative (HHI). Direct communication with pass-byers and heritage owners was casually carried out with single cases but not on a larger scale due to the overall revolutionary situations dubbed with the feeling of insecurity, skepticism and diminishing trust people have towards foreign ones.

Criteria Catalogue
The research study seeks to reach a catalogue of agreed on criteria. They are rather principles of sustainability rather than measurable indicators. The usage of indicators needs thorough studies to put contextualized standards to each criterion, which does not exist in the Egyptian field and lies beyond the scope of the research; however it opens the field for further studies upon the subject matter.

1.10 RESEARCH STRUCTURE

This section briefly presents the dissertation's structure and organization (Figure 1-9). It consists of five parts comprising 12 chapters.

Chapter (1) INTRODUCTION
This chapter is an orientation chapter that illustrates the whole research content explaining the research background and research scope. It shows then the problem statement, research objectives reaching the formulation of the research questions. This part also includes the research motivation, limitations and significance concluding with the brief presentation to the structure and organization of the dissertation.

PART I - CONTEXTUAL SETTING

Chapter (2) 19TH CENTURY ERA, EGYPT
This chapter presents the epoch of the 19th century in Egypt and the emergence of planned neighborhoods with new definitions using western vocabulary. It first defines the 19th century period, determining its start and end that is extended to encompass the early 20th century period. The chapter then clarifies how 19th century reforms and changes were motivated by modernization trends and not by colonial powers showing how Khedive Ismail has urged all the efforts for a Modern Egypt. Finally, this chapter presents the Cairene neighborhoods of that period as an introduction for the following chapter about Heliopolis, the case study.

Chapter (3) HELIOPOLIS – 'THE CITY OF THE SUN'
This chapter illustrates the Cairene neighborhood of Heliopolis that has emerged in the early 20th century presenting when and how it was constructed and developed reaching nowadays Heliopolis being a designated heritage neighborhood yet under threat of loss.

Chapter (4) RECOGNITION OF THE EGYPTIAN RECENT HERITAGE

This chapter discusses how and when Egypt started to recognize its recent heritage of the 19th and early 20th century. It introduces different entities that recognize the Egyptian heritage such as the National Organization of Urban Harmony (NOUH) as the responsible governmental body and the Heliopolis Heritage Initiative (HHI) as an example of grassroots interested in preserving their heritage.

PART II - THEORETICAL BACKGROUND

Chapter (5) EXISTING HERITAGE NEIGHBORHOODS

As the title of the PhD research tells '*Towards a Sustainable Preservation approach to Egyptian Heritage Neighborhoods*' the conducted study deals with heritage neighborhoods that are demonstrated thoroughly in this chapter. They illustrate the 'heritage neighborhood' definition and characteristics from a theoretical and historical point of view that comprises the urban scale for the study and the 'cultural heritage' as the urban nature of investigated units, focusing mainly on the neighborhoods emerged in the 19th and early 20th century also called 'recent heritage'. This chapter also talks about the 'social resistance' as a counter reaction from the community towards protecting the valuable gems of their neighborhoods from loss and neglect.

Chapter (6) SUSTAINABLE HERITAGE PRESERVATION

Moving to another layer, the theoretical part then discusses 'sustainable preservation' in this chapter as an eligible response within small urban areas against urban growth spills, building loss and decaying quality of life. It talks about 'historic preservation' features, in addition it explains that sustainability principles are of great significance when dealing with existing heritage settings within the neighborhood, ending the chapter with a 'reconciliation' section clarifying how the previously conflicting approaches 'preservation' and 'sustainability' can work together in harmony finding common goals to assure desired limits of quality in future heritage neighborhoods.

PART III - CONCEPT AND METHOD

Chapter (7) CONCEPTUAL FRAMEWORK – DPSIR- FRAMEWORK

This chapter presents the DPSIR-framework adapted for illustrating the conceptual framework of the dissertation. It presents its origins and defines its different elements, the driving force (D), pressure (P), state (S), impact (I) and response (R) concluding with explaining why it is significant for the research at hand.

Chapter (8) SUSTAINABILITY OPERATIONS AND PROCCESSES

In this chapter different sustainability instruments are discoursed mainly the international sustainability certification tools LEED-ND used for tackling neighborhood scale assessment and rating. Moreover, soft tools will be taken-out mainly from the German existing urban regeneration arena, such as strategies and instruments adapted to control and assure a sustainable and well preserved urban environment to its inhabitants and visitors concluding the chapter with the proposal of a 'sustainable state catalogue' resulting from the investigated theories, concepts and principles translated into a simple criteria list working as a prelude to a mature approach that will be developed and used further in the coming parts of the study seeking the determination of a localized sustainable state (see chapter 10 & 11).

Chapter (9) RESEARCH DESIGN AND METHODOLOGY

This chapter presents the research methodology starting with linking the research questions to the conceptual framework then it explains the research strategy and process followed by explaining the reason of choosing a single case study approach. The different data collection methods carried out throughout the work are presented to answer the research questions, such as the conducted expert-interviews and the LeitFaden-interviews for the development of the sustainable state catalogue and develop recommendations for responses (R) respectively. Finally, it talks about the validity, reliability and generalization possibilities.

PART IV - EMPIRICAL ANALYSIS

Chapter (10) TOWARDS A LOCALIZED SUSTAINABLE STATE

This chapter illustrates the analysis to the sustainability-related criteria, their importance and applicability as resulted from the semi-structured expert-interview based on a questionnaire. The answers of experts are analyzed in this chapter at hand and significant conclusions are drawn out. The important criteria under each sustainability pillar are discussed developing a shortlisted Catalogue of the criteria confirmed as important by the experts. The criteria less important will be also discussed clarifying their irrelevance or less importance to context reaching a localized sustainable state catalogue as sought for in the conceptual framework (see Chapter 7) and explaining possibilities for application. Finally, the priority-criteria of NOUH are put juxtaposed to these of HHI to come up with relevant reflections about the interest of each entity within the heritage neighborhood.

Chapter (11) HELIOPOLIS BETWEEN SUSTAINABILITY AND LOSS

This chapter focuses on using the DPSIR-elements introduced in the conceptual framework (Chapter 7) to crystalize Heliopolis' current situation. This entails the identification of the driving forces (D) influencing Heliopolis development, the created pressures (P) practiced on the different levels, the changed state (S) of the neighborhood which will be illustrated in detail using the sustainability catalogue created in (Chapter 10) merged with SWOT. The escorting impacts (I) are shown concluding with previous and current responses (R) affecting the neighborhood either positively or negatively.

PART V – RECOMMENDATIONS AND CONCLUSIONS

Chapter (12) FINDINGS, RECOMMENDATIONS & CONCLUSION

This closing chapter provides a summary of the research followed by highlighting the key research findings answering the research questions of the study. It then proposes recommendations on different levels as drawn-out from the empirical analysis part. The recommendations are assigned to the three responses (R1, R2 & R3) as defined initially in the conceptual framework chapter. Finally, it proposes further research opportunities.
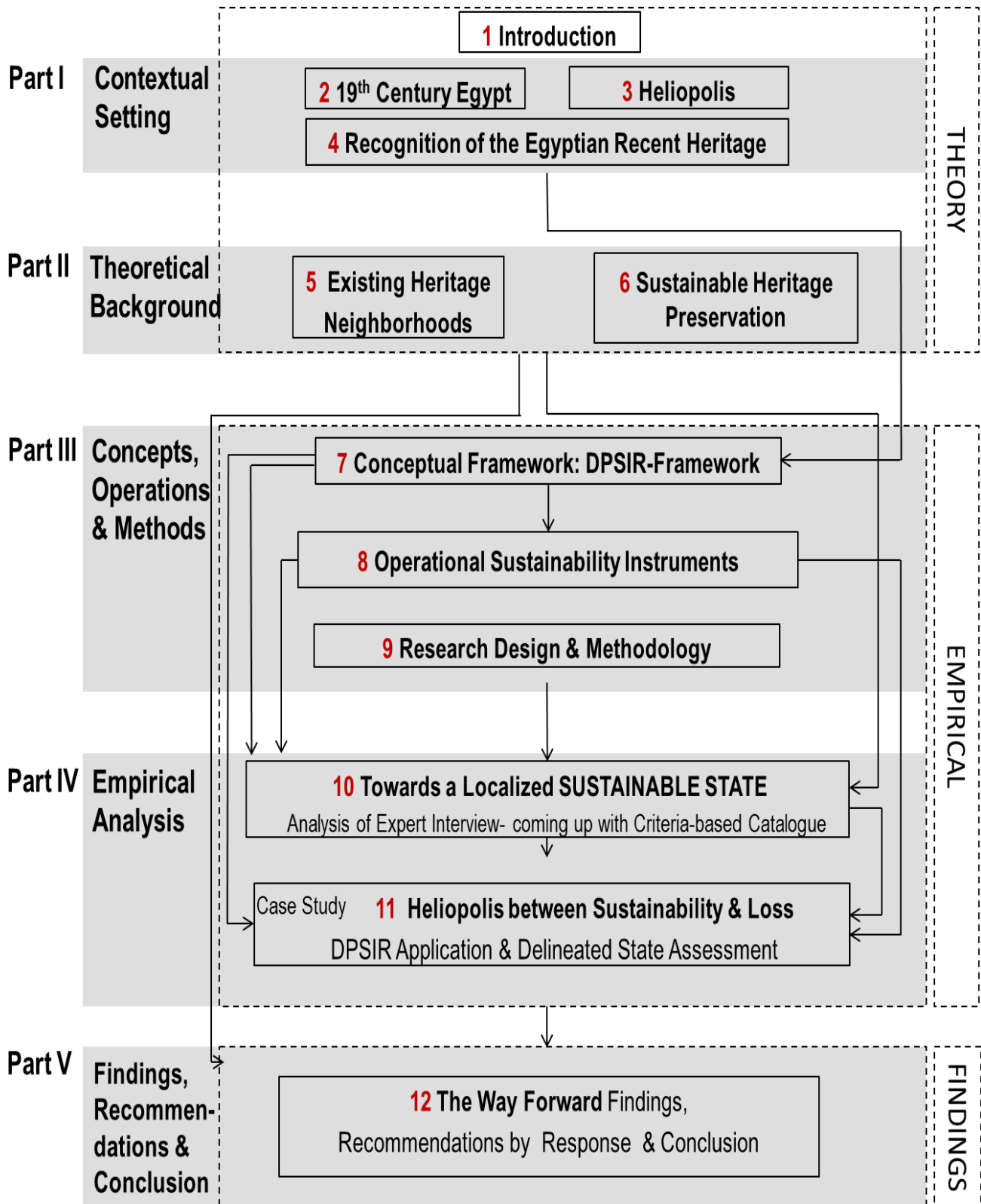
Figure 1-9 Schematic illustration of research structure as developed by author

1.11 WORKING DEFINITIONS

Neighborhood: As used by Barton (2000) and Mayer, Schwehr & Buergin (2011) the research study is concerned with the term 'neighborhood' in which the meaning of 'community' and 'neighborhood' converge combining spatial and social dimensions.

Living Heritage: are functioning heritage buildings which form dynamic social spaces (Al-Harithy, 2005). A living city is in continuous change and renewal. Layers of alteration and additions are accumulated to it as long as it is alive (Abu-Lughod, 1978). Living heritage is the one with continuity of use (El-Rashidi, 2012).

Urban Heritage: According to Steinberg it is not only monuments such as temples, religious buildings, palaces and castles but likewise the historic residential areas and historic city centers that are usually excluded although they equally represent the urban heritage (Steinberg, 1996)**.**

Recent Heritage: are the 19th and early 20th century neighborhoods which comprise of heritage buildings and areas with distinct value, that were formally planned and conventionally growing and recently worth preservation and sustainable up-keep (Carabelli, 2006).

Preservation: The term has an active and a passive meaning. Abu-Lughod (1978) elaborates, to "preserve" can mean "to keep undisturbed, safe from harm or destruction (passive), however it can also mean "to keep alive" (active) emphasizing growth and change which reflects a vital and healthy life of an entity; returning something to a flourishing state after decline and decay (Abu-Lughod, 1978:64)

Sustainability: .The fluid concept reflects the *'ameliorist approach to sustainability'* within the Egyptian context where the decision makers distinguish between compensatable and critical resources as introduced by Strange (1997), seeing what can be replaced (compensatable resource) and what is irreplaceable (critical resource). This approach to sustainability is against stagnation or freeze of the development corridors within a heritage neighborhood (read more in chapter 6).

Catalogue: *A complete list of items, typically one in…systematic order, in particular* (Oxford Dictionary[6])

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[6] Oxford Dictionary available under: http://www.oxforddictionaries.com/definition/english/catalogue

Part I: Contextual Setting

'...the land of the great River Nile' (Goldschmidt, 2004)

PART I: CONTEXTUAL SETTING

The Contextual Setting is the first part of the PhD dissertation. It consists of three chapters (2), (3) & (4). Chapter (2) *19ᵗʰ century Era, Egypt*; introduces the 19ᵗʰ century epoch, the start of Modern Egypt defining the temporal scope of investigated heritage neighborhoods. Chapter (3) *Heliopolis 'the city of the sun'*; illustrates the chosen case study, Heliopolis neighborhood. Last but not least Chapter (4) *Recognition of the Egyptian Recent Heritage*, presents how and when Egypt started to recognize its recent Heritage of the 19ᵗʰ & early 20ᵗʰ century going through different phases.

Chapter (2): 19th Century Era, Egypt

'*Haussmanisation*' (Carabelli & Volait, 2005)

2 19TH CENTURY ERA, EGYPT

This chapter starts with determining the 19th century period, which will be dealt with as the temporal scale for the study spanning from the late 19th to the early 20th century. Then it discusses that it was for modernization intentions and upon a colonial influence; explaining the situation before the start of the period and how the khedive Ismail initiated the period introducing a new definition to the neighborhood and planning that did not exist previously in Egypt. Last but not least, the different neighborhoods, which were constructed in that period, are illustrated to pave the way for introducing Heliopolis neighborhood as the case study of this dissertation.

2.1 19TH CENTURY DILEMMA

What is meant by 19th century? Remarkably, there is no consensus where the limits are of the 19th century in historical usage. The 19th century period determination differs from context to context and from place to another (Fortna, 2006:1). According to Fortna (2006) 19th century in the western European history defines the period from 1789-1914 starting from the happenings of the French Revolution and ending by the end of the WWI that transformed the territory. While for Fortna, the 19th century for the Islamic Middle East spans from 1798 to 1914 putting an importance to Napoleon's invasion of Egypt and how this altered the region. Recent historians have questioned this previously defined interval proposing that for the Ottoman Empire 1774 was the date of the Treaty of Küçük Kaynarca[7], and 1923 defines the establishment of the new Turkish Republic and the end of the empire (Fortna, 2006:2).

As for the Egyptian context, 19th century era starts rather with the digging and then the inauguration of Suez Canal; the definition proposed by Sims and Ilbert & Volait that seem to be more relevant. According to Sims (2010: 14) the 19th century period has spanned from 1870 to 1925 calling it 'Cairo's golden period' or 'Cairo's belle epoch' while (Ilbert & Volait, 1984) called it Neo-Arabic Renaissance starting also 1870 however ending 5 years later in 1930.

For closing this point, the 19th century period is not a rigidly defined period; it is rather prone to stretches in order to include important happenings that might have a big influence in the course of history seeing it in the end as a bundle (Fortna, 2006). For the research study at hand, the 19th century starts in 1870 and ends in 1930, stretching the period to include urban delineations that could be related to the same period of time calling it the '*long nineteenth century*' (Fortna, 2006:1) for which the research also uses the term '19th & early 20th century.

2.2 MODERNIZATION OR COLONIALISM?

Nasr & Volait (2003) talked about '*Transporting planning; the implementation and modes of diffusion in other locations such as the Mediterranean basin away from its original place*' (Nasr & Volait, 2003). In the case of Cairo, the Khedive Ismail had the deliberate will to import voluntarily the Haussmann-Principles of Planning introduced at the same time in Paris with the intention of reflecting modernity and development by introducing the boulevard, the

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[7] Treaty of Küçük Kaynarca is a pact signed at the conclusion of the Russo-Turkish War of 1768–74 at Küçük Kaynarca, in Bulgaria. Available online at: http://www.britannica.com/event/Treaty-of-Kucuk-Kaynarca

sewer, vehicular-appropriate planning and zoning regulations re-shaping the neighborhood definition in Egypt opening the door for the production and reproduction of different modes of neighborhoods minted with foreign planning concepts (see Nasr &Volait, 2003). The period was dubbed as the period of '*modern urbanism*' (Nasr & Volait, 2003) where '*global projects before globalization*' has emerged as referred to by (Volait, 2014a).

Local stakeholders acted like a catalyst for urbanistic changes. In addition, any changes in the urban form, physical patterns, functions, etc. were produced by national and global entities together (Nasr &Volait, 2003). Native people of the place had an active role in shaping the choice, adaptation and realization of the planning and architectural ideas. Local actors used the imported plans to address their own urban needs and aspirations (Nasr & Volait, 2003:xii). Unlike in other places, where the western influence within the city-building is under colonialism; in Egypt the domestication and development of the western planning principles of modernity was '*a top-driven endogenous process, embedded in Ottoman cosmopolitanism, and prone to all sorts of hybridizations*' (Asfour, 1993; Volait, 2014a).

In the case of Heliopolis for example one cannot talk of a non-contextual foreign implant. On the contrary autochthons were involved from the beginning. Moreover, the architectural style designed for the desert city had predominantly Neo-Islamic and Moorish elements that strengthen a rooting of the design, making it location-oriented and not a mere 'copy-paste' approach even if architects and planners where foreign (Nasr &Volait, 2003).

2.3 PRE 19TH CENTURY PERIOD

With the Ottoman conquest to Egypt (1516-1517), Cairo, under the Sultan rule, kept its important position as the second city of the Ottoman Empire after Istanbul. It was a center of the richest, most famous and cultured in the Arab territories (Raymond, 2000). Despite the general turmoil and wicked situation in Egypt shortly before the end of the Ottoman rule, Cairo was rigidly connected to its old traditions functioning naturally as an Islamic oriental city with no evidence of a change or a so called 'westernization' (Scharabi, 1989).

At that time Cairo consisted of the Fatimid-city core in addition to *Abdin*, *Azbakeya* and *Qasr al-'Aini* as stated by *al-Gabarti* in (Scharabi, 1989). Figure 2-1 shows the old city of Cairo boundaries in the 1850s before the introduction and spread of the modern city planning of the late 19th century.

The first trials for changing the Ottoman Cairo was with the French Campaign on Egypt 1798, however all the achievements until the first half of the 19th century were ad hoc without a big visionary urban project of a predominant style, such as the construction of the '*Mouski*' Street in the old city or the cultivation of land along the Nile (Arnaud, 1998/2002). Egypt had an independent modernization move away from the control of the Ottoman Empire that generated conflicts and in the 1830s Egypt managed to pursue its own policies with limited consideration of the 'Sublime Porte', resisting obeying to the *Tanzimat*[8] (Volait, 2003).

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[8] The first reformed Ottoman legal code issued by 'The Noble Rescript' of 1839 in (Volait, 2003)

The *maglis tanzim al-mahrusa* or *maglis al-urnatu* was established in Cairo, 1843 responsible for the beautification of the city and improving streets[9] (Volait, 2003:18). In the beginning of the 1860's Egypt began to acquire a remarkable place in the global economic system. This was due to the exhilaration of the Egyptian cconomy because of the increase of the cotton price in the international market and the establishment of the first shareholding companies (Shoelch, A 1982 in Arnaud, 1998/2002:8). In this flourishing era Ismail took the power ruling from 1863 to 1879 (see Goldschmidt, 2004).
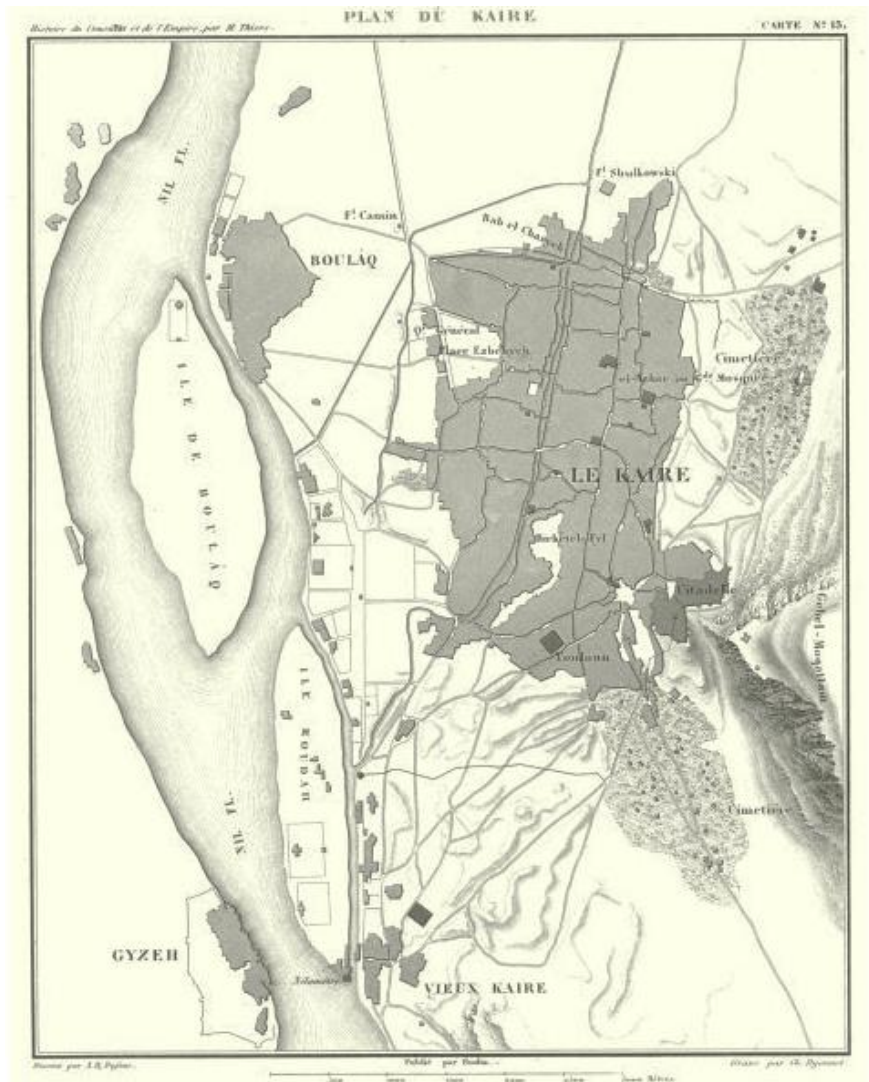
Figure 2-1 Historic map of Cairo, Egypt in 1859 Engraved by Ch. Dyonnet; Drawn by A.H. Dufour source: (Antiqua Print Gallery)
http://www.antiquaprintgallery.com/egypt-plan-du-kaire-cairo-gyzeh-giza-boulaq-1859-antique-map-148256-p.asp

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[9] Khedivial order of 30 December 1843, cited in Helmy Ahmed Chalabi (1987) *Al-hukm al-mahalli wa al-maglis al-baladeyya fi misr* [Local Government and Municipal Councils in Egypt], Cairo: 'Alam al-kitab, p.35 in (Volait, 2003)

2.4   KHEDIVE ISMAIL (REIGN 1863-1879)

With Ismail Pasha being in power different modernization projects were carried out in Egypt to compete with other countries of the western world (Arnaud, 1998/2000:33). His biggest projects started with the inauguration of the Suez Canal connecting the Mediterranean Sea with the Red Sea (Figure 2-2) and the construction of the Khedivial Cairo vis-à-vis to the old city of Cairo (Arnaud, 1998/2000).
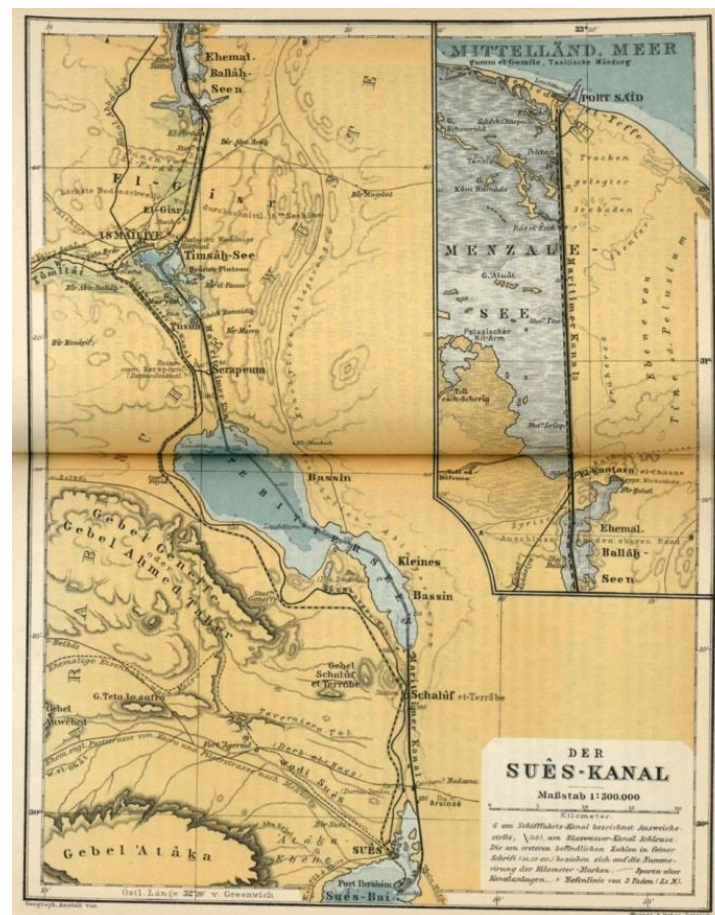
Figure 2-2 Map of Suez Canal Baedeker's Indien: Handbuch Für Reisende, 1914 source: (Adventures of the Blackgang)
http://adventures-of-the-blackgang.tumblr.com/post/15959759840/map-of-suez-baedeker-s-indien-handbuch-f-r-reisende-1914

Since 1870 there was a strong governmental will to control the urban development especially in Cairo and Alexandria (Ilbert, 1985); representing across the Arab world an early urban transformation and expansion imported from the west and called for by endogenous reforms in the Egyptian Ottoman province (Volait, 2014b).

1867 was a crucial turning point in the Cairene Modern city. Parallel to the Khedivial wish of preparing for the celebration of the Inauguration of the Suez Canal which will take place in two years' time (1969) and influenced by his visits to the European cities which were at that time going through central changes his vision for planning Cairo was a long vision that would take even more than two years for making it Paris of the region (Arnaud, 1998/2002:8). The modern move have resulted in the emergence or extreme modern development of different

unique cities in Egypt mostly evident in its big cities such as in Cairo, Alexandria, Port Said, Port Fuad, Ismaelyya, Suez, Mansoura, amongst others.

Distinct developments happened during the political context of the reign of Khedive Ismail in the years from 1863 to 1879 (Volait, 2003). The Influence of the Parisian visits of Khedive Ismail were enormous; seeing crucial change in Paris from the narrow dirty streets before 1853 where neighborhoods were crowded with their people and then the period after 1853 witnessing the improvements carried out by Baron Haussmann by the incision of new wide streets and the allocation of spaces for gardens in addition to the construction of a promising sewage system wellness (Dobrowolska Agnieszka & Dobrowolski, 2006/2008:41). Impressed by the developments happening in Paris he wished for a haussmanization of Cairo (Volait, 2003), turning it into 'Paris along the Nile' (Myntti, 2014). He builds the Opera House of Cairo only 6 years later after the Parisian Opera House (Dobrowolska Agnieszka & Dobrowolski, 2006/2008:42). Modernizations tackled various faces of the Cairene urban development. Although projects were mainly focusing on new developments, however some upgrading concepts such as gardening different streets within the old fabric was also part of Ismail's concern (Arnaud, 1998/2002:8). Nevertheless, there was a will to preserve the old quarters of Cairo that made some proposals calling for a lot of demolitions to stop. Unlike Napoleon the third, Ismail Pasha tended to demolish less within the existing city fabric choosing to build new city on the western side of the existing old one (Dobrowolska Agnieszka & Dobrowolski, 2006/2008:42). However, the existing older quarters of Cairo were upgraded to conform to hygienic and traffic needs (Volait, 2003). The opening of two main streets '*Clot-bey*' and '*Mohamed Ali*' streets was implemented within the existing fabric in 1870 &1872 respectively under a reform of traffic movement within the old city quarters (Volait, 2003).

As for the new development projects, Ismail initiated with the *Azbakeya* quarter first (Volait, 2003). His projects were on a wide scale and not gradual as the concept of the Ottoman cities. The newly constructed neighborhoods were one forth big as the actual old existing city of Cairo (Arnaud, 1998/2002:8). The development of gardens, botanical gardens and promenades were unique at this stage (Volait, 2003). The political vision to reconstruct the city was crystallized and thus the administrative divisions were upgraded and European experts were invited for fulfilling this goal (Arnaud, 1998/2002).

The city-planning initiated first with the spread of 'Haussmannism' moving then to the 'Garden City' and reaching the recent 'New Urbanism' (Nasr & Volait, 2003). The new definition of the neighborhood that was introduced in Egypt urged by Khedive Ismail starting with the construction of several neighborhoods such as *Khedivial* Cairo (*Ismaelyya*) in 1870, *Helwan* in 1878. Moreover, the turn of the century was a phase of booming expansions in the building sector. Modern Cairo was flourishing and quickly developing putting the plans for the new neighborhoods, initiating large scale real estate developments (Volait, 2014b).

The 19ᵗʰ century reflected the 'two interlocking rhythms of change' were the change and tradition are the two interacting factors which were influenced by internal and external forces (Hourani, 1991:129; Fortna, 2006:4).

2.5   CAIRENE 19TH AND EARLY 20TH CENTURY NEIGHBORHOODS

The 19th century is a turning point in Cairo's urban fabric (Ilbert &Volait, 1984; Waly, 2008) After having a rather southern-northern expansion of settlements along the Nile in older periods; the 19th century settlements took a perpendicular axe to the west direction (Waly, 2008). This epoch drove an urban development of transformations and overlaps. In the 1870s, around the *Abdin* palace *Ismaelyya* residential quarter and the *Azbakeya* garden district were developed shifting the city's center of gravity west of the Islamic traditional Cairo (Stewart, 1999:135). Looking at Figure 2-3, it shows the expansion of the vast metropolis of Cairo mainly to the west with the establishment of a bundle of neighborhoods and districts in the Golden period. Figure 2-5 illustrates unmistakably the clear cut between the old Islamic Cairo and the newly constructed Khedivial Cairo adjacent; between the conventional planning with narrow bent streets and the modern planning of squares with radial streets wide enough to accommodate vehicles that are a new mean of transportation reflecting new needs.

Year	Population
1882	398,000
1897	598,000
1907	678,000
1917	790,000
1927	1.064,000
1937	1.312,000
1947	2.090,000
1960	3.353,000
1966	4.220,000
1976	5.074,000
1986	8.762,000
1995	9.656,000
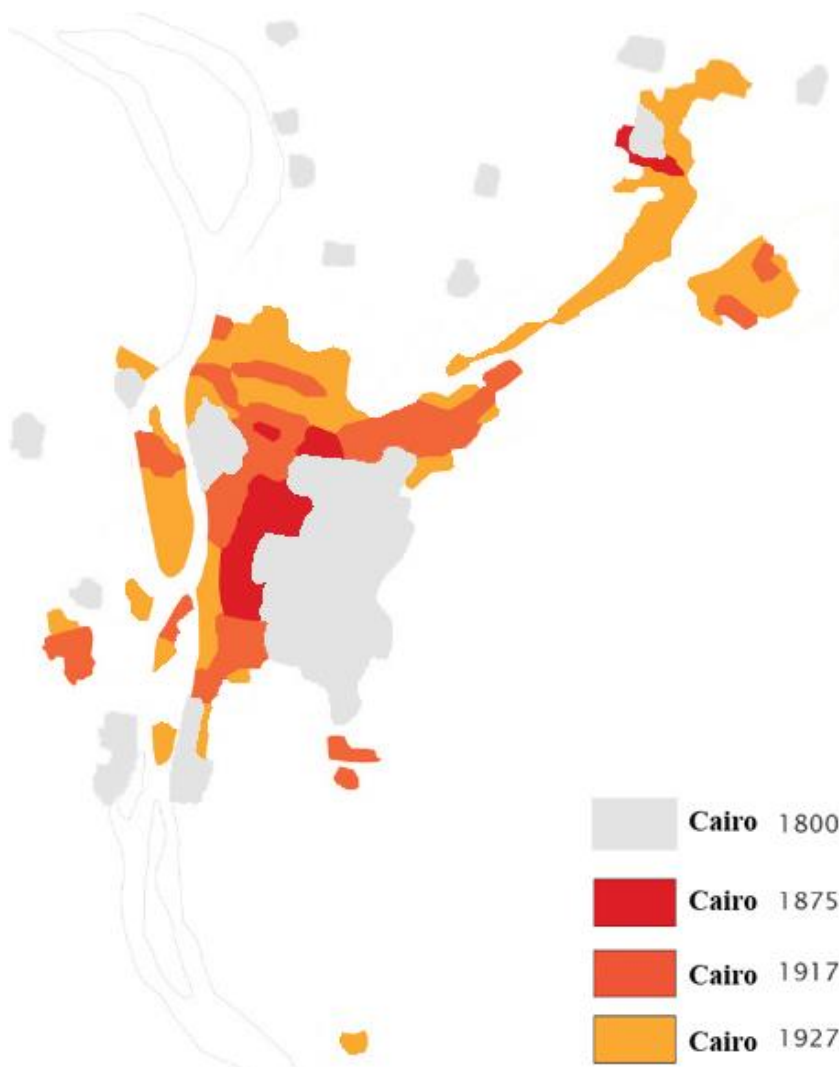
Figure 2-3 Cairo Expansion layers from 1800 untill 1927 (Amedi, Nagler & Wessling, 2009) developed further by author

Table 2-1 Cairo Population expansion (Stewart 1999:136)

By 1900 Modern Cairo was flourishing and quickly developing putting the plans for the new neighborhoods; *Maadi* (Figure 2-4) and *Heliopolis* 1905, *Garden City* 1906 (Figure 2-6), with lots of trees, and the upgrade of *Zamalek* Island in addition to *Helwan* that was connected to the city by train headed for wellness (Dobrowolska Agnieszka & Dobrowolski, 2006/2008) and *Koubbeh* Gardens in 1908 a project of a subsidiary of the Heliopolis company (Volait, 2003) among others. *The architectural outcome of these globalizing forces was of marked heterogeneity. Structures of every possible origin and essence coexisted almost side by side* (Volait, 2014b)*.*

Extreme suburbanization wave of the wealthy Cairene society has started, moving out of the old city to these new constructed districts emerging on the peripheries meanwhile a rural-urban migration moved into the old city (Amedi et al., 2009). In addition, diverse urban improvements made Cairo far more advanced than Istanbul stabilizing it's position away from the control of the 'Sublime Porte'(Volait, 2003).

The British possession was not meant to be a settlers colony (Volait, 2003) in the phase of the British rule in Egypt the State was disengaged from urban planning related matters (Volait, 2003). However, the State carried out a big project of the sewer and drainage system in Cairo (1907-1915), a significant public intervention. Parallel to that a lot of private urban planning projects were carried out, of local or foreign parties (Volait, 2003). Heliopolis city was created far to the east and to the south of the city the European-style *Maadi* was established (Stewart, 1999:135) 'as a large residential project' (Ilbert, 1985).

The urban sphere of *Gezira* 'the island' was located in the middle of the river Nile (Stewart, 1999). *Zamalek* was a designed neighborhood in 1866 becoming the most fashionable in 1920s and 1930s taking over the role of *Hilmiya al-Gadida* and *Munira* (Hamamsy, 2005; Raafat, 2000) it was a result of a speedy developing private enterprise (Ilbert, 1985). Upper classes of the 19th century built their residences in *Hilmiya, Munira, Garden City* (also known as *Qasr al-Dubara*) and *Zamalek*. In addition, there were other less elegant neighborhoods that were resided too such as *Dokki, Manial* and parts of *Giza* (Hamamsy, 2005).

The 19th & early 20th century Egypt has experienced a tremendous development in the planning field initiated mainly by Khedive Ismail followed by other rulers. The next chapter introduces the case study of Heliopolis that has emerged in the early 20th century having a unique architectural and urban pattern.
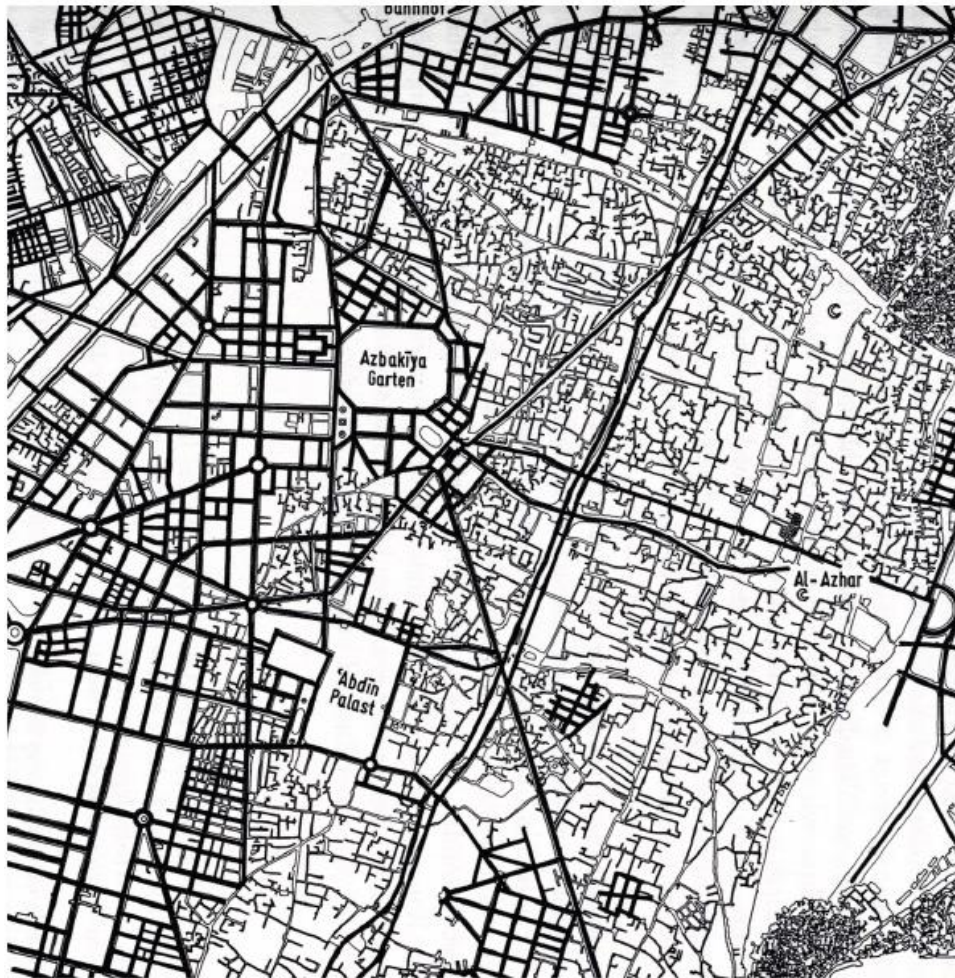
Figure 2-5 Old Islamic city (east) and the 19th century
Khedivial city (west) (Scharabi, 1989:137)
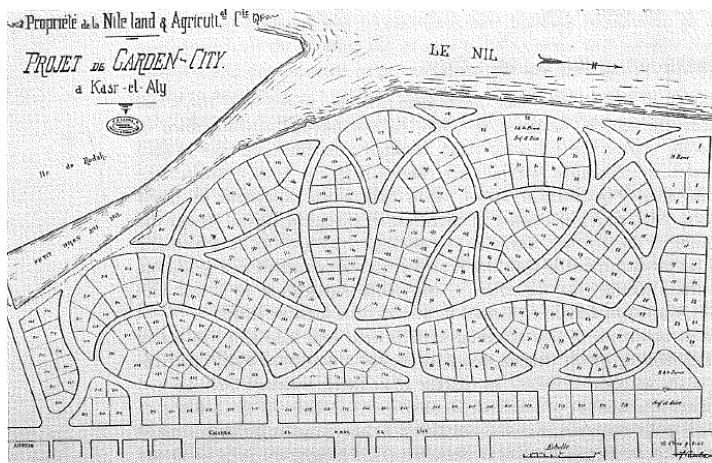
Figure 2-6 Garden City, 1906 planned exclusively
residential, designed by Joseph Lamba, systematic curving of
streets (Volait, 2003:32-33)
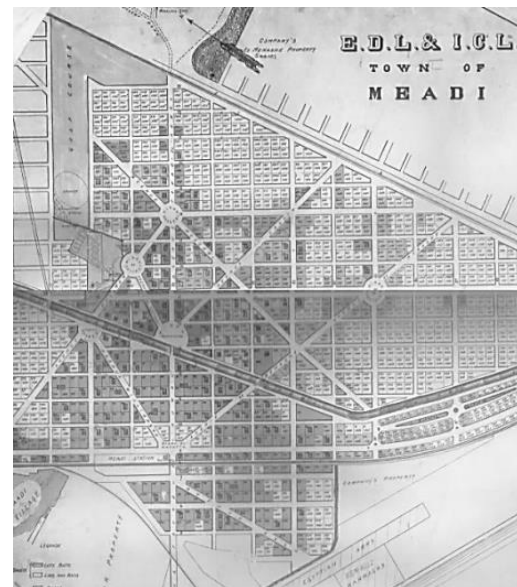
Figure 2-4 Maadi iron grid plan with
diagonals forming squares, 1905 (Volait,
2003:35)

Chapter (3): Heliopolis 'The City of the Sun'

'*the most remarkable and important enterprise in modern town development that had been undertaken in Egypt*' (Volait, 2003)

'*Living in the historical city-core is highly significant for the preservation of its heritage values, historically significant building-and urban structures*'

(Struessmann, 2013:89)

3   HELIOPOLIS 'THE CITY OF THE SUN'

After illustrating the 19th century period that was significant for the emergence of unique Egyptian neighborhoods, in this chapter a historical background about the case study of Heliopolis is presented. It gives first basic information about Heliopolis today then it elucidates how it was initiated and developed; showing its significant characteristics such as its smart location, the distinctive urban morphology and its unique urban features.

3.1   HELIOPOLIS TODAY

Heliopolis is one of the 22[10] neighborhoods of Cairo to its northeast belonging to its Eastern part as Cairo is divided administratively into four parts, Northern, Southern, Eastern and Western as seen in (Figure 3-1). Today, Heliopolis administrative boundaries consist of four sub districts called *shyakhat* which are *al-Bostan, Almaza, al-Montazah,* and *Mansheyet el-Bakry* (Cairo Governorate, 2013[11]) (see Figure 3-2). Heliopolis has a total current area of 9,1641.20 km2 (Capmas, 2012); 81.1% are Muslims, 18.8% are Christians, and 35.6% have a higher education, 6% analphabet (Gardolinski & Ge Men, 2010).

In Arabic, Heliopolis, is called ' *Misr al-Gadida'* which means literally 'new Egypt', referring actually to a new Cairo because *'In Egyptian slang Greater Cairo is always referred to as Misr or Egypt, probably due to the huge centralization of Cairo that makes it along many eras the real heart of Egypt'* (Hussein & Attalah, 2005:4). Heliopolis is sometimes referred to as a city, neighborhood or a suburb, an autonomous city constructed away from the

Figure 3-1 Cairo neighborhoods according to Cairo Governorate

traditional Cairo's old quarters (Hussein & Attalah, 2005). It was and is maybe still a place where diverse people came to reside in (Dobrowolska Agnieszka & Dobrowolski, 2006/2008). Its historic core remains relatively well preserved (75% of the buildings built till

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[10] NOUH divides Cairo is into four areas; northern, southern, western and eastern with total neighborhood number of 22 traced in the inventory listing Check: http://www.urbanharmony.org/valueplaces.asp?id=1
While according to Cairo Governorate, they are 37 neighborhood or district *hay*. Cairo is divided into Northern part:7; Southern part:12; Eastern part:9 and western part:9 check: http://www.cairo.gov.eg/areas/default.aspx
[11]Cairo Governorate please visit: http://www.cairo.gov.eg/areas/default.aspx

1937 are preserved) which hosts about 50,000 inhabitants (2003) as stated by (Volait & Piaton, 2003) which has however decreased in the last decade.

Heliopolis or the City of the Sun was the name of an ancient site in old Egypt from which not much has remained. Baron Empain (1852-1929), the Belgian businessman and Engineer searched unsuccessfully for traces for this ancient city and finally named his new city Heliopolis, for the remembrance of the old city which was actually located much closer to the Nile (Volait & Minnaert, 2003).
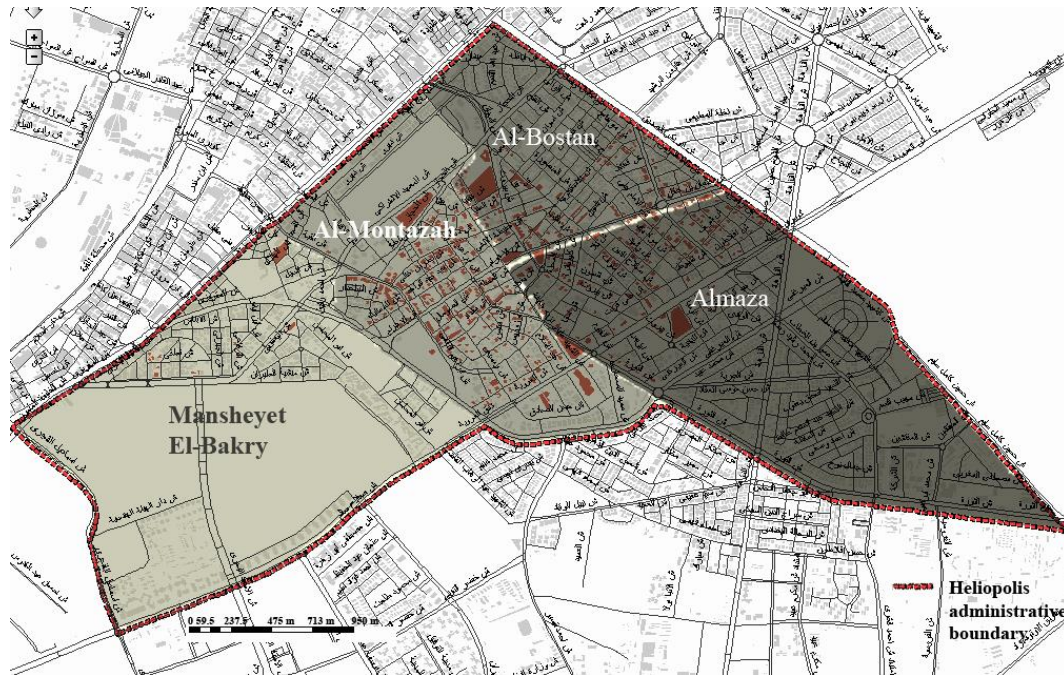
Figure 3-2 Heliopolis Administrative Map with its 4 sheyakhat divisions (Source: Base map NOUH, 2011 illustrated by author)

According to Capmas the number of population in Heliopolis as per 2012 was 127.032. Looking at the graph of Figure 3-3 there is a drop in population in 2006. David Sims explains that drop by the population shift experienced in most of the Cairene formal districts, more striking depopulation was in older historic neighborhoods. He elaborates further that inner districts of Cairo Governorate have lost over 500,000 inhabitants ascribing the drop to different factors. One of the main factors is the commercialization of space turning most of the residential apartments into offices, clinics, ground-floor apartments into cafes and restaurants coupled with deterioration of the old housing stock. Another strong factor is the old rent control over older buildings coupled with the continuous deterioration of the overall urban quality. With the increase of population and housing demand, prices increased leading to illogic high land-value against the low value of a frozen old building which is prohibited from demolition, missing governmental financial support; all these factors have led to the exodus from old neighborhoods. Affording people went to newly built gated compounds seeking more green spaces and better quality of life, while poor people went to informal areas. The earthquake in 1992 could be another factor that has forced people to leave old buildings that doomed to fall, after the resulting fatalities in Heliopolis and other districts of Cairo (Sims, 2010:100). The exodus of population from the city cores to the peripheries tends to result in declining residential functions. That is why keeping the original residents of the neighborhood is of functional preservation in addition to attracting more people to reside in a heritage neighborhood calling for its up-keep and revitalization encouraging mixed uses (Tiesdell; Oc & Heath, 1996:97).
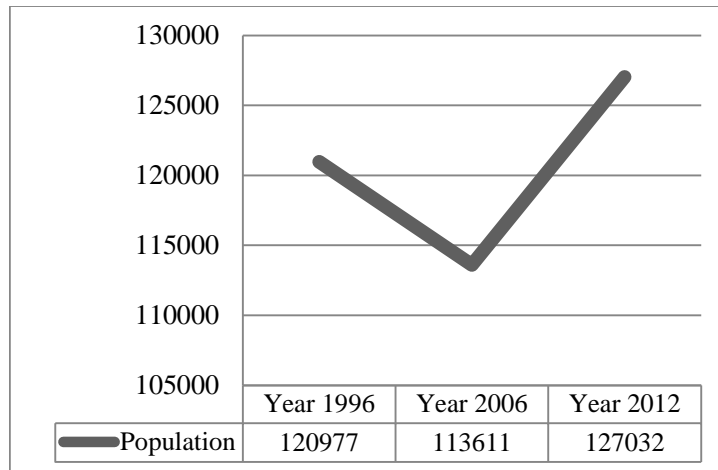
Figure 3-3 Heliopolis total population 1996-2006-2012
(Capmas, 2012)

3.2 TAMING THE DESERT

Almost forty years after the inauguration of modern Cairo presented the initiation of a new experience in the field of urban development in the desert around 1906 (Arnaud, 1998/2002:8). Baron Empain and Boghos Nubar believed that the expansion of the city of Cairo after being stabilized at the river Nile banks should go towards the desert (Ilbert, 1985). This was an insight into the future that steered their dreams and actions. In 1905, after being granted the concession on a piece of land in the desert by the Egyptian government together with Nobar Pasha (the son of the prime Minister at that time); Baron Empain decided to create on it a new city calling it Heliopolis (Heliopolis Company for Housing & Construction, 1996) where he has built his prominent glorious palace ' *among a medley of creations'* (Hussein &Attalah, 2005) (see Figure 3-5 & Figure 3-4).

The concession stipulates first the development of 2500 hectare with a possible extension to 5000 hectare for 5952 Egyptian Pounds; a very low price at that time. The owners where obliged to follow the strict condition of customizing a maximum of one-sixth of the area for housing projects with its needed services and facilities such as streets and plantations (which was then amended to be one-quarter of the land in 1907) (Heliopolis Company for Housing & Construction, 1996). The second point of the concession states that the buyers had the privilege to run the electric railway (Tram-line) for a period of sixty years; connecting the newly developed area with existing Cairo to provide its inhabitants an easy way to reach the capital (Heliopolis Company for Housing & Construction, 1996). In February 1906 the company of the '*Egyptian Electric Railway and EinShams Oasis'* was established and the Tram was in operation in 1909 (Heliopolis Company for Housing & Construction, 1996). As living spaces in Cairo became few and prices high, the 'future oasis' attracted people for its cheap rents (Raymond, 2000) and good connectivity. It was built as a response to the rising demand of housing by the turn of the century (Mursi, 7-13/10/2010).

Figure 3-4 Baron Empain Palace Designed by Alexander Marcel 1907-11 source: http://www.egy.com/community/95-05-13.php

Figure 3-5 Baron Edward Empain 1852-1929 source: (Dobrowolska Agnieszka & Dobrowolski, 2006/2008)

Approximately 30 kilometers of streets, 10 kilometers of sewers and 50 kilometers of water-lines were extended to feed and serve Heliopolis city (Raymond, 2000). In order to solve the water-supply issue to the city in the desert, mud was transported from the Nile to fertilize the ground for future plants; in addition two big water basins were constructed coordinating its management with the Cairo Water Company (Gardolinski & Ge Men, 2010). "*...Houses there will all have gardens and should realize certain sanitary and aesthetic conditions.*" Said Pierre Teilhard de Chardin a French visionary Jesuit and philosopher writing a letter to his parents dated November 1, 1906 (in Hussein & Attalah, 2005)**.**

3.3 SMART LOCATION

The location of the city was chosen thoroughly being 10 kilometers to the northeast away from Cairo close to the highway heading to Suez, behind *Abbaseya* quarter (Figure 3-6) (Dobrowolska Agnieszka & Dobrowolski, 2006/2008; Raymond, 2000). The location was unique for its climate being on a hilly plateau receiving refreshing breezes from the north and at the same time being protected by the *Moqattam[12]* hill from receiving the warm unwanted wind coming from the south. With this it was a warmer place in the winter and a colder place in the summer (Dobrowolska Agnieszka & Dobrowolski, 2006/2008).

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[12] A hill located in southeastern of Cairo
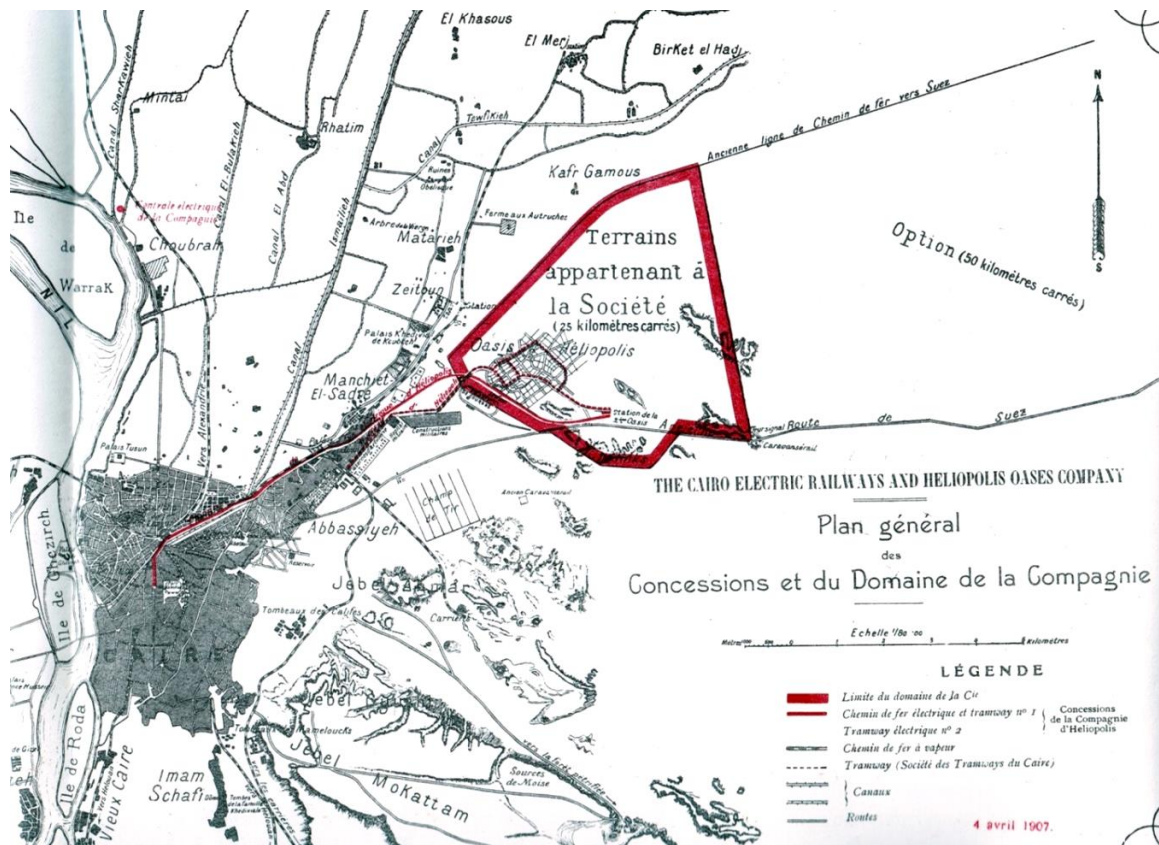
Figure 3-6 The land-plot developed by the Heliopolis Company in 4 April 1907 Source: (Dobrowolska Agnieszka & Dobrowolski, 2006/2008:43) documents from the archive of Heliopolis Company

3.4 URBAN NUCLEI: MORPHOLOGY AND STRUCTURE

Inspired by the Unwin & Parker '*Garden City*'; the initial plan by the Baron Empain and his architects was to construct two oasis (Figure 3-7); the first one luxurious residential touristic while the second one is rather industrial serving the first (Ilbert, 1985; Gardolinski & Ge Men, 2010:26); however due to the financial crisis that has struck Egypt in 1907, the project faced some difficulties (Raymond, 2000) and the focus was put on the oasis with luxurious residential land-uses (Ilbert, 1985). Heliopolis and Almaza were the names of the two oases.
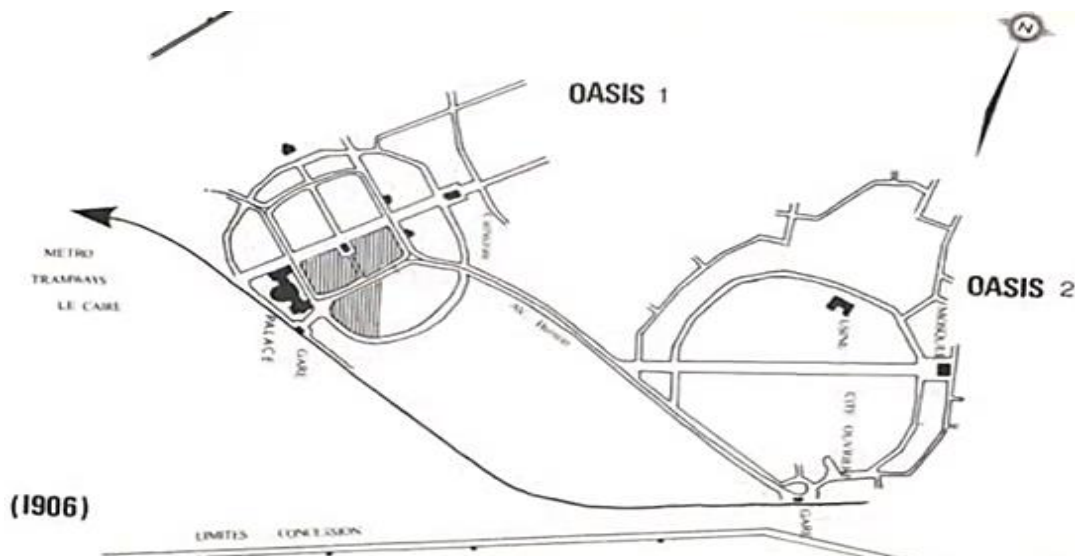
Figure 3-7 Initial Idea of the two oases, the residential touristic oasis and the one industrial one (Heliopolis) Source: (Ilbert, 1981)

Heliopolis was the first area to start with which became afterwards the main project (Heliopolis Company for Housing & Construction, 1996). Heliopolis was designed after the prevailing planning concepts of the 19th century which was initiated by Haussmann in Khedivial Cairo, downtown; having radial streets coming from squares with landmarks or iconic buildings in the middle, the wide streets and the arrangement of trees right and left. The urban structure of the city was organized around the enormous hotel, the cathedral, clubs, the race course and the Luna Park (see Figure 3-9) (Ilbert, 1985).

Following the Parisian principles in planning[13] it had strict regulations for the percentage of area that should be unoccupied in every plot division, which were respected resulting in a porous pleasant urban fabric with a lot of green. The height of buildings and number of storeys, the arcades, width of streets and the trimmed corners at crossings were firmly calculated with the consideration of vehicular traffic (Ilbert, 1985) which continued to introduce to Egyptian urban planning new definitions for the neighborhood with a foreign flavor which quickly was grafted and merged to be accepted as one's own simultaneously influencing the life style and daily rhythmus accepting some new western patterns of life that were in no way imposed; it was Modern but Egyptian (Ilbert, 1985).

As explained by Volait & Minnaert (2003) the regulations of Heliopolis followed the ideology of Charles Fourier[14] which was evoked in his utopias; having a clear zoning with parts that are purely residential and others residential-commercial (Volait & Minnaert, 2003:338). The width of roads and sidewalks depend on their hierarchical position specifying coating materials (type of curbs and sidewalks lining). Using aligned trees (ficus, jacaranda, palm trees); height of buildings, fences gardens are all regulated very meticulously (Volait & Minnaert, 2003:338).

Figure 3-8 shows a satellite map of Heliopolis in the 30's. In the center there is the Basilique Square; coming out of the square are 5 main streets (see Figure 3-10). The street to the southwest leads to the Grand Hotel, which became the presidential premises since 1958 (Seif, 06/16/2014) (see Figure 3-11); the street to the southeast leads to the Baron Empain Palace; the third street to the northwest leads to the horse racing arena 'Hippodrome' while the two other streets, one leads to the *Gamei*-square (mosque-square), and to the main market area and the last street is the one that leads to the extensions further done in the 30's and 40's of the last century Ismaelyya, Safir and Triumph squares. The urban pattern is characterized as an iron grid–radial concentric where the buildings are legible as individual entities being surrounded by green space from all sides. The main axis for futuristic expansions can be also seen (Abdel Salam & Al-Kharazaty, n.d.). Curved streets were added to the plan, green areas were around buildings and in central public spaces (Mursi, 7-13/10/2010). The area surrounding the *Midan Al-Gamei*, was initially designed for low-rent worker residence (Mursi, 7-13/10/2010).

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[13] Quartier Dauphine, Paris (see Ilbert, 1985:38)

[14] Charles Fourier is a French social theorist. Available online at: http://www.britannica.com/biography/Charles-Fourier

Figure 3-9 Luna Park Heliopolis 1912 a western-style amusement park
source:http://www.egyptedantan.com/egypt.htm

The district of Korba to the south-west housed the opulent tenements and elegant villas with arcades in commercial streets (Mursi, 7-13/10/2010) while the north-east hosted the 'native city' with workers, where other parts are occupied by middle class popualtion with a majority of Egyptian governmental officials (Volait & Minnaert, 2003). Heliopolis plan cooperated industries, green open spaces, buildings and housing of various types from villas to worker's dwellings. There was no physical or psychological barrier within the neighborhood though it was zoned into, a quarter for villas, a quarter for bourgeois apartments, and a quarter for industries and workers (Ilbert, 1985). In these capacities, one might consider Heliopolis as an assimilation seed for accommodating different levels of people (Volait & Minnaert, 2003); having the '*madina 'omaleya'* the workers district and the luxurious villas in the same planned plot (Ilbert, 1981 in Arnaud, 1998/2002:9).

Figure 3-8 Satellite shot for Heliopolis in the 30's Source: HHI

The building design and zoning was coined with European concepts whereas the facades were following the Islamic, Neo-Moorish style. Later From the mid-twenties, the reference to Art Deco can be found and from the thirties, the modern movement was recognizable (Volait & Minnaert, 2003). The continuity and connectivity of the buildings side by side gave a feeling of a complete city spirit (Volait & Minnaert, 2003). Heliopolis was more a 'garden city' with native adaptation implementing planning theories of Ebenzer Howard '*grafted onto the urban structure of Cairo*' (Ilbert, 1985).

Figure 3-10 Arial view 1932 showing public green spaces surrounding the iconic Basilique located in the center of the square. Source: (Heliopolis Company for Housing & Construction, 1996)

Figure 3-11 Grand Heliopolis Palace   Source http://www.egy.com/landmarks/97-05-01.1.php

3.5   URBAN MOVEMENTS WITHIN HELIOPOLIS

Phase I: 1906-1914

In the first phase of construction the company constructed public facilities such as the Hotel Heliopolis Palace, the race-course, places of worship, market in addition to infrastructure such as road networks, nursery plants, brick factory) and housing for various population groups (GOPP-URBAMA Report, 2000:9-10). Villas and apartment buildings were designed by leading architects such as the French Alexander Marcel and the Belgian Ernest Jaspar (Volait & Minnaert, 2003).

Phase II: 1915-1925

In the second phase 600 dwellings were constructed for employees carried out by the architectural design section in the Company. Buildings are of one floor or ground +first floor (GOPP-URBAMA Report, 2000:13). Some parts of Heliopolis had a more dense building approach built in rows of three storeys with balcony access (Ilbert, 1981).

Phase III: 1926-1937

Between 1926 and 1937, sales of land and the pace of construction accelerated. In following years, the northeast of the historic core of Heliopolis was built (GOPP-URBAMA Report,

2000:16). The Art Deco building types started to grow used in luxurious palaces and ornamented residential buildings (Volait & Piaton, 2003; GOPP-URBAMA Report, 2000). The growth and expansion happened then in the north-eastern direction from the historic core with an Art Deco prevalence (Volait & Piaton, 2003).

3.6 UNIQUE CHARACTER

Unlike the suburbs of the same period extended outside Cairo which were depending on the city core in the services and amenities; Heliopolis was a remote city, unique for accommodating technical, cultural and religious facilities (Volait & Minnaert, 2003). It was meant to be an integrated urban community with its economic and social dimensions (Ilbert, 1981) with its own services making it comparable to other plans such as of the Municipality of Alexandria (Ilbert, 1985). Following the Baron Empain's wish, Heliopolis was built respecting an architectural style that is in consistence with the traditions of the country with a prevalent Islamic character (Dobrowolska Agnieszka & Dobrowolski, 2006/2008) which reflected a level of authenticity being mainly built using Arab decorative motifs and Neo-Moorish style (Raymond, 2000) (see Figure 3-12).

Three features have distinguished Heliopolis from other neighborhoods of the same time. First, it was built without any assistance of the state; second, the starting of the city from scratch in the desert; and third, it was an expression of one's individual dream; the Empain (Ilbert, 1985). All these aspects have put a lot of skepticism in the beginning of the project and fascination and appreciation later on upon its success (Ilbert, 1985).

Figure 3-12 Heliopolis and its unique architecture, 1929

source: http://www.theegyptianchronicles.com/History/Heliopolis.html

3.7   CAHIER DES CHARGES

The *Cahier des Charges* or the 'Specifications and Regulations' for Heliopolis city were developed by the Heliopolis Company (Mursi, 7-13/10/2010). These regulations divided each parcel, prescribing functional, volumetric and aesthetic requirements of the general subdivision plan applying regulations according to the situation of each plot; whether it is an area of villas or in a licensed area for shops. Moreover, the *Cahier des Charges* regulates the relation between built-up areas and public space; they specify the possible zone of non-building and, if necessary, establish the dimensions of the fence and vegetation of it (Volait & Minnaert, 2003:4). They also determine the maximum height of construction (5 storyes to a max. of 20 meters (Mursi, 7-13/10/2010), the maximum built up area, the possible volume on the plot and the color of the façade. Finally, they stipulate safety standards and also stringent hygiene features. The formulation of these specifications by the company was rigorous and respecting its application was fastidious with every permission process (Volait & Minnaert, 2003).

These enforced building codes and regulations served to ensure that each area retained a distinctive architectural character where all must conform to it above all private builders (Mursi, 7-13/10/2010); guaranteeing consistency and homogeneity following instructions *to the letter* even ornamentation and outdoor decorations (Doss, 05/04/2005).

"*Through this book, Empain managed to control every detail about the image, the height and style of each building. This document sets deadlines for construction, require technical clauses on materials to use, as well as technical requirements and determining the general shape and architectural style*, "said Milad Hanna in (Doss, 05/04/2005).

3.8   DEMOGRAPHIC PROFILE

The inhabitants of Heliopolis were basically people from the 'well-to-do' bourgeoisie of Egyptians and foreigners, in addition to mid-level functionaries and even poor (Raymond, 2000:332). In 1909, they were barely a thousand inhabitants(Ilbert, 1985). Egypt was able to benefit from the construction of Heliopolis reaching the population of 20,000 people between the 1920s and 1930s (Raymond, 2000). In three decades, by 1937 Heliopolis has reached 30.000 inhabitant where 45% of the city was built (Volait & Piaton, 2003) (see Table 3-1).

Year	# of Population in Heliopolis	Source
1909	Ca. 1000	(Ilbert, 1985)
1915	6.210	(Ilbert, 1985)
1919	8.600	(Raymond, 2000)
1921	9.200	(Ilbert, 1985)
1925	16.000	(Raymond, 2000)
1930	20.000	(Raymond, 2000)

Table 3-1 Heliopolis Population from its establishment till the 30s

illustrated by author

It is documented that Heliopolis population won immediately a large local majority and Egyptian owners were many from the beginning (Volait & Minnaert, 2003). Until around the middle of the century Heliopolis has oriented the growth of the city towards the northeast in

addition to filling the vast empty space separating Heliopolis the remote city from the city of Cairo (Raymond, 2000).

3.9 HELIOPOLIS COMPANY

Empain was an engineer, he first thought of establishing a shareholding company, Heliopolis Oasis Company (HOC) and this was the start of the entrepreneurial issue (Hussein & Attalah, 2005). The Empain Group set up the company as a holding company in 1906. Its formal full name is '*The Cairo Electric Railways and Heliopolis Oasis Company*' which, in turn, held controlling shares in various related companies—such as, the Société Egyptienne Electricité (Vitalis, 1995). The Empain's various companies controlled transport, power, utilities, and eighteen thousand feddans of commercial and private real estate by mid-century (Raymond, 2000). The Heliopolis Oasis Company located in *Ibrahim Laqani* street (see Figure 3-13), created a place with all its vibrant aspects able to influence its surroundings and being influenced by them (Hussein & Attalah, 2005). It was the second big company after Suez Canal in terms of capital (Ilbert, 1985:42). It was established based on stocks, where Empain had the highest with 33.000 stocks, followed by Boghos Pasha Nobar 2600 stocks and 24.400 for private, national and international companies from Germany, France, England and Belgium (Gardolinski & Ge Men, 2010).

Figure 3-13 Heliopolis Oasis CompanyIbrahim Laqani Street, Arcade
Building with Neo-Islamic and Moorish style, designed by Ernest Jasper
1908-09 , Source: AN/IFA Paris (GOPP-URBAMA Report, 2000)

As Empain had materialistic interest in the projects, he wanted to mitigate the risk probability making business in the real-estate field by splitting the company into smaller ones; each in charge of certain tasks. For example 'La Societe de Traveaux Publics' was responsible for building 28 lots and the Palace Hotel. Wanting to attract French people to live in the desert city he left French companies invest within the new city. The company has shaped firm guidelines and laws mentioned previously, the '*cahiers des charges*' to be followed and respected. It also opened the possibility for private owners to buy lots and build their own buildings under constricted regulatory control of the company (Volait & Minnaert, 2003:339; Gardolinski & Ge Men, 2010). This public private cooperation has proved success for the project until the complete nationalization in 1961 (Gardolinski & Ge Men, 2010).

In order to overcome the problems escorting the crisis of 1907, Empain decided to slow down selling (which does not bring much profit) and instead invest within the city doing some attracting projects such as Luna Park, the first big entertainment facility in Africa and the Middle East; attracting people from all social classes (Gardolinski & Ge Men, 2010:22). The real boom of Heliopolis was twenty years later from 1922-1928 (Ilbert, 1985).

Figure 3-14 The decision to adopt the Company formation 'Cairo Electric Railways & Heliopolis Oases Company with a captial of 15 million Francs to replace the concessionaires

Source: http://www.egy.com/landmarks/97-05-01.1.php

Heliopolis Company was like a state within the state; it used to issue building permissions and licenses, connecting water–facilities. It is a good experience that should have been preserved (A. Refaat, personal communication, 22 December, 2013). '*A company that acted as a municipality*' (Hussein & Attalah, 2005). However, in the early 1960's the company was nationalized and liquidated turning it into Heliopolis Company for Housing and Development being part of the governmental body (Hussein & Attalah, 2005:17).

Concerning the management of building permits, until the 50's building permits were the responsibility of the Heliopolis Company. Nowadays, this role is carried out by the technical service department in the Cairo Governorate. The company retained however a say on these permits under the conditions stipulated in the Specifications or *cahier des charges* that was put at the time of the construction the Heliopolis for each parcel (Volait & Minnaert, 2003). Nowadays the authentic cahier de charge has become a document of the past,' (Hussein & Attalah, 2005:37).

With the nationalization a wave of change has started. In 1959, the Municipality of Cairo ordered, that the Heliopolis Company was committed to respect the regulations, for example, banning the construction of passages and dead ends in the city of Cairo (art. 16 of Law No. 656 of 1954), and therefore the company was asked to construct additional buildings at the

bottom end of each plot[15] (Volait & Minnaert, 2003). This stack of rules and guidelines of the building regulations, opened a door to contradicting actions such as the practice of heightening buildings which did not respect the original building style and material (Volait & Minnaert, 2003). Responding to the housing crisis in the Egyptian capital; the Heliopolis Company adopted a resolution in 1972 (No. 8 dated February 20, 1972) authorizing an increase in the heights, against a payment of owners wishing to benefit from this provision[16] (Volait & Minnaert, 2003). A few years later (with the resolution of August 26, 1975), the possibility of a new overrun up to 28 m was available to homeowners, the increase this time being set at 12.5% of the land price for each extra floor. An extra charge was also put for the installation of additional electricity meters. On the practical ground this action has urged people to extend their buildings in Heliopolis (Volait & Minnaert, 2003). This was a company strategy that affected the urban fabric directly and had its seeds already since the 40s. One of the latest specifications (*cahier des charges*) written prior to the nationalization (8A list of 1947) provided for the possibility of extending or lowering against the cost of a parcel, depending on the use (Volait & Minnaert, 2003).

3.10 HELIOPOLIS METRO

Due to Baron Empain's great experience in the fields of Metro railway construction and the electric power generation it was one of his unique achievements within the newly constructed city to connect it with the city core by a tram (Volait & Minnaert, 2003; Dobrowolska Agnieszka & Dobrowolski, 2006/2008). Empain asked the Belgium engineer Andre Brchillo, who was working at that time with 'Paris Metro" company to carry out the job (Hafez, 01/05/2012). The tram connecting Heliopolis to the city center was a basic element by the establishment of Heliopolis; it was a "*vital link*" and a decisive factor in the success of the

Figure 3-15 Map showing Tramline connecting Heliopolis to the Cairene city center in the 1910s
(Heliopolis Company for Housing and Construction, 1969)

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[15] Cairo, the Archives of Heliopolis Housing and Development Company, series of particulières constructions, issue 52 (in Volait & Minnaert, 2003)
[16] the height can be raised from 15 to 20m, against payment of a 20% of land price

city which lies in the desert away from the existing city of Cairo (Hussein & Attalah, 2005). "People came and settled on the two sides of the metro and beyond." resembling the Nile River and the growing agricultural settlements on its both sides; 'The Nile of Heliopolis'[17] (Hussein & Attalah, 2005), echoing the spine of life (Figure 3-15).

Today, the tram is a landmark giving Heliopolis this aristocratic neighborhood a unique flavor for 100 years. It [still exists] however due to lack of maintenance and renovation; it is quite deteriorated. The trip in the tram is rather a promenade as it is not a fast mean of transportation, which gives a possibility to see the beauty of the neighborhood as Hafez states (Hafez, 01/05/2012). It is one of the cheapest and cleanest means of transportation as it works with electricity, having no exhausts; and that is why most of the Heliopolis inhabitants insist on using it (Hafez, 01/05/2012). The Public Transport Authority of Egypt now owns the Heliopolis Tram, after it was nationalized in Nasser time. Before that time the tram was managed by the French company under the auspices of Heliopolis Oasis Company (Hafez, 01/05/2012).

Figure 3-16 The Tram-Line in Heliopolis, 1923

Source: http://www.delcampe.com

3.11 POLITICAL CONTEXT AND GRADUAL DESTINY

By the start of Heliopolis city construction, Egypt was under the rule of Khedive Abbas Helmi II (1892-1914) (Sonbol, 1998). Until 1914, Egypt was statutorily an Ottoman province, therefore subject to the Sublime Porte, to which tribute is paid annually, while being militarily occupied by Britain since 1882. From 1914 to 1922, Egypt was granted the status of a British Protectorate until the Unilateral Declaration of Independence proclaimed by the English in 1922 under the pressure of a powerful national movement. At that time, the

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[17] An interesting analogy was the one made by Artine Karayan, a Heliopolitan who resided there with 8 years in 1948, comparing the Metro line to the Nile

Chapter (3): Heliopolis 'the city of the Sun'

country became an independent state (Volait & Minnaert, 2003). 1922 the independence brought new trends and urban development modes to the foreground. There was a will to plan the evolution of the city controlling its urban expansion (Volait, 2003:38). The new status obtained in 1922 was reflected in practice by the introduction of a parliamentary government under a constitutional monarchy and the restoration of the financial autonomy of the Egyptian government forcing Egyptianization to all sectors of political, economic and social life of the country[18](Volait & Minnaert, 2003).

One of the most obvious assimilations of Heliopolis as stated by Volait & Minnaert (2003) is its capability to move in few decades from a quasi-autonomous satellite city into a neighborhood of the Egyptian capital, Cairo. The purely desert path became completely urbanized in the 50s. Now it is totally merged within the Cairene urban fabric (Volait & Minnaert, 2003) (see Figure 3-17).
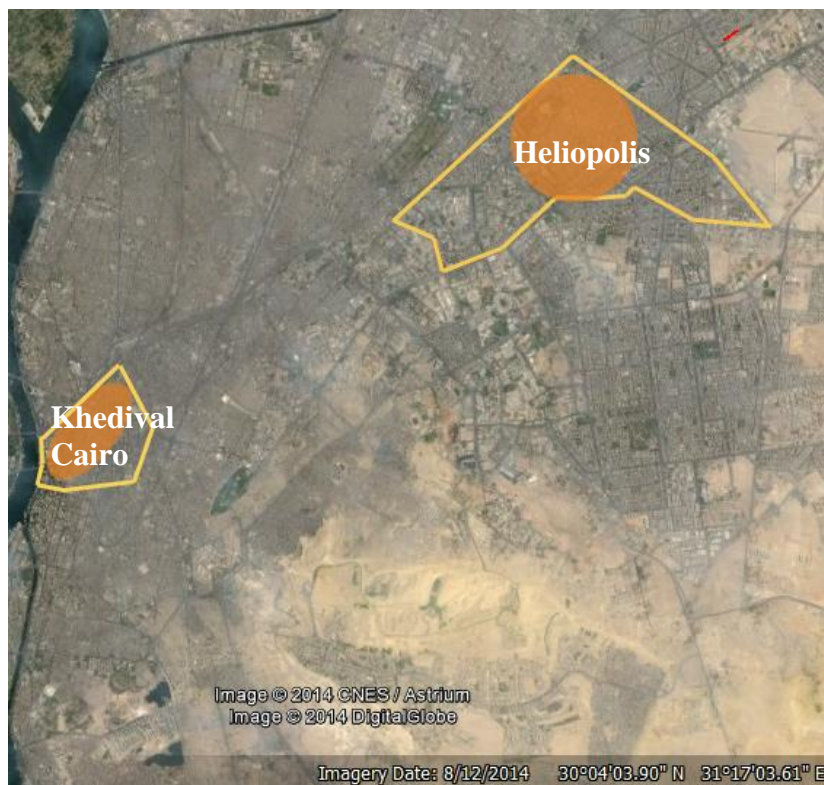
Figure 3-17 Satellite map showing the urbanization
happened between the Khedive city (south-west) and
Heliopolis (north-east) and beyond source Google earth
2014 illustrated by author

Rabi', Mohamed, an Egyptian blogger writes about how Heliopolis has changed from the 70's until now. The horse-racing zone is currently replaced by *Gesr al-Suez* Street where only the old platform still exists in a dilapidated condition (Figure 3-18) and the Merryland garden is closed and neglected (Rabi', 2013). Nowadays, the streets are very crowded; he claims that the best way to move would be walking. The Cahier des charges was continuously modified so that '*the authentic cahier de charge has become a document of the past*' (Hussein & Attalah, 2005:37). In the 60's and 70's buildings did not provide parking spaces in the

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[18] Afaf Lutfi Al-Sayyed Marsot, *Egypt's Liberal Experiment: 1922-1936*, Berkeley, University of California Press, 1977 (in Volait & Minnaert, 2003)

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basements. Heliopolis was ruined by unplanned and greedy decisions; instead of respecting the old urban fabric and architectural style (Rabi', 2013).

The unique architectural and urban value of Heliopolis and all other heritage neighborhoods of the 19th and early 20th century are distinct. How and when this recent heritage was recognized in Egypt will be illustrated in the next chapter (4).
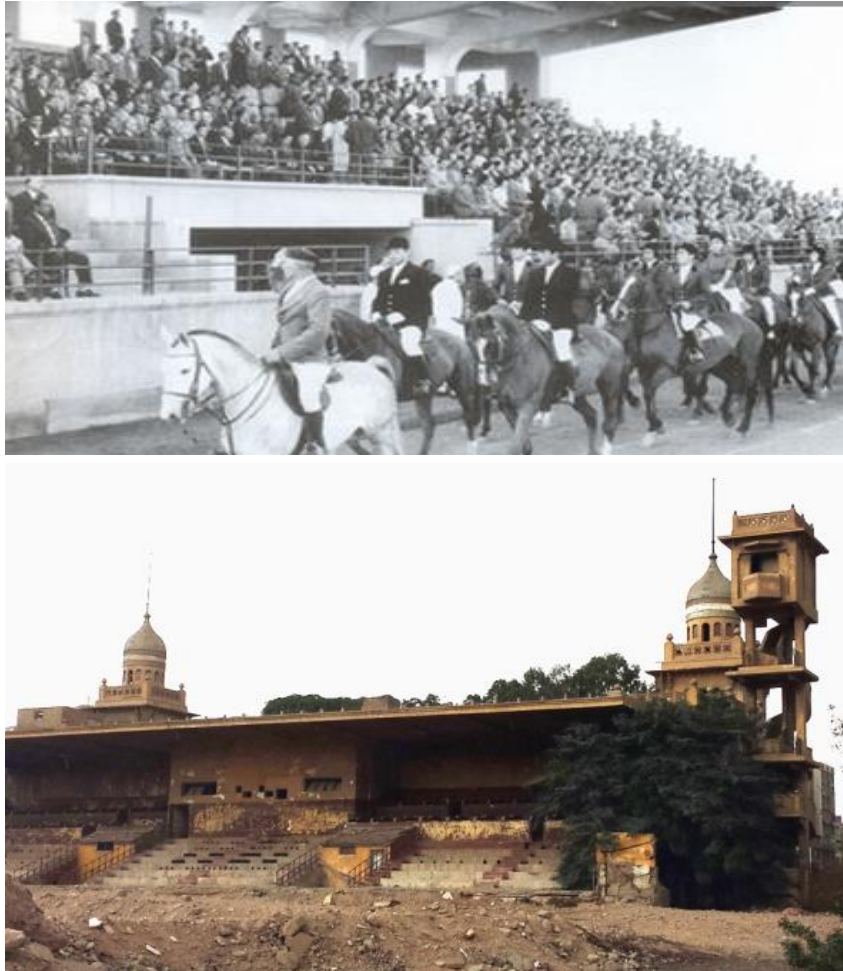
Figure 3-18 Above: Archival photo of the Hippodrome 1910s
http://english.ahram.org.eg/ Below: The remains of Heliopolis Race Course,
photo (author, 2015)

Chapter (4):

Recognition of the Egyptian Recent Heritage

4 RECOGNITION OF THE EGYPTIAN RECENT HERITAGE

This chapter discusses the recognition of distinctive buildings and areas in Egypt, how and when it started and how it did develop. Recognition can be on a state or governmental level, but also on a community level were the civil society and grassroots also aim to protect the valuable assets of the neighborhood, city etc. In this concern two types of entities are introduced in this chapter; the first is the National Organization of Urban Harmony (NOUH) as the governmental entity recognizing and trying to preserve the distinctive assets. The second is the Heliopolis Heritage Initiative (HHI) as an example of a grassroots interested in preserving Heliopolis neighborhood, its unique buildings in addition to reaching a certain satisfying quality of life.

4.1 HISTORY OF RECENT HERITAGE RECOGNITION

The recognition of urban heritage value in the Middle East started later than the European urban conservation and preservation movement facing mainly problems of fund, lack of expertise and quality control (Orbasli, 2007). The issue of what to preserve and what not exists in both western and eastern cities (Larkham, 1996; Tiesdell et al., 1996; Orbasli, 2007:167); but in eastern cities less appreciation is shown towards historic assets preferring modes of development (Kuban, 1980:6 in Orbasli, 2007:167). Urban planners and designers started to appreciate more the urban heritage in our cities after decades of modernist thinking that wiped traces of long rooted histories in the cities (Ouf, 2008). This appears even more in developing countries where there is a dilemma for keeping urban heritage for decades; preferring the face of modernization flows into 'backward' urban systems (Ouf, 2008).

For a long while in Egypt, the recent heritage of the 19th and early 20th century was not considered valuable or distinctive and thus had no laws that protected it. The notion of protecting distinctive urban centers had its first traces, which then began to accelerate in the 1990s putting a priority for urban centers of Cairo and Alexandria (Carabelli, 2006). The protection legislations put at that time was often steered by military orders, central government decrees or local authorities' decrees (Carabelli, 2006).

In the 70s, the southern Mediterranean countries, and among them Egypt, did not yet consider the architecture of modernity – meaning 19th & early 20th century Architecture - as part of the heritage; the interest was rather more increasing towards more traditional pre-colonial heritage which is seen as more 'authentic' and thus –for responsible decision makers- more requiring protection (Carabelli, 2006). In the 80s, on the other hand there was an obvious change in the issuance of protection legislation were the new Antiquities' law promulgated in Egypt in 1983 (Bouchet, Volait; Carabelli & Minnaert, 2005 in Carabelli, 2006:66). The interest in recent heritage became evident in the 90's where responsible people begun to discuss the unclear parts of the regulations especially after a wave of villas demolitions has happened in the same period which resulted first in an order of the Cairo Governor in 1996 prohibiting the demolition of any villa of the 19th and early 20th century all over the Egyptian towns which was confirmed later with a decree by the military order No. 2 for the year 1998 to stop the trend of demolition which caused the partial loss of Egypt's architectural gems

(Volait, & Piaton, 2003; Carabelli, 2006:67; El-Aref, 04/24/2014). At that time, this decree has strengthened already existing building codes prohibiting the destruction of old buildings, villas, and palaces (El-Aref, 04/24/2014).

4.1.1   FIRST TRACES OF BUILDING LISTING TOWARDS PRESERVATION

In 1998, the Governor of Cairo established a Consultative Committee for the preservation of buildings of the 19th and 20th centuries, to establish an inventory of buildings worthy of protection and to propose measures to promote conservation. A first evaluation has shown that about 1,900 villas in total of these epochs no longer exist in Cairo due to pressure on land (Volait & Minnaert, 2003). Inventories by districts were then undertaken and 350 buildings in Heliopolis were identified as of historic or artistic interest by a designated team of *Helwan* University, Egypt (Volait & Minnaert, 2003:14). Strict limits were also put on heights in neighborhoods with historic buildings (Volait & Minnaert, 2003; Volait & Piaton, 2003).

4.1.2   TRACES OF A POLITICAL RECOGNITION

As stated by Volait & Minnaert (2003); since the beginning of the 1990s, a conservatory concern was expressed on the governmental level for any architecture belonging to the so-called modern Egypt, encompassing the period 1850-1950, which is also known as the "Belle Époque"; and Heliopolis is one of the neighborhoods tackled in this concern (Volait & Minnaert, 2003). In the year 1997, the *General Organization for Physical Planning* GOPP, a ministerial organization responsible for territorial planning, undertook a study project titled 'Preservation of Greater Cairo's Architectural and Urban Cultural Heritage'. They have chosen 10 urban areas with historic character of modern Cairo as object of the study (Carabelli, 2006:72) with the aim to improve the urban environment and preserve the architectural character of the different neighborhoods of Cairo and above all to maintain the character of urban and architectural heritage of these areas (Youssef, 04/17/1999). Each architectural consultancy was in charge of an urban area within the ten designated neighborhoods to conduct a detailed study. The 10 neighborhoods are: *Ain Shams, Heliopolis, Abbaseya, Wust al-balad* (down town Cairo), *Helmia, Garden City, Magra el-'ouyoun* (Aquaduct), *Maadi, el-Roda, Zamalek, Giza* defining the boundaries of each districts by four streets east, west, north and south while the two Islands *Zamalek* and *el-Roda* were investigated completely (see Figure 4-1). The project was under the auspices of the Ministry of 'Housing, Utilities and Urban Communities'[19]. The desire to preserve urban ensembles of the 'recent heritage' of the Egyptian capital was a strong motivation for the study (Volait & Minnaert, 2003).

The study included suggesting renovation plans proposing protection laws and instruments, which could consider not only distinctive buildings but can also safeguard whole valuable zones (Carabelli, 2006:79). It also aimed at proposing elements of teaching concerning requalification of public spaces and training on restoration of private buildings. One of the intentions of this project was to urge the decision makers and inhabitants of the distinctive areas to the importance of the upgrade and preservation projects, on a long run.

At that time, although there were no protecting laws, however encroachments were less and the experts calimed not to need major interventions in order to restore the value of heritage

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[19] The project was carried out in the framework of a Protocol between Egypt and France; the General Organization for Physical Planning, Egypt, French Cultural Center, University Francois Rabelais of Tours, the URBAMA laboratory, France (Volait and Piaton ,200; Final GOPP-URBAMA Report, 2000)

(GOPP-URBAMA Report, 2000); a case which has critically changed in recent years.
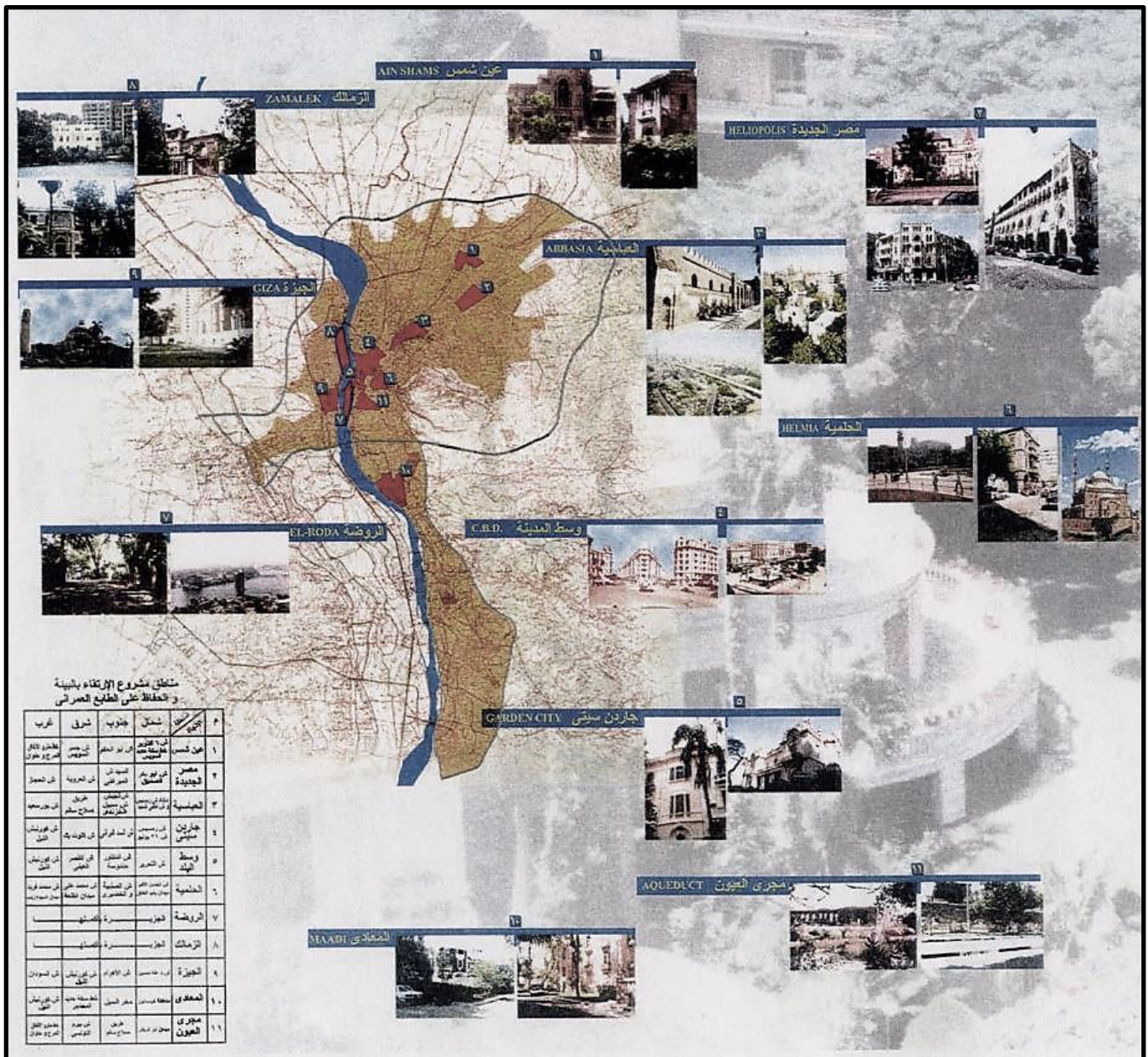
Figure 4-1 The ten chosen urban areas within 19th & ealry 20th century
neighborhoods for the Study source: GOPP-URBAMA Report, 2000

The joint study institutes defined a set of Preservation principles as follows (GOPP-URBAMA Report, 2000. The Heritage has the ability to

- Attract service activities and the development of tourism.
- Improve the quality of life for residents
- Be a powerful instrument in drawing the image of the city as a whole
- Be not limited to buildings but to embrace also architectural clusters and urban areas.
- The preservation and conservation is through developing regulatory requirements and specific construction regulations by conducting field surveys and historical studies and taking into account the current situation.

The research team recommended to upgrade the public spaces; and to find out owner friendly processes where regulations must be respected and enforced meanwhile owners should be compensated or rewarded tax exemption, or financial incentives. Moreover, preservation is not turning the place into a museum.

One of the benefits behind the study according to S. Attia (Personal communication, 28 March, 2013) was the inventory of distinctive buildings, carried out by the Cairo governorate; and reaching new regulations for each zone (*manteqa tafseeleya*), because until that time the general unified building regulations were applied on these areas. This means when a villa of 2-3 storeys is demolished a high-rise appeared following height equals 1.5 the width of the street resulting in high-rises with ugly colors.

The military decree no.2 of 1988 of villa demolition prohibition and other study efforts were seeds for developing the protecting laws. It was a cognizant and promising move to consider the importance of the 19th and 20th century distinctive assets that faced a lot of investment pressures and are not protected by law.

In the 2000's former president Mubarak annulled all military decrees which were under the Emergency laws aiming to win his folks' satisfaction, causing the disappearance of the decree prohibiting demolition putting architectural buildings again under threat (El-Aref, 04/24/2014). This critical situation has urged the quick establishment of the National Organization of Urban Harmony (NOUH) along with developing the two important laws; the Law No. 144 of 2006 & Law No. 119 of 2008.

4.2   MANAGEMENT OF RECENT HERITAGE BY NOUH

Today, the National Organization for Urban Harmony (NOUH) manages the recent heritage in Egypt. NOUH was initiated by the presidential decree no. 37 for the year 2001 and was inaugurated at the Saladin Citadel premises, Cairo in 2004 with the main objective of improving the aesthetic values of the Egyptian urban space (Gharib, 2009). One of NOUH's essential focuses is seeking to define criteria for buildings with distinctive value and documenting the buildings and developing inventory lists including these buildings with distinctive value all over Egypt. The Organization has achieved to develop the law no. 144 of 2006 about the control for building demolition and preservation of distinctive architectural heritage and the law no. 119 of 2008 prohibiting violation on listed historic buildings and regulating building in heritage settings (see Gharib, 2009). NOUH also prepared lists of distinctive building for most of the Egyptian cities and their neighborhoods, following the two above mentioned laws (NOUH website[20]).

NOUH aims to apply the values of beauty to the exterior image of buildings, urban and monumental spaces, the bases of visual texture of cities and villages and all the civilized areas of the country including the new urban societies (Yousry, 2010). Its central premise is in Cairo, Egypt and should have affiliated offices in the different economic regions for follow up and control (law 119 of 2008 art.28).

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[20] NOUH Lists of distinctive buildings, please visit: http://www.urbanharmony.org/valueplaces.asp?id=1

4.2.1 NOUH'S RESPONSIBILITIES

According to the law 119 of year 2008 NOUH is responsible for

- setting the policies concerning the urban harmonization (art. 29)
- Discussing draft laws and pointing out every remark that helps to achieve urban harmony; proposing relevant legislations (art. 29)

- To specify the foundation and criteria for the preservation of historic areas of distinctive value following the Law 119 for 2008 that guarantee no alteration to the current architectural image (art. 29)

- Carrying out relevant research studies (art. 29)

- Follow up to make sure that the created guidelines and standards are followed (art. 29)

- Identifying heritage areas and buildings; setting the principles and the means of control to preserve them (art. 80)
- Suggesting important actions to be carried out related to property rights (art. 80)

- Preparing databases comprising all buildings with special architectural values all over the country and setting the necessary rules and guidelines to preserve this patrimony (art. 81)

The NOUH has a supreme scientific council, which consists of famous Egyptian expertise in different fields. It has issued 12 guiding handbooks for urban harmonization principles and criteria as an essential requisite of the law no.119 (2008); 1) Heritage Areas and Buildings, 2) Ads and Banners; 3) City Centers; 4) Green and Open Spaces; 5) Quality Control; 6) Coastal Areas; 7) Streets and Pavements;8) Environmental Guidelines; 9) City Gates and Entrances; 10) Villages, 11) Protectorate and Natural Areas; 12) External Lighting and Illumination (Yousry, 2010). These guiding foundations are essential supplements to the law 119 of the year 2008 (Gharib, 2009).

4.2.2 NOUH'S PROJECTS

In 2012 NOUH has carried out a small scale project in downtown Cairo (Khedivial Cairo) to upgrade the facades of *Talaat Harb* square. It was mainly concerned with external facades, fixing any occurring damages and asking shop owners to respect the regulations of shop signboards. In late 2013, again there was another wave of upgrade happening starting with the inauguration of the *Tahrir* parking with a capacity of 1700 parking plot (Abdel Rady, 31/01/2015)) and the *Tahrir* square. Afterwards, there was a will of expanding the work. Priorities went to iconic squares and important pedestrian areas, such as *Talaat Harb* square, *Orabi* square, and *Abdin* square in addition to *al-Alfy* pedestrian street which will be followed by other pedestrian streets. The project is steered by the Cairo Governorate funding mainly infrastructure amenities and streets in addition to some heritage buildings. In this project NOUH has a technical and consulting role where all the work should follow the stipulated 'Boundaries and Requirements' handbook issued 2011 according to the law no.119 of 2008. Another important actor is the Misr Real Estate Assets Company who is funding the renovation of buildings owned by it; moreover Banks are additional entities providing funds for further renovations (S. Hawas, personal Communication, April, 2015).

- The priority of work goes to developing and upgrading pedestrian streets encouraging walkability within the heritage city streets
- renovation of buildings by Banks located in the area
- In *al-Alfy* pedestrian street the inclusion of the shop owners was important to absorb their needs and win their support
- The new Tahrir underground parking along with other existing parking should provide more parking areas underground after parking in main streets is prohibited
- Minimizing the usage of private vehicles within the project area along with providing minibuses from the parking to the khedivial Cairo streets for a better
- Renovation of the external façade
- The desire of other neighborhoods to undergo upgrade and renovation measures

4.2.3 NOUH'S ACTIONS AGAINST ENCROACHMENTS

By virtue of its role, NOUH has carried out miscellaneous actions to solve encroaching conditions and save distinctive buildings. In Ramses square it has stopped the construction of a multi-story parking in front of the listed valuable train station, in downtown they removed the ads from above listed buildings around *Tahrir* square; in front of the Citadel they have stopped the establishment of a commercial project in front of the citadel (Tawfiq, 02/16/2014) and stopping major changes to happen to *Azbakeya* Garden, in Khedivial Cairo (NOUH website, 2013) that would ruin its over 100 years old garden. These are actions they have won while there are other actions carried out such as their support to the HHI to keep the Swiss chalet, Heliopolis from demolition (Facebook, HII) nevertheless it was demolished.

4.3 EGYPTIAN LAWS AND GUIDELINES FOR BUILDINGS AND AREAS WITH DISTINCTIVE VALUE

4.3.1 THE EGYPTIAN LAW NO.119 OF THE YEAR 2008[21]

Any work related to urban planning, urban landscape, regulating the construction work and the preservation of the built property *al7efaz 3ala al-tharwah al3aqareya* should follow the law no.119 of the year 2008 (Art. 1). Sustainable urban development is achieved by managing the urban development process with the optimal usage of the available natural resources, in order to fulfill the needs of present generations without influencing the opportunities for future ones (Art. 2) which is the common definition of sustainability.

The handbook named 'Foundations and Guidelines of Urban Harmony for Heritage Buildings and Areas' gives a delineated definition for the buildings with distinctive value clarifying the criteria for the selection. These are buildings or a faciltes that are characterized by historic or symbolic value, or technical architecture, or urban, or social value (NOUH, 2010) as follows:

- Acceptance of society: to win the acceptance and positive reaction from the community this allows its continuity.
- A cultural and social phenomenon: to express materialistic and moral or intellectual phenomena of a certain period.

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21 The Egyptian law No.119 of 2008 for the issuance of Building law was issued in the formal Gazette volume 19 repeated (a) in 11th of May, 2008

- Resilience and continuity: its condition allows its continuity the possibility of dealing with it. (NOUH, 2010:11)

NOUH (2010:12) distinguishes between different types of values that make a building defined as distinct, these are the historic, the architectural artistic, the urban, the moral social, and the local traditional value which are explained in detail in the following table (see Table 4-1)

Table 4-1 Definition of value according to NOUH (NOU, 2010)

The Value	Basic Criteria
Historic value	has a link with of national historical aspects was resided by an important person Has to do with the influential national events has a symbolic value Age of the building
An architectural Artistic Value	A unique and distinct architectural style Architectural Design and distinctive artistic creation Represents an important era in the history of art and architecture The product of an artist or prestigious local or global architect A scientific or Technical value of construction of scarcity and exclusivity.
Urban Value	The building has a value of being part of a group of integrated distinct architectural heritage urban planning setting The building has a garden of environmental and historical importance within an urban scheme that shows a stage or epoch of community history Heritage buildings that form a unified integrity with each other in terms of shape and style of construction
A moral social Value	Connected to important regional social functions over time The building is a reflection of social thought, belief or tradition
Local traditional Value	The building is part of an urban, rural or desert architecture of an integrated nature characterized by its history and homogenous architecture Building is part of an architectural group built with distinctive materials reflect the nature of the location and copes with the climatic conditions. Traditional Construction expresses the experiences accumulated over generations of design and construction & traditional crafts.

The classification of buildings with distinctive value (NOUH, 2010:13; Hawas, 2013:94)

Listed Distinctive buildings are classified according to NOUH either being of Value (A), (B) or (C) which reflects importance according to value and the measure of intervention possible:

- Distinctive Value (A) Restoration of Building without carrying out any external or internal modifications
- Distinctive Value (B) A certain flexibility in internal modifications are allowed while no external modifications are allowed

- Distinctive Value (C) More flexibility is allowed reaching demolition while retaining the structure or the façade of the building, and the complete rehabilitation of the building internally. Any measure carried out in one of the zones requires permission from NOUH.

On the other hand, areas with distinctive value are areas with rich contents of heritage value or architectural or urban or symbolic or aesthetic or natural value that needs to be handled as a unit to conserve it (art. 27).

The Criteria for the selection of Areas with Distinctive Value

NOUH determines the zones with distinctive value in coordination with the responsible and relevant governmental bodies so that this zone forms a homogeneous unit of cultural value (historic, Urban, Natural, and Aesthetic). The boundary determination is either natural through rivers, seas or mountains etc. or urban through streets squares and fences etc. and put on a map for accreditation by the Supreme Council for Planning. To fulfill one of the following characteristics (law 119 Section 2- article 88):

1) Buildings of the zone with distinctive architectural or urban value that are unique and are listed and restricted from demolition following law no.144 of 2006

2) The zone should have a distinctive setting or aesthetic Image or geometrical order, or an urban fabric that reflects one of the development layers or historical evolution.

3) The zone should majorly form an expressive image that reflects political or military or historical or social or economic or scientific or artistic or functional values, or it contains information, historical or scientific evidence in an afore-mentioned features.

4) To be related to an important event or person or persons or a movement that had a clear effect upon the history of the country.

5) To be a pivotal and main location for mobility connecting to important zones or buildings or facilities with outstanding value.

6) To be a cultural location that represents a culture with outstanding value distinct belonging to a certain group of people.

7) To be of natural value characterized with landmarks or natural or geological aesthetic or scientific values forming the distinct location

8) To be one of the Natural Protected areas according to the Law of environmental reserves.

Classification of Areas with Distinctive Value

Again, similar to the classification concept to buildings; distinctive zones are also classified to (A), (B) & (C) (Hawas: personal communication, 10 April, 2013)

- Outstanding Value (A) Zone of Maximum Protection and highest number of listed distinctive buildings resembling the heart of the area (the old core)
- Outstanding Value (B) Zone of Medium Protection with less distinctive buildings resembling the development and expansion of the neighborhood

- Outstanding Value (C) is the Transition Zone between the areas of protection (maximum / medium) and ordinary Zones with higher flexibility in change and renovation or replacement

NOUH prepares the foundations and guidelines for protection of buildings and areas with outstanding value. The determination of the areas with unique value are suggested by the NOUH and in compliance with the standards put to conserve them, NOUH prepares leading models (pilot projects) of areas and buildings of distinctive value, and carry out the work it sees as required to maintain the value (Law 119-Section 1 – Chapter 1 - Article 32-34).

It is not allowed to construct, modify, extend with extra levels or restore any building or project or movable and immovable installations nor is it allowed to put any temporary or permanent usage or moving any architectural elements or statues, carvings, decorative units in the public urban spaces in areas mentioned in the previous paragraph before attaining a permission (license) from the responsible managerial agencies (Law 119-Section 1 – Chapter 1 – in Article 33).

4.3.2 THE EGYPTIAN LAW NO.144 OF THE YEAR 2006

According to the law no. 144 of the year 2006 art.2 there is a committee for the inventory of the buildings with distinctive value that consists of one representative of the Ministry of Culture chosen by the Minister (Head of committee); one representative of the Ministry of Buildings and urban development chosen by the Minister; two representing the governorate and five from the faculty professors covering the fields of architecture, civil, archeology, history, art chosen by the deans of each faculty. Each governorate has inventory committees. A big governorate like Cairo is divided into 4 zones; northern, southern, eastern, western, each zone has a chairman of the committee. They carry out site visits and check whether a building does have one or more of the specified criteria mentioned above in order to register it in the inventory lists (A. Aly NOUH, personal communication, March 26, 2013) (see Table 4-2).

There are two ways of carrying out the work. After having a finished list of distinctive buildings it is then distributed on the related local district units to conform to them. In most of the local district units, when someone applies for demolition permission, they only check the

Cairo	# of distinctive Buildings
Southern Zone	
Masr El-Qadeema	162
El-Khaleefa we El-Moqatam	60
Al-Sayeda Zeinab	252
Maadi	233
Helwan	93
Total	800
Northern Zone	
El-Zaytoon	61
Hadayeq El-Qoba	48
El-Sahel	28
Rood El-Farag	85
Shobra	82
Boolaq	63
Total	367
Western Zone	
El-Mosky	37
Bab El-Shareya	20
Abdeen	494
Wassat (el-darb el-ahmar & Gamaleya)	121
Gharb (Qasr El-Nil)	491
El-Waily	237
Total	1400
Eastern Zone	
Heliopolis	732
Ain Shams	5
El-Nozha	4
El-Marg	3
El-Matareya	9
Total	21
Cairo total	**2588**

Table 4-2 Inventory list of distinctive buildings of all Cairene neighborhoods (NOUH, 2013)

lists. If the building is listed they don't issue demolition permission. A more keen approach is the one of the committee for 'Cairo West' where any demolition decision is not prosecuted unless the committee visits the site and investigates the building, even if not listed. This type assures that no distinctive building is demolished, because there are distinctive buildings, which are still not listed (A. Aly NOUH, personal communication, March 26, 2013). Following the law no. 144 of 2006, the documentation and recording are very important steps towards the protection of any distinctive building; knowing basic information about it and about its history.

It's like an ID identifying the entity's value and status the architect, the architectural style, the building date, etc. The documentation is a continuous action happening before during and after restoration acts (point 3.1 The Foundations and Guidelines of Urban Harmony for Heritage Buildings and Areas, NOUH, 2010). The Punishment for those who break the law and demolish, is prohibiting construction on plot for 15 years unless following the same old rules and codes for the building along with paying a fee ranging from 100.000 reaching 5 million Egyptian pounds (Law 144 of 2006 Art. 12).

4.4 HERITAGE INITIATIVES AND 'GRASSROOTS'

Chaoui (2005) has assumed that the emergence of civil society and the emergence of new investments in the housing stock of old urban centers will raise the awareness for important related economic, social, and political issues within the Egyptian colonial heritage (in Carabelli, 2006:81). The violations carried out to distinctive buildings are due to the absence and inability of the responsible apparatus, the effective resistance comes from the bottom, the civil-societal institutions fighting for rescuing some distinctive buildings from demolition (Salah, 10/23/2012).

4.4.1 MEDIA AND SOCIAL-MEDIA AND CIVIL SOCIETIES

Social and Media campaigns have been developed to save the palaces and villas of Cairo or Alexandria from destruction, websites have been developed (starting with www.egy.com), associations have been created, such as the Association *Turath* (Heritage) created to specifically address the recent heritage (Volait & Minnaert, 2003). The last decade shows a tremendous increase in the formation of initiatives and civil-society groups aiming to save their Heritage, such as Save Alex[22], and Heliopolis Heritage Initiative[23], *Zamalek* Guardians[24], Egypt's Heritage Task Force Community[25], *Masr el-aan we Zaman-* Egypt now & of the past[26], Oriental Heritage without borders[27], Egypt Heritage Network[28], *Port-Said ayam zaman-* the past days of Port-Said[29], Save Mansoura[30], Save Cairo[31] etc.

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[22] https://www.facebook.com/savealexeg
[23] https://www.facebook.com/HeliopolisHeritageInitiative
[24] https://www.facebook.com/groups/160837127300042/
[25] https://www.facebook.com/EgyptsHeritageTaskForce?fref=pb&hc_location=profile_browser
[26] https://www.facebook.com/Egyptts
[27] https://www.facebook.com/ohwb.e.v?fref=pb&hc_location=profile_browser
[28] https://www.facebook.com/pages/Egypt-Heritage-Network-%D8%B1%D8%A7%D8%A8%D8%B7%D8%A9-%D8%AA%D8%B1%D8%A7%D8%AB-%D9%85%D8%B5%D8%B1/268318636621698?fref=pb&hc_location=profile_browser
[29] https://www.facebook.com/portsaid.AyamZman?fref=pb&hc_location=profile_browser
[30] https://www.facebook.com/SaveMansoura?fref=pb&hc_location=profile_browser
[31] https://www.facebook.com/SaveCairo?fref=pb&hc_location=profile_browser

4.4.2 HELIOPOLIS HERITAGE INITIATIVE (HHI)

In Heliopolis neighborhood, the chosen case study for the research at hand, the Heliopolis Heritage Initiative (HHI) is a grassroots based initiative that was created in 2011 under the auspices of a politician in the Egyptian Parliament, Amr Hamzawy (the first parliament after 25th January Revolution)[32]. The members of HHI are volunteers who mostly were born and lived all their lives in Heliopolis, which connected them emotionally to the place. These members come from different backgrounds such as pharmacists, architects, IT-engineers among others. Their love to their neighborhood and the qualities that they used to have in their childhood are basic motivators for them to work in this initiative (HHI, personal communication, 16 March, 2013).

The Initiative aspires to have a say in making decisions concerning their neighborhood. It believes in its will and power to resist and fight for the heritage 'distinctive assets' of Heliopolis. The Initiative started very active making different promising activities; however, a lot of this power disappeared after the dissolution of the former parliament in June 2012, which reflects the major role politics play in this matter. Therefor they wish to establish an NGO, hoping it will have a stronger will and influence. The initiative is based on the participation and engagement of all Heliopolitans in achieving the image they all wish to see working on six main goals (HHI, personal communication, 16 March, 2013[33]): (Figure 4-2)

Figure 4-2 The HHI goals divided into 6 major pillars Source:
HHI, 2012

1) Participation of Heliopolis community with civil society, private sector & governmental institutions
2) Preservation and Revitalization of Architectural & Urban Heritage
3) The optimal use of gardens, public spaces & open spaces

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[32] (HHI Facebook group) founded 2011 http://www.facebook.com/HeliopolisHeritageInitiative/info
[33] This was an outcome of attending one of the meetings of HHI

4) Proposing solutions for the traffic problem & develop & activate a public transportation system
5) Encouraging community awareness through cultural & leisure activities
6) The Waste Management

The Heliopolis Heritage Initiative HHI divides its work into short-term, long-term and quick-wins. In chapter 11 the different actions and efforts carried out by the initiative is illustrated and analyzed, describing their actions as a social resisting response (R). This was conducted through attending direct HHI meetings and carrying out interviews with their key members[34].

Finally, it is possible to say that a gradual paradigm shift in appreciating the heritage is happening in Egypt where the recognition is increasing finding volunteers interested in saving the heritage gems as reflected in the number of formulated initiatives, NGO's and internet groups that seek voluntarily to save the Egyptian heritage with their different kinds. Even on the governmental level there is a gradual change, as in previous times talking about heritage was underestimated and seen as retrograde in official meetings concerned with agendas while now discussing the issue of heritage preservation becomes accepted and more appreciated as stated by S. Hawas (personal communication, 10 April, 2015).

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[34] Ahmed Mansour, Choukri Asmar, Omneya Abdel Bar

SUMMING-UP THE CONTEXTUAL SETTING

Summing-up part I, chapter (2) has presented the 19th century era in Egypt which was a flourishing period. It is described as having a 'selective borrowing' approach to westernization and colonialism where nothing was imposed; on the contrary Khedive Ismail the ruler of Egypt has encouraged this urban vocabulary at the start of the 19th century period and was not imposed by foreign powers as has happened in other countries under Colonialism (Volait, 2003). Chapter (3) illustrated the uniqueness of Heliopolis, which has emerged with the intention to solve the starting problems of housing in Cairo with its rapidly increasing population, presenting a prototype in satellite cities in the desert. Heliopolis is an iconic example for having a diverse community in religion, nationality, social, and economic level (Raymond, 2000). Heliopolis succeeded in becoming an integral part of modern Cairo being a unique case with its capitalist character (Ilbert, 1985). Heliopolis of the past has different aspects that are sustainable in nowadays terms (see section 11.1). Concluding this part, chapter (4) has presented the development of recognizing the Egyptian recent heritage from complete neglect reaching finally the formation of relevant protecting laws, which will be discussed, and analyzed more in detail in chapter (11). The different efforts carried out in the field of recent heritage preservation in Egypt are considered essential and majorly positive, however thinking a step further to include other aspects beside urban and cultural ones is an advanced way of thinking preparing instruments (see section 10.4) to be ready for the near future whenever the political situation shows readiness for implementation.

Part II: Theoretical Background

"We have to make better, wiser use of what we've already built. It makes no sense for us to recycle newsprint and bottles and aluminum cans while we're throwing away entire buildings, or even entire neighborhoods. The bottom line is that the greenest building is one that already exists"(Roots, 01/04/2008).

The act of preserving historic structures, landmarks, and landscapes is a gift to future generations (USGBC, 2013)

PART II: THEORETICAL BACKGROUND

Approach: **Sustainable Preservation**
Instrument: **Criteria-based Catalogue**

Urban Scale : **Neighborhood**   Urban Nature: **Living Heritage**
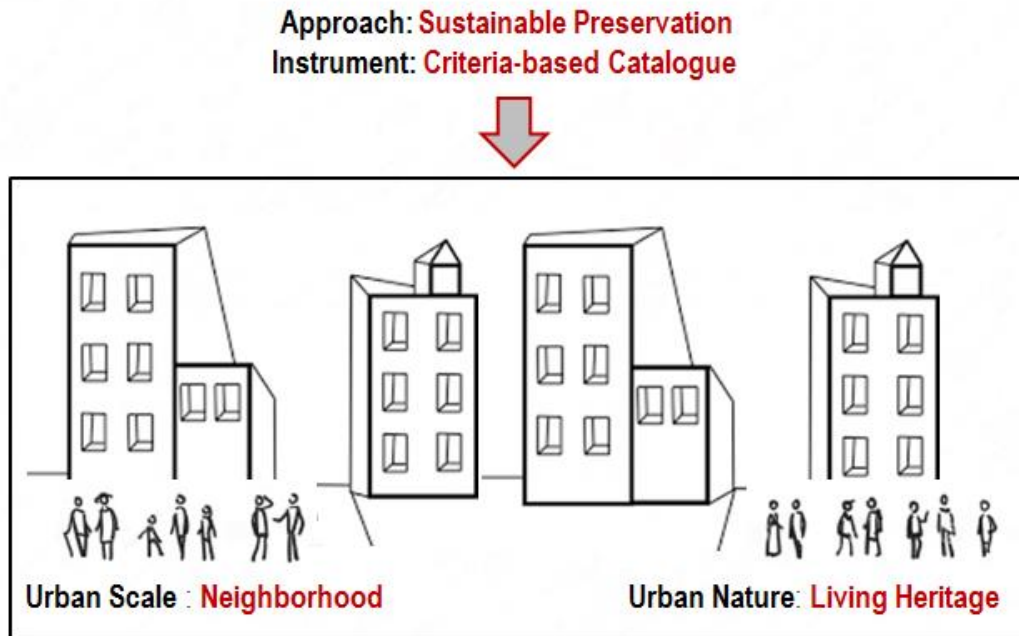
Figure 0-1 Schematic illustration of the Study elements used in the Theoretical Part
designed by author

In the Theoretical Part a set of relevant concepts, approaches and theories to Sustainable Heritage Neighborhood Preservation are gathered and conferred to form the basic knowledge enabling an investigation based on literature review. As the title of the PhD research tells '*Towards a Sustainable Preservation approach to Egyptian Heritage Neighborhoods*' the conducted study investigates the urban scale of a neighborhood, focusing on recent living heritage that implies the urban nature of the study (chapter 5). The suggested approach to deal with the heritage neighborhoods is Sustainable Preservation (chapter 6) illustrated in this Part.

Chapter (5): Existing Heritage Neighborhoods

The historic built environment represents a huge resource that can be conserved and made efficient for the twenty-first-century challenge of fossil fuel exhaustion (Jackson, 2005:51).

5   EXISTING HERITAGE NEIGHBORHOODS

As mentioned in the introduction the research study deals with the neighborhood as the urban scale of the study. Following, the major terms needed are elucidated and the working definition used by the research study at hand will be clearly stated. The heritage neighborhood is demonstrated extensively here in chapter (5) which presents the working definition for the term as used in the study in addition to its characteristics showing the significance of the scale of a neighborhood and the international recognition of recent heritage on a governmental and social level.

5.1   NEIGHBORHOOD, SPATIAL AND SOCIAL DIMENSIONS

Neighborhood is a complex and multifold term (Barton, 2000). For children and elderly it provides the home and the place in which daily needs are available creating a shared experience and memory (Barton, 2000). It is a compact residential or mixed use area that people can access walking, where its scale is geared by the pedestrian approachability (Charter of the New Urbanism, 1999; Farr, 2008:42; Barton, 2000:5). In addition it has a recognized identity that is valued and appreciated by the local people (Barton, 2000:5).

The neighborhood, since ancient times is the basic unit of human settlement (Farr, 2008). *'Stadtquartier'* or Neighborhood gives an idea of closeness, unified identity, attractive affordable housing, diverse transport-methods, walkability and accessibility of basic daily facilities and recreation areas and public spaces (Verbands Magazin, 2014).While some scholars define the neighborhood as the spatial dimension only the research is interested in the definition which comprises the spatial and social dimensions. In the Oxford English Dictionary[35] the neighborhood has a social and spatial dimension having a certain manageable size embracing its *community* where *'people live near to a certain place or within a certain range'* reflecting the social side and as 'a *small sector of a larger urban area, provided with its own shops and other facilities'* showing the spatial dimension; Barton (2000) adds that it implies a locality which has a particular unifying character (Barton, 2000:4).

As used by Barton (2000) and Mayer, Schwehr & Bürgin (2011) the research study is concerned with the term 'neighborhood' in which the meaning of 'community' and 'neighborhood' converge combining spatial and social dimensions. This means that it deals with the social networks of people who are sharing the same local, which makes them have common memories for the place, creating a sense of belonging (Barton, 2000). Moreover, it is a place where the utility-pattern of the society and the building structures adapt and meet (Mayer, Schwehr, & Bürgin, 2011). Also (Heyder, Huber, & Koch, 2012) recognize the two facets of the neighborhood; the spatial dimension and the social relational space (Heyder et al., 2012).

Barton then crystalizes the neighborhood with its different facets (Barton, 2000), important to move forward the sustainable pattern of living; having a functional facet, the place of aesthetic experience and locus for community.

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[35] http://www.oed.com/view/Entry/125931?redirectedFrom=neighborhood#eid
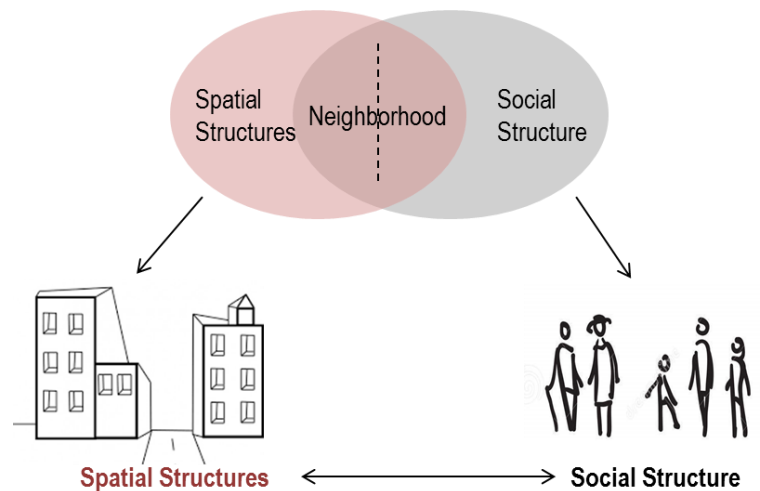
Figure 5-1 The neighborhood as the spatial social unit defined by
Mayer, Schwehr & Buergin (2011) illustrated by author

1) The functional facet emphasizes on the locality being the base for home life, educational retail, leisure and employment activities.
2) The Neighborhood as a place, as an aesthetic experience with historic roots where the residents' perceptions of their own 'home' territory are linked to its valuable quality. This recognition of a historic neighborhood was revitalized by the end of the 21st century responding to the emphasis on local distinctiveness and quality.
3) Neighborhood as the locus for community, where the community consists of people of diverse interests. When people have locally-based activities the community is then intertwined with the sense of local network

The term neighborhood is not used in the Egyptian context when dealing with distinctive heritage areas. This is because the determination of distinctive urban areas according to NOUH follows certain criteria away from respecting the administrative boundaries of a neighborhood (S. Hawas, personal communication, April 10, 2013). Value-based drivers steer the boundary determination of distinctive areas; however the research chose to deal with neighborhoods encompassing both the social and the spatial facets, which implies the feeling of belonging, sense of place, and common memories toward a certain neighborhood rather than to a mere designated area. These features are significant motivators for the local community and local civil society eager to protect the tangible and intangible qualities of their neighborhood that the research supports.

5.2 SIGNIFICANCE OF NEIGHBORHOOD SCALE

The neighborhood today is considered as the relevant operational scale for city development (Heyder et al., 2012). It is said that the smaller the unit of investigation the more feasible it is to manage and break down problems (Meisel, 2014). Working on the neighborhood scale has different advantages such as it is big enough to have a contribution by a mass of stakeholders and small enough to avoid confusion (Meisel, 2014).
It is acknowledged in recent years, that neighborhood is the scale of land development where new buildings and facilities are proposed and constructed (Benfield, 2010). There is a concern in developing assessment methods and tools for the neighborhood and urban scale

(Haapio, 2012; Retzlaff, 2009) which is seen as fulfilling the requirements of the Local Agenda 21's goals towards sustainable development (Sharifi & Murayama, 2013).

> *'A neighborhood is a fundamental building block of a city, and a good starting point to create a truly sustainable community'* (Sharifi & Murayama, 2013)

5.3   RECENT HERITAGE NEIGHBORHOODS: 'LIVING HERITAGE'

The recent heritage consists of a combination of several buildings in neighborhoods often created in the same era, not like monumental heritage which is rather tied to singular architectural objects (Carabelli, 2006). The unique thing that characterizes the recent heritage is the value of the whole and not the value of each object alone. An object even if aesthetically and architecturally of high value or standing as a monumental pivot, is rather a part of a whole being a component of the urban fabric (Carabelli, 2006). The recent heritage has a level of monumentality and quantity that dictate on cultural heritage and town planning to perceive it as whole encouraging the change of the people's recognition to cultural heritage. The challenge confronting recent heritage is that it needs a long-time development process, managing the complexity of the place being inhabited, economically robust facing a process of transformation (Carabelli, 2006) which makes it a 'living heritage'. (Abu-Lughod, 1978) described the 'living city' referring to the Islamic city; however its characteristics are also applicable on the 'recent heritage' neighborhoods and cities; she explains that the basic characteristic of the living cities is the continuous change and constant renews where an 'Alive' building is maintained, embellished, altered, and added to over time accommodating surrounding changes. She assures that, the activation of economic functions protect a healthy urban quarter (Abu-Lughod, 1978). Moreover, living heritage are functioning monuments, which form dynamic social spaces. In order to preserve them one should deal across the different layers economic, social, political and physical (Al-Harithy, 2005).

Historic quarters or as used in the study at hand, heritage neighborhoods are old existing urban fabrics that were preserved over time add additional layers over time (Doratli et al., 2004). Heritage neighborhoods are unique for their coherence as a complete entity, identifiable by their traditional character and architectural value (Doratli et al., 2004). The historic urban quarters are a significant accumulation of cultural layers where every generation is adding its own special layer (Doratli et al., 2004). They are neighborhoods, which *confer a sense of place and identity through their historic continuity and cultural associations*. These neighborhoods are in most of the cases *an integral element of the city's Image and identity* (Tiesdell et al., 1996).

According to the World Heritage Center; being inhabited makes these neighborhoods fragile urban fabrics where spatial organization, structure, materials, forms and maybe functions of a group of buildings should essentially reflect previous civilizations (UNESCO World Heritage Centre, 2008). A large number of old buildings within the historic area is a direct indicator for its exceptional distinct value (UNESCO World Heritage Centre, 2008).

Policies are important to solve problems and diminish threats for the historic city attractiveness, to live, to work, to invest and to vacation (Strange 1997:231)

- Tension over land-use
- Changes in the nature of local economies
- Continued consumption of historic assets

- Conflicting demands of development and conservation in the historic city
- Pressures of over-consumption of the assets

5.3.1 CULTURAL HERITAGE

The meaning of heritage according to the definition of Dr. Tharwat Okasha, a prominent former Egyptian Minister of Culture is 'everything valuable that is made by the predecessor and is left to us and is worth preservation and lasting for generations to come' (S. Hawas, personal communication, 10 April 2013). The role of planners and the humanity as whole is to convey the remained valuable objects from the past to the present and future generations (S. Hawas, personal communication, 10 April 2013). Hawas continues that the heritage assets preserved should have a real distinctive value; otherwise the earth won't be enough space to accommodate everything; that is why the technical experts carefully select what is distinct and has an outstanding value (S. Hawas, personal communication, 10 April 2013). This proposed mechanism reflects continuity, where the word '*turath*' heritage comes from '*Irth*' legacy which means what is left from our inheritance and continues to exist and live, which lies exactly within the newly invented term sustainability (S. Hawas, personal communication, 10 April 2013). Continuity is a basic concept in sustainability making sure that the process of preservation is done in a good quality that is not harming the existence of assets to present and future generations (S. Hawas, personal communication, 10 April 2013).

According to (World Heritage Convention, 2012) *"Cultural heritage" is among others; Monuments: architectural works, ... which are of Outstanding Universal Value[36] from the point of view of history, art or science; and Groups of buildings: groups of separate or connected buildings which, because of their architecture, their homogeneity or their place in the landscape, are of Outstanding Universal Value from the point of view of history, art or science* (Paragraph 45 Article 1).
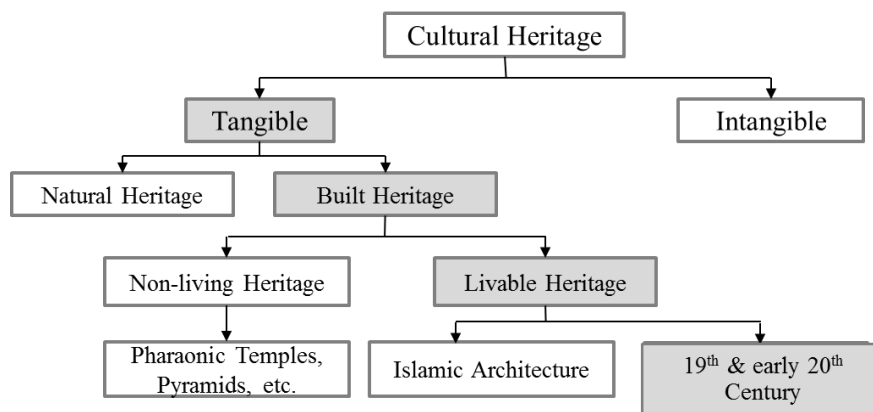
Figure 5-2 Types of cultural heritage illustrating the kind of heritage
dealt with in this study (developed by author)

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[36] *Outstanding Universal Value means cultural and/or natural significance which is so exceptional as to transcend national boundaries and to be of common importance for present and future generations of all humanity. As such, the permanent protection of this heritage is of the highest importance to the international community as a whole. The Committee defines the criteria for the inscription of properties on the World Heritage List* (Paragraph 49. of the World Heritage Convention 2012)

5.3.2 DISTINCTIVE VALUE

On the other hand, the Egyptian 19th and early 20th century buildings and areas with distinctive value are defined and protected by the law no. 119 of 2008–NOUH, Cairo stating that; *A Building* with distinctive value is a building of a historic, symbolic, architectural aesthetic, urban or social value; while *Urban Areas* with distinctive value are areas rich with their historic, aesthetic, architectural elements that need to be treated as a complete unit (Section 1 Art. 27). The research study is focusing on the 19th and early 20th century built heritage, which is livable, used by people for living working and leisure (Figure 5-2).

Valuing built heritage has not a clear cut method of calculation; it needs reasoning and cultural aware explanations (Hukkinen, 2007). *'Values'* are those beliefs which have significance for a cultural group often including, but not limited to, political, religious & spiritual, and moral beliefs; ("Australia ICOMOS Burra Charter for Places of Cultural Significance," 1999, Article 1.1)

Inherent values of place are divided in 2 levels (Brwon & Pembroke, 2008).
1. 'Expert' values, which are identified by previous or existing legislations, which requires prior knowledge or education.
2. 'Universal' value is apparent and may appeal to people, where little or no prior knowledge is required.

In the case of this study, expert values are those defined by NOUH while the universal value is this appreciated by the local community and civil society, in that case in Heliopolis the HHI without a necessarily prior knowledge.

The term 'heritage neighborhood' used by the study, focuses on the 'recent' 19th and early 20th century neighborhoods that have emerged in Egypt reflecting new planning concepts and introducing a new definition of a neighborhood. These neighborhoods are inhabited comprising of social and spatial qualities.

5.4 RECOGNITION OF HISTORIC NEIGHBORHOODS

Societies have become aware of the cultural heritage only a few decades ago. They began to appreciate the architectural significance of the old buildings and sites (Benton-Short & Short, 2008; Tyler, 2000). "*Cities search for a way to celebrate their past while looking to the future. It can be used to preserve neighborhoods*" (Benton-Short & Short, 2008:232). Meier wrote, '*the preservation of the historical city is not a separate task, but an integral part of urban design*' (Meier, 2010:35).

5.4.1 LEGISLATIVE PROTECTION

In the Northern Mediterranean countries the change in paradigm to consider urban centers and entire cities as heritage worth protection came early in the 1940s (Volait, 1996 in Carabelli, 2006:78) while in the southern countries this came much later, starting in Egypt in the 1990s (Carabelli, 2006). In this part the research wants to show the importance of both the legislative and grassroots efforts towards preserving the valuable areas, neighborhoods and their buildings.

Internationally, USA was pioneering in the field of urban heritage recognition where the concept of 'historic districts' was shaped in the 30s and 40s by the public sector (Benton-Short & Short, 2008; Gale, 1991; Tyler, 2000). In the US these moves where first community driven by the local citizens and planners without any legal provision with the intention to protect their beautiful houses (Tyler, 2000). Later this practice was spread by attaining a legislative form (Gale, 1991). Whether it was first community-driven or governmentally driven it was clear that the strength of both entities together towards preserving their historic valuable assets was a key factor in the success and spread of the practice.

The National Trust for Historic Preservation is an entity that was created with the motive to gather the efforts of the private parties and the governmental activities, resembling in Egypt the NOUH which is a governmental entity yet it has a private character. This trust issued new laws and provided legal funds for preserving valuable assets, supporting '*locally regulated historic districts*' (Benton-Short & Short, 2008; Gale, 1991; Tyler, 2000:229). Then in the 70s and 80s appraisal of complete districts as historic districts instead of single buildings has started and area-based preservation was enshrined on the planning and housing legislation (Slater & Shaw 1988 in Strange 1997:228) controlling demolitions and alterations (Reed, 1969 in Gale, 1991). One disadvantage of the historic building/ neighborhood designation is the fear of accelerating property values, which could lead to increasing tax charges and rents and forcing the displacement of low-income and elderly households (Gale, 1991) resulting in the so called gentrification however this issue lies beyond the scope of the study and could be discussed later in a further study.

Looking at on example in Europe, in Germany the 'urban renewal (*Stadtsanierung*) in the context of city development is an engaged element of the communal practice' (Reicher, 2013). Urban renewal today versus building demolitions of the past (post WW); this is because of the current challenges of city development and heritage preservation. In 1968 the German society started to think differently with the parallel change in the economic and social conditions where preserving urban settlements was addressed and the awakening of the public interest has started (Mainzer, 2007:9). City-renewal in Germany went through different adaptation and modification processes to suit current challenges and requirements (Altrock, 2013) which is something important for a better preserved urban context.

A paradigm shift happened in Germany by the year of Heritage Conservation (1975) to carefully renew existing ensembles[37], neighborhoods and cities which was not easily accepted and needed laborious community efforts (Altrock, 2013). Again, here it is clear that it is not enough to issue a law or announce a decision in order to sense its success. More important, it is to work hard on both levels; the governmental and community level to gain a stronger support upon the subject matter. In the international building exhibition Emscher Park (IBA) in the 10 years from 1989 to 1999 the issue of the residential settlements played again a big role where a lot of buildings were 'instandgesetzt' repaired and the overall housing conditions were improved (Mainzer 2007).

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[37] An Ensemble: eine Mehrheit von baulichen Anlagen , Bayerische Denkmalschutzgesetz but also according to the law in other Laender of Germany. (Guratzsch, 03/14/2013)

5.4.2   SOCIAL RESISTANCE

The role of communities towards their cities and neighborhoods is growing. Sometimes their inclusion is encouraged by international charters, other times by local authorities who legitimize their role by putting new policies; however there are also other cases where the community gathers trying to intervene in certain processes convinced of their important role against malfunctioned-responses.

The Agenda 21, the key document approved at the Earth Summit in Rio de Janeiro, promotes the work with all sectors of our communities; citizens, businesses, interest groups when developing 'our' local agenda plans (Aalborg Charter, 1994). On the city development level the Agenda 21's motto was *'think global act local'*, on the neighborhood-scale this 'local-action' seems possible where a small group of the community with common interest is in the center of the action (Hopfner & Zakrzewski, 2012); to enable communities to deliver their own future (Brown & Pembroke, 2008; O'Rourke, 2008). The Post-2015 Agenda concerning sustainable development goals SDGs did also confirm its full respect to Agenda 21 (United Nations, n.d.). '*Citizens are the Key Actors and the Involvement of the Community is essential opportunities for education and training for sustainability* (Aalborg Charter, 1994). *'Leading from below: the Contribution of Community-Based initiatives'* (Rowe & Robbins, 2000)

The civil society is the public associational realm between the state, the market and the private sphere, including any association formed to pursue public collective purposes, from non-governmental organizations (NGOs), community-based organizations (CBOs) (Huber, 2004). As Benton-Short & Short (2008) illustrate *social resistance*, it is a response that usually happens in rich areas with high social standards. He gives examples of occurring problems within a certain neighborhood or city such as having high traffic, over-filled schools and local property taxes that can encourage local resistance. This happens when residents begin to resist the development movements that entail an increased growth within the tackled complaining area (Benton-Short & Short, 2008:224). Looking at the Egyptian experience it is also clear that heritage-driven social resistance has appeared in different Egyptian cities and neighborhoods as a counter-reaction against unwanted development and growth that does not respect the value of its buildings. These are rather educated and intellectual people. In other areas with poorer conditions, the need for a social resistance becomes even more important yet challenging. In that case there are initiatives such as save Cairo which are rather concerned with the big scale city and they are able to face the single cases of encroachments happening on buildings in poor areas (see Save Cairo[38])

The more powerful the local residents are the more efficient it is to oppose investors and politicians stream of development. Wealthy and well-organized residents '*affirm their shared values*' being afraid for example from the outsider residents described by Benton as the nouveaux rich that might disturb their '*traditional moral code*'. Moreover, he elaborates that it is sometimes very efficient to have connections to political bodies being able to form a pressure or support the pressure group created by the local residents (Benton-Short & Short, 2008:224). Again, when observing the Egyptian situation, focusing on Heliopolis Heritage Initiative (HHI); it had its initial power and influence through a political support in 2011; and by dissolving the parliament the Initiative became weaker striving up till now to have a say in fateful decisions concerning their neighborhood, Heliopolis (see 4.4.2). They are volunteers who seek to return back the quality of life that used to be there when they were kids. One of

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[38]Save Cairo available under: https://www.facebook.com/SaveCairo/info?tab=page_info

their challenges is that they as an initiative don't have a strong organizational structure. Currently, they are trying to have a more formal structure to become an NGO however this stage is not reached yet (A. Mansour, personal communication, January 5th, 2014).

The diversity of types of grassroots reflects the search for appropriate solutions for problems on spot (Heyder et al., 2012). Seyfang & Smith (2007) describe sustainable neighborhood-communities as "*networks of activists and organizations generating novel bottom-up solutions for sustainable development; solutions that respond to the local situation and the interests and values of the communities involved*" (Seyfang & Smith, 2007). From a sociological perspective the small scale citizen groups offer the chance for long-term sustainable live-patterns (Heyder et al., 2012:205). They are locally situated and context-related processes for sustainable neighborhood-development (Heyder et al., 2012).

Community-based initiatives face some challenges as they are relatively fragile (Heyder et al., 2012). That is why it is emphasized that long-term internal structure formation is crucial to stabilize their activities against surrounding influence (Seyfang & Smith, 2007:598; Heyder et al 2012:208). Their success depends on having enough resources (Seyfang & Smith, 2007:597), and the ability of turning the individual potentials of the members to become an institutional learning (Seyfang & Smith 2007:596). Funding constraints inhibit experimentation (Heyder et al., 2012; Seyfang & Smith, 2007). These challenges are clearly seen in the case of Heliopolis Heritage Initiative, where the political situation is a barrier facing their goals having no enough resources or funds.

Local initiatives' target is to find contextual solutions that suit the local community to achieve a sustainable live-pattern in the designated neighborhoods where the participation in such initiatives is not based on technical expertise but on the will of the members for shaping a positive environment (Heyder et al 2012:209). In retrofit or heritage related initiatives the whole community benefits putting the question of "what is considered heritage; trying to recognize the role of Heritage in linking people with place (Brwon & Pembroke, 2008). Last but not least, the diversity of initiative members is beneficial for a better quality of outcomes (Brwon & Pembroke, 2008:26-27).

Chapter (6): Sustainable Heritage Preservation

'Re-energizing historic areas saves resources and promotes socially, culturally, and economically rich communities' (Cooper, 02/03/2010)

6   SUSTAINABLE HERITAGE PRESERVATION

How are cities being managed in order to decrease the negative impacts on the environment promoting sustainability (Benton-Short & Short, 2008, p.223)? In the past hundred years urban growth became a prevalent phenomenon of all types of cities, apart from their size or development. Life patterns and thus urban patterns have changed. People who used to walk to find their needs tend to depend more on vehicles (Benton-Short & Short, 2008:223).

Moving a further step, the theoretical part then discusses 'sustainable heritage preservation' in this chapter as an eligible response within small urban areas against urban growth spills, building loss and decaying quality of life. It starts with introducing the approach of sustainable urban development presenting the prevailing principles of a sustainable neighborhood. It then moves to explain the sustainability pillars and criteria. In addition to social, economic and environmental aspects, cultural aspects seem to have a high importance discussing historic preservation and its principles. Finally, the chapter concludes with a 'reconciliation' section clarifying how the previously conflicting concepts 'preservation' and 'sustainability' can congregate together in harmony finding common goals to assure desired qualities in future heritage neighborhoods.

6.1   SUSTAINABLE URBAN DEVELOPMENT

> *Sustainability and sustainable development are fluid concepts (Strange 1997:232)*

'*Cities cannot continue consume their resources in an unsustainable way*' (Benton-Short & Short, 2008). While in the late 90's (1997), the application of sustainability to planning and development process in historic cities was new (Strange 1997:229); the consideration of sustainability measures within the construction and retrofitting field has been increasing in the last years recognizing single buildings, neighborhoods and cities either new or existing (Benton-Short & Short, 2008).

Sustainability is a term that took some time until it reached its mature definition and scope; from the pre-Brundtland period to the sparkle of the Brundtland-Report 1987. From that point onward there were a lot of efforts done in this field coming up with Agenda 21 in 1992 followed by RIO+10 in 2002 (Adinyira, Oteng-Seifah, & Adjei-Kumi, 2007), and the most recent Rio+20 in 2012. There is no one rigid definition for sustainable development (Benton-Short & Short, 2008; Wheeler, 2004) The commonly accredited definition is of the Brundtland Commission (1987) stating that sustainable development is a *'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'* (United Nations, World Commission on Environment and Development, 1987:8) *as well as ensuring the enjoyment of culture and its components by all,* (United Cities and Local Governments, n.d.). It is also 'improving the quality of human life while living within the carrying capacity of supporting ecosystems; as defined by the World Conservation Union in 1991' (Wheeler, 2004:23). In Sustainability the local and the global belongings become as significant to be protected (Benton-Short & Short, 2008:232).

Sustainability as a notion aims to protect the environment that was neglected for decades in all fields of development; in addition it seeks the interdisciplinary approach combining its

pillars together. Sustainability in the urban context is characterized "as inter-generational equity, intra-generational equity, protection of the natural environment, minimal use of non-renewable resources, economic vitality and diversity, community self-reliance, individual well-being, and satisfaction of basic human needs" (Adinyira et al., 2007).

6.1.1   LOCAL APPROXIMATION OF SUSTAINABILITY

Each country has its own set of challenges, problems and needs. The goal is to contextualize sustainability in a way that commensurate with the prevailing economic, social, environmental and cultural conditions. *'...each country must develop a local approach to sustainability which responds to its specific socio-economic and environmental needs'* (El-Gendy, 09/13/2010)*; however, there are general principles that can be followed. Steering Egypt's much-needed development in a more sustainable direction is not only the right thing to do for the environment, but is also an economic necessity* (El-Gendy, 09/13/2010). The 'ameliorist approach to sustainability' is a suitable approach within the Egyptian context where the decision makers distinguish between compensatable and critical resources as introduced by Strange (1997), seeing what can be replaced (compensatable resource) and what is irreplaceable (critical resource). This approach to sustainability is against stagnation or freeze of the development corridors within a neighborhood; however decisions related to demolition, renovation, and adaptive reuse must be upon justified criteria and for the benefit of the whole neighborhood. Development is the planning of change' (Meier, 2010:34). In the Egyptian case the question of what is compensatable and what is critical can be answered taking into account the categorization of buildings A, B & C developed by the National Organization of Urban Harmony (NOUH).

6.1.2   SUSTAINABLE NEIGHBORHOODS

Neighborhood sustainability implies self-sufficiency, reducing inputs, using local resources, minimizing waste and making use of urban economies (Rudlin & Falk, 2009). In recent years, the neighborhood started to form the center of attention as an area for concretization and application when applying sustainable development principles, however focusing more on new neighborhoods while existing neighborhoods were rarely dealt with. Research projects dealing with sustainable development in existing neighborhoods were basically focusing on life-cycle management and sustainable reuse of single buildings (Hopfner & Zakrzewski 2012: 46) and this shows a research gap providing a path of further research and investigation as sought by this study. The objective of creating sustainable cities and neighborhoods is to reduce the use of natural resources (water, land, energy), lessen production of waste, try to avoid using toxic materials, consider inclusion of open spaces and green areas into planning, minimize transit means while encouraging cycling walking and using public transport, no distinction of a group within a gated community wasting land, consider safety issues, focus on affordability and inclusiveness producing a part of the needed food locally, climate responsive design of buildings (Benton-Short & Short, 2008), in addition to using less cars (Low, 2005). Sustainable development interventions differ from one neighborhood to another depending on its conditions (Hopfner & Zakrzewski, 2012). Applying sustainability measures on a neighborhood scale is a precondition for achieving sustainability on a larger scale (Hamedani & Huber, 2012:122).

Existing neighborhoods, which are denser, compact and walkable, are smart locations benefitting from the vicinity to different amenities that tie the residents to their community. These are not newly invented trends, however it's a call for returning to the paradigm of traditional neighborhood development (USGBC, 2013). Addressing transportation is crucial

in developing countries where they have not invested much in transportation. *'Megacities need a comprehensive regional transport plan to adequately deal with the congestion'* (Benton-Short & Short, 2008:249). The other problem in developing countries is the catching up of the middle class to reach a higher level by owning a car by the first income increase (Benton-Short & Short, 2008:249). This is what has happened in Egypt with the ease of getting bank loans along with taking advantage of the subsidized fuel (which was partially removed in July 2014); many people of the middle class sought the ownership of a car leading to more congestion. In addition, the failed traffic management in Egypt urged the private sector to inject inefficient mini-buses driven mostly by diesel for the sake of transporting low-income people; traffic congestion, double and triple road parking are only natural consequences (El-Gendy, 09/13/2010).

In recent years, the construction industry in many countries focuses on sustainable development (Streck, 2005:10). Structural measures should not only be economically viable, but at the same time sustainable, environmentally appropriate and socially acceptable (Streck, 2005) as sustainability is a perspective of collective actions side by side (Heyder et al. 2012:197). Only through concrete goals and actions one can achieve recognizable sustainability within the neighborhood. No abstract goals, they have to be perceptible and operational which the actors and the neighborhood can recognize (Meisel 2012:243).

At neighborhood-actors level different weights can be given for sustainable development aspects prioritizing sustainability dimensions (Meisel, 2012:243-245). Different weights may result from the already available position of the neighborhood, from logics of group affiliations or system, or from personal assessments. Thus neighborhoods may already meet certain requirements, so that other sustainability dimensions may gain importance in the future. Criteria must systematically be determined and weighed in structured appraisal processes testing their consequences on the existing Neighborhood (see Dahlhaus & Meisel, 2009 in Meisel, 2012:245).

6.1.3   NEIGHBORHOOD SUSTAINABILITY CRITERIA

After a thorough investigation of the literature it was possible to recognize that the majority of scholars and resources talk about sustainability and sustainable urban development using almost the same bundle of criteria such as *compact city development, mixed land-uses, land efficiency, protecting biodiversity and the natural environment, local food production, walking and cycling privileged, efficient water, energy and waste management, efficient public transport, high quality public spaces providing public culture and equity, legible physical structure, visually appropriate, maximizing economic performance, planning the future city and social inclusion* (see Barton, 2000; Kenworthy, 2006; Benfield, 2013, Smart Growth[39], New Urbanism, Sustainable Development[40]). These principles are also discussed in the charter of New Urbanism[41], and Charter of European Cities and Towns towards Sustainability (Aalborg Charter) amongst others.

In the following section three different sustainability principles are being selected and discussed; New Urbanism, Barton's neighborhood Sustainability checklist (Barton, 2000),

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[39] Smart Growth available online at: http://www.smartgrowth.org/
[40] Sustainable Development available online at
https://sustainabledevelopment.un.org/topics/sustainabledevelopmentgoals
[41] Charter of New Urbanism available online at http://www.cnu.org/charter

and Benfield's[42] additions concerning highly dense cities (Benfield, 2013). These principles will form the first draft of a criteria-based catalogue that will define later the sustainable state (SS) of a heritage neighborhood as sought for by this study (see chapter 7 and chapter 10). New Urbanism is used as it has the thick-line principles of urban sustainability suitable for existing neighborhoods. Barton's sustainability criteria do deal of the same principles yet proposing a well-structured table that would be beneficial to start with for the study at hand.

'The New Urbanism is a movement that seeks to restore the civil realm to urban planning and a sense of place to our communities. It is a tangible response to the failed Modernist planning that has resulted in unchecked suburban sprawl, slavish dependence on the automobile, and the abandonment and decay of our cities' (Katz, Vincent Scully, Bressi; 1994). It has appeared in the late 1980's and early 1990's against prevailing development patterns (CNU[43]).   'The *New Urbanism model is a nostalgic sense of community and neighborliness, longing for a lost community'* (Benton-Short & Short, 2008:227)*;* creating a better future. It reforms the design of the built environment, and is about raising the quality of life and standard of living by creating better places to live. New Urbanism is a response to urban-sprawl that emphasizes on vitalizing the old urban centers. It involves fixing and infilling in addition to the creation of compact cities[44]. It calls for restoration of existing urban centers conserving natural environments and preserving the built legacy. It believes that physical solutions alone are not enough, as they don't solve economic and social problems (New Urbanism Website)[45].

Barton (2000) has developed a list which he called 'a Sustainability checklist applied to neighborhoods' (Barton, 2000:9). According to him the sustainable principles to be applied on neighborhoods are divided into 6 sections. The first three deal with the environmental pillar of sustainability comprising the *Global Ecology, Natural Resources, & Local Environment.* The second two deal with social aspects; *Social Provision & Social sustainability* while some urban and cultural criteria where embedded within his division such as *heritage as the sense of place & design reflecting distinctive landscape and cultural heritage.* His division reflects the relative importance he has put to the different pillars when dealing with neighborhoods where environmental aspect are on top.

Benfield's contribution (2013) is considered an addition as he deals with high density cities' where a reflection on Egyptian neighborhoods would be significant. In his article '*10 Principles for Making High-Density Cities Better'*, Benfield claims that while a low-density city is inefficient, a very high density city can also bring over unwanted problems. The critical issue here is how to get the right city density, or specify the threshold and thus rarefaction of densities in case of highly dense cities becomes a goal instead of compactness. He talks about the future of dense cities and the options for a sustainable development within rigid boundaries. Significant criteria are the criterion concerned with *relieving densities, and plan for long term renewal & growth* draw a framework for city and neighborhood development.

The following table shows an amalgamation of the three mentioned resources. The criteria of this table form a basic construct for the sustainability criteria catalogue that should be attained by the end of the study in addition to other heritage related criteria and additional suggestions by experts that will be shown in a further table (see section 8.3 and 10.4).

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[42] Benfield is one of the co-founders of the Citizen's Guide to LEED-ND.
[43] Charter of the New Urbanism CNU Available online at: http://www.cnu.org/who-we-are/movement
[44] http://www.newurbanism.org/newurbanism.html
[45] www.newurbanism.org/newurbanism/principles.html

Table 6-1 Sustainability principles of New Urbanism, Barton's Sustainability checklist and Benfield's points towards dense cities developed by author

Barton's Sustainability checklist (2000)			New Urbanism	Benfield (2013)
Sustainability principle		New NH development		
Global Ecology				
Climate Stability	Energy in Transport	Locations that minimize trip lengths, and are well served by public transport	Green Transport encouraging Train networks, Bicycle ways & walking	Prioritize green transport and building options
		Design that fosters walking & cycling & discourages car reliance	High quality pedestrian and cycling network	
			Decreased dependence on vehicles	
			Walkability implies 10 min walk of home & work; Pedestrian streets free of cars	
			Connectivity implies Existence of Intersecting street networks & Hierarchy of streets	
	Energy in Buildings	Energy-efficient built form & layout		
		Development of Community renewable energy		
	Biodiversity	Wildlife refuges and corridors		
				Draw nature closer to people
			Encouraging local production	
Natural Resources				
	Air quality	Traffic reduction & air quality management	Sustainability implies Eco friendly technologies Energy efficiency	

			Minimizing use of finite fuels	
	Water	Local sourcing & demand management		
		Local surface water/ sewage treatment, aquifer recharge		
	Land & Soils	Higher densities to reduce urban land take		Make public spaces work harder
		Local composting/ organic recycled building materials		
	Minerals	Locally-sources & recycled building materials		
Local/Built Environment				
	Aesthetic quality	Attractive pedestrian-scale local environment	Quality architecture & urban design Aesthetics & human comfort	
			Increased Density More efficient use of services	Relieve density with variety and add green boundaries
	Image & Heritage	Legible environment with sense of place		
		Design reflecting distinctive landscape and cultural heritage		
Social Position				
	Access to facilities	Accessible, good quality health, educational retailing & leisure facilities	every-day needs are accessible by foot	
	Built Space	Diverse, affordable good quality housing stock	Mixed housing Diff. types, sizes, price	
		Adaptable, good quality commercial/institutional space		
	Open Space	Accessible, well run parks/		

		playgrounds/ playing fields/ allotments		
	Infrastructure	Adaptable, easily maintained road & utility networks		
Social Sustainability				
			Quality of life create and revitalize livable places	
	Health	Pollution-free environment facilitating healthy exercise, local food production & mental well-being		
	Community safety	Safe traffic-calmed streets with good visual surveillance		Activate spaces for greater safety
	Equity & Choice	Access to housing for all social groups	Diverse community structure	Embrace diversity, foster inclusiveness
		All facilities easily accessed by foot or public transport, with special attention to needs of children and the disabled	Mixed-use & diverse People, ages, income culture, races	Develop affordable, mixed-use neighborhoods
		Neighborhood social balance & continuity		
				Forge "3P" (people, public, private) partnerships
Economic Sustainability				
	Job Opportunities	Diverse & accessible job opportunities with good local training services		
	Economic buoyancy	Encouragement for local offices/workshops, home-working and tele-centers		

			low-rise residential zones yet with high density distribution for an efficient use of the existing infrastructure	
			Traditional neighborhood structure Has a defined edge and center Quality public realm	
				Plan for long term growth and renewal
				Promote innovative & non-conventional solutions

6.2 HISTORIC PRESERVATION AS A SUSTAINABLE MEASURE

'Historic Preservation is inherently green'
(USGBC, 2013)

'Sustainability begins with preservation'
(WBDG Historic Preservation Subcommittee, 2014)

It is a response against the demolition of historic and old buildings that reflect an image of a neighborhood or a city; calling for retaining the valuable assets that has historic roots reflecting different periods over time and are worth preserving (Benton-Short & Short, 2008). It is an ongoing process even if it deals with the past (Allison & Peters, 2011:29). '*Preservation is the act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property*' (U.S. Department of the Interior, 1995). '*The Qur'an teaches us that while man may make use of nature for his own benefit, he also has a duty to nurture it. This must extend to architecture and to the natural materials used by our forebears to create their homes and settlements*' (Abdul Aziz Al-Saud, Nouf, 2011).

A preserved urban area consists of the original layers with their values and present day meaning which form its status within the historic context (Sedky, 2009:113). Ruskin[46] and Viollet-le-Duc[47] and their followers have shown diverse approaches to historic building preservation and conservation. These extreme viewpoints were fine-tuned over time and basic intervention strategies for preserving buildings where developed (Tyler, 2000).

Preservation is maintaining the asset without major alternation to its present condition safeguarding the structure against further threats (Benton-Short & Short, 2008; Tyler, 2000). It accepts the changes that happened over time to a building having different layers, maintaining its original fabric and integrity as much as possible(Streck, 2011:23). It can be divided into two different measures: inspection (*Inspektion*) and maintenance (*Wartung*). inspection is the action of identification and evaluation of the is-state (*Istzustand*) while maintenance is an action carried out for postponing the degradation of existing buildings (Streck, 2011).

As elaborated by Abu-Lughod (1978), the active facet of preservation implies regeneration and revitalization as the most dynamic approaches for a vivid, vibrant community and heritage where the reuse assures a continuous maintenance and the conscious regeneration is a 'sine qua non' for a healthy urban neighborhood (Abu-Lughod, 1978:65). When planning new interventions within the inherited urban-scape, it is important to respect the nature and peculiarity of the space for the nostalgia and also to ensure that all the urban elements, from buildings and intermediate spaces function and continue working in harmony as a complete whole (van Oers, 2010:12). Revitalization as the active facet of preservation is the ''*process*

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[46] called restoration "a lie from beginning to end."
https://shareok.org/bitstream/handle/11244/9069/Jackson_okstate_0664M_1794.pdf?sequence=1
Ruskin is an art& architectural critic of the 19th C.with the philosophical approach 'anti-scrape' advocating the retention of changes and additions to the built assets as they reflect the differetn historic layers (Wells, G. T., 2008)8
[47] restoration as "re-instating it [building] in a condition of completeness that could never have existed at any given time." https://shareok.org/bitstream/handle/11244/9069/Jackson_okstate_0664M_1794.pdf?sequence=1

through which the deterioration and decay of a historic urban quarter can be addressed terminated or reversed'' (Doratli, 2000:32 in Doratli et al. 2004).

To maintain and enhance the physical and social fabric of historic cities upon which their localness and economic vitality is based, policymakers and planners should be aware of the required regulatory mechanisms (Aalborg Charter, 1994). In other words, urban preservation and revitalization can be achieved only if it is envisaged in a wider policy context; 1) linking between preservation and socio-economic opportunities from a sustainable perspective 2) inject strategies for building a multi-faceted portfolio of policy options, 3) financial and managerial mechanisms generating incentives for public-private partnership" (Bizzarro und Nijkamp 1998:193–194). In this research study the term preservation is the rather broad term embracing the above mentioned explanations.

6.2.1 PRESERVATION PRINCIPLES: ADDITIONAL CRITERIA FOR THE CATALOGUE

There are different preservation principles that are important when dealing with existing heritage neighborhoods. Authenticity and Integrity are two important "Qualifying conditions" that are essential in the nomination for the World Heritage List (Stovel, 2007). Authenticity entails maintaining the original function of the property, to ensure its preservation, which often had to be adapted to other functions (Von Droste & Bertilsson, 1995:3 in Srovel 2007:2). It is also the ability to secure/sustain significance of a property (Stovel, 2007). Integrity as a qualifying concept is the "*ability of a property to convey its significance*" (Andrus & Rebecca, 2002; Stovel 2007:23); seeking to inscribe only places offering genuine material testimony to important historic periods and manifestations (Von Droste & Bertilsson, 1995:4).

Stovel (2007) introduces six sub-criteria under the notions of integrity & authenticity these are (wholeness, intactness, material genuineness, organization of space and form, continuity of function, continuity of setting) in relation to historic towns (Stovel 2007:32-33)Table 6-2.

Table 6-2 Stovel's criteria of heritage preservation and conservation

Stovel's sub-criteria under integrity and authenticity	
Cultural criteria towards sustainability	Description
Integrity	the "*ability of a property to convey its significance*"
Authenticity	the "*ability to secure/sustain significance of a property*"
Wholeness	All outstanding elements of a historic quarter that make it a complete whole.
Intactness	The good physical state of repair of a historic quarter. Physical, social and economic conditions should support efforts to maintain its outstanding values.
Material genuineness	Calls for surviving historic valuable fabric should be protected. Either protecting original material or material from a particularly important phase of city development; or to protect the material testimony of successive phases over time
Genuineness of organization of space & form	Comprises of the particular patterns of spatial organization (urban layout of streets and spaces) which contribute to the outstanding value of the property should be present and legible.
Continuity of function	Ensuring continuity of function over time however if functions

	became obsolete, efforts should be in place to encourage compatible functions avoiding obliteration of earlier functions.
Continuity of setting	The extent to which the current setting of the settlement maintains the quality of the setting. Development controls in an associated buffer zone should be sufficient to protect the character of the existing setting.

The developed sub-criteria of authenticity and integrity introduced by Stovel will be included to the sustainability criteria catalogue developed by the research at hand as they are relevant aspects that might be important when dealing with heritage neighborhoods. How important these criteria are within the Egyptian heritage neighborhood context, this will be discovered after conducting expert interviews (see Chapter 9and 10)

Preservation and renewable energy sources. There are cities and communities who invest in historic preservation to attract investments and to create job opportunities. Linking the preservation and the use of renewable energy sources can help mitigating the negative impacts of climate change becoming more sustainable and economically viable in the long run (Girard 2006:2).

Energy conscious conservation: In order to transform urban and regional economies from running non fossil fuels to operating through energy conservation and energy efficient renewable sources, new technologies and techniques must be tried and tested (Girard, 2006:5).

Cultural heritage and urban sustainability: The cultural built environment is an asset of both historical and socio-economic importance in any society. It serves as an identification and orientation point for all individuals and communities. Preservation of the cultural built heritage (CBH) should therefore be based on resource-efficient principles in order to properly respond to the contemporary demands on scarce historical resources. Heritage Preservation is thus a fundamental strategy through which groups of different socio-cultural backgrounds are able to preserve their socio-cultural identity. The cultural built heritage should be therefore preserved for its externality value for the wider community (Hubbard, 1993).

6.2.2   Existing- versus New Construction

There are fundamental differences between planning a new construction and dealing with existing ones. One of the biggest differences is the need to deal with real people and their interests in existing neighborhoods (Hawas, 2013). On the physical level while it is very flexible planning a new construction applying new technologies and adapting sustainability concepts, it is certainly more complicated when wishing to do the same with existing neighborhoods or buildings (see Streck 2011: 29-34). In a new construction the margin for design is quite wider while in the renovation it is limited (Streck 2011:29). Being a listed building as heritage or valuable building, puts more limitations (Streck 2011:30).

Also when talking about the location choice; in new developments choosing the location has a great impact on the overall sustainability of the project, however existing settings are rigid and not subject to change. As the location of the neighborhood is unchangeable and rigid, improving the transport connections and reachability are ways to recover the overall quality of the neighborhood (Hopfner & Zakrzewski, 2012:59).

Existing buildings have their own challenges concerning energy-consumption (Streck 2011:5). It is important to consider existing buildings as part of the functional city-structures where the quality of life is a current need while keeping construction action-cost low, environmentally friendly and socially compatible (Streck 2011:6). Renovation or retrofitting is more complex than new construction as the planners should be concerned with the historic construction style and the conservation beside the regular process of studying the actual built-physical and the building regulation and other regular requirements (Streck 2011:30).

Streck (2011) explains that neighborhoods that have emerged in the 20s and 30s have a good quality and reflect now a unique character which makes a wide consensus about preserving them (Streck 2011:6). Actually this applies also to the Egyptian case, where neighborhoods and buildings emerging before the 30s are valuable assets with high quality construction, aesthetic, and architectural value worth preservation while the descendant era saturated with industrial and socialistic ideologies do not reflect the same aspired quality (see section 11.1). The existence of inhabitants in the historic zones makes the work much complex than having a conservation project on a heritage site (of the antiquities that are not inhabited). In this case the site becomes yours. The fence is put so nobody can enter; providing a new cycle of life for the whole area (S. Hawas, personal communication, 10 April, 2013).

When the economic and social conditions change the pressure grows to rebuild every historic building. Old buildings lose their initial function and appear as redundant and here comes the role of Heritage preservation (Euskirchen, 2007:108). It is quite challenging to integrate the various needs for preservation and revitalization in addition to balancing economic development and considering environmental aspects within heritage neighborhoods (Doratli et al., 2004:331).

6.3   SUSTAINABILITY PILLARS

'...the trio of economic growth, social inclusion and environmental balance no longer reflect all the dimensions of our global societies (United Cities and Local Governments, n.d.).

Sustainability of cities means the consideration of a variety of pillars; the economic, social, environmental in addition to cultural ones when planning development in the city (Benton-Short & Short, 2008). This is a main reason for combining culture/heritage on one hand with social, economic and environmental requirements on the other to achieve viability of concepts. Using the concept of sustainability when dealing with heritage neighborhoods is important recommending the emphasis on the uniqueness of each place in terms of its history, human assets, physical and cultural assets, potentials, weaknesses, community capabilities (Duxbury, 2004:8).

Many entities such as UNESCO called for the inclusion of culture in the sustainable development process to be the fourth pillar; as culture confines what is meant by development influencing actions of people and therefore it is important to be protected by including it in policies (United Cities and Local Governments, n.d.). Neglecting culture in the development process can disrupt reaching sustainable development (United Cities and Local Governments, n.d.).

In addition to these four pillars the research study at hand puts the urban-related sustainability criteria in a separate pillar to reflect its importance within the designated context. Last but not least, and especially for the Egyptian context the research is urged to add another compartment which is not an extra pillar per se naming it overarching concept. It includes

central demands of sustainability that should be seen as essential pre-requisites without which achieving sustainable development is not possible within heritage neighborhoods.

6.3.1   ENVIRONMENTAL SUSTAINABILITY

"The Greenest Building Is...One That Is Already Built" (Elefante, 2007)

Buildings consume enormous quantities of the Earth's resources in both their construction and daily operation (Benton-Short & Short, 2008:240). The amount of energy consumption and greenhouse gas (GHG) emissions from buildings is astounding[48], accounting for approximately 40% of the total carbon emissions which puts the construction industry in a critical position (Elefante, 2007; Mazzoni, 2013; Merlino, 2011). This means that houses consume more energy than traffic and industry (Mazzoni, 2013). Reuse of existing buildings *'bypasses the wasteful process of demolition and reconstruction which makes reuse an essential component of sustainable development'* (Department of the Environment and Heritage, 2004; Yung, 2012) Thus great emphasis must be put on sustainable preservation of existing buildings and whole neighborhoods using renewable energy sources as a response to first stabilize and then reduce emissions of greenhouse gases into the atmosphere (Aalborg Charter, 1994).

Preserving existing buildings is an essential component for sustainable development (Carroon, 2010; Elefante, 2007; Hutchison, 2010:4). Environmentalists seek to mitigate the negative impacts of human activity and preserve the ecological systems preserving the limited resources (Hutchison, 2010). Existing buildings and complete neighborhoods have a great amount of the so called embodied energy (Carroon, 2010; USGBC, 2013). It is the total energy consumed directly and indirectly in the extraction, production, transportation and assemblage of materials into a building (Carroon, 2010:7; Hutchison, 2010; Fox-Kämper, Meisel, & Ulmer, 2009). In existing buildings the costs associated with the labor, processing, transportation, and construction have already been paid by previous generations and is not recoverable that is why it must be seen as an investment and the longer the building is in use, the better deal it becomes (see Caroon, 2010; Hutchison, 2010). This embodied energy forms 20% of the energy used for and from a building of 100 years. In this context every building starts with an energy account by the day of its existence, this includes scarce resources and energy (Carroon, 2010). Tearing a building down wastes this energy and requires even more energy and more raw materials to construct which makes reuse of buildings a must (Carroon, 2010). *"Renovation instead of comparable new construction results in impressive energy savings"* (Booz, Allen & Hamilton, 1979). *'Many historic buildings can be just as sustainable if they are properly maintained and operated'* (USGBC, 2013: 6). One of the main goals of environmental sustainability is to increase the intensity and duration of use of an existing building while reducing the resource-consumption (Fox-Kämper et al., 2009).

6.3.2   ECONOMIC SUSTAINABILITY

The values of the neighborhoods when well preserved can have an economical existing-value (Wittke, 2007); and through the commodification of heritage, the history becomes a dynamic asset connecting the local with the global (Strange,1997:229). For the Economists the

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[48] UNEP, "Buildings and Climate Change: Status, Challenges and Opportunities.," (United Nations Environment Programme, 2007). Available at: http://www.unep.org/publications/search/pub_details_s.asp?ID=3934

challenge is how to best allocate the limited resources in order to achieve human welfare (see Hutchison, 2010).

There are potential tensions between the need to encourage new business and investment while maintaining the integrity of the historic core; and between different forms of development (ARUP, 1995). In other words, personal benefits should have their limits and meanwhile the right of the living people should be respected in a sustainable approach. Including the principles of sustainability in the policies, creating locally appropriate strategies (Aalborg Charter, 1994) can ease these tensions. This can be done through Integration of environmental protection with economic development under sustainable development (Strange 1997: 229). Historic commercial buildings play the natural business incubator role, usually with no subsidy or assistance of any kind (Rypkema, 2005).

Creating jobs which contribute to the sustainability of the community reduce unemployment. When seeking to attract or create jobs, assessing the effects of any business opportunity in terms of sustainability in order to encourage the creation of long-term jobs and long-life products in accordance with the principles of sustainability' is important (Aalborg Charter, 1994:2). For competitive historic cities preservation becomes a necessity (Strange 1997:229); where 'branding' and place making are important features encourage shaping the local identity and pride (Duxbury, 2004:8). The concept of branding and marketing of culture is included in planning policies in many cities; however it is important to always focus on the meaning of culture within the built environment (Temple, 2012: xix).

The benefits of historic preservation outweigh the costs; monetary profits are quite difficult in conservation (Mason, 2007). However, boosting economic conditions promises a longer life for preserved historic neighborhoods. *On the longer run, economic revitalization is required because ultimately it is the productive utilization of the private realm which pays for the maintenance of the public realm''* (Tiesdell et al., 1996:20 in Doratli et al 2004). The number of job offered within a neighborhood affects the demand for housing (Streck 2011:5).

6.3.3   SOCIAL SUSTAINABILITY

'For citizens of a community to feel a sense of belonging to a place and to each other, a symbolic landscape that embodies collective memory must exist' (Hutchison, 2010:10). Sustainable development is founded on the principles of integrational equity, transfrontier responsibility and social justice (Strange, 1997). Social justice should be based on economic sustainability and equity requiring environmental sustainability; maintaining the natural wealth (Aalborg Charter, 1994). Improving accessibility and sustaining social welfare can be achieved encouraging walking, cycling, and public transport as a priority (Aalborg Charter, 1994). Historic preservation can in some cases promote social equity providing affordable Housing (Hutchison, 2010:10) where the people are able to pay for their flats after revitalization which would probably need a governmental support in Egypt.

6.3.4   URBAN SUSTAINABILITY

Buildings as 'vortex of environmental consumption' should be revisited to see how energy efficient they could be (Benton-Short & Short, 2008). Green roofs reduce energy costs and

soak up rainwater and contribute to the reduction of Urban Heat Island[49]. In addition, it minimizes summer air conditioning needs, and winter heat demands, reducing CO_2, while providing bird habitat (Benton-Short & Short, 2008).

Urban land use patterns are ways in which urban society utilizes and defines their relationship to the physical environment (Benton-Short & Short, 2008). Existing neighborhoods which are denser, compact and walkable are smart locations benefitting from the vicinity to different amenities that thigh the residents to their community. These are not newly invented trends however it's a call for returning to the paradigm of traditional Neighborhood development (USGBC, 2013).

Green Spaces is an approach of vegetation within the city. It is not a pure aesthetic thing, more important it is considered as a basic element of the infrastructure (Benton-Short & Short, 2008; Low, 2005). Today, local supplies of fruit and vegetables are part of sustainability finding community gardens that grow food for local residents meanwhile reducing the energy required to transport food from far away (Benton-Short & Short, 2008); called local food Production (USGBC, 2009).

Green Transportation tries to encourage less dependence on cars which cause traffic and congestion resulting in negative environmental impacts such as local pollution and greenhouse gases (Benton-Short & Short, 2008:242). In a sustainable scenario people must be given the chance to move first by foot, then with a bicycle or with public transportation making the car the last in the hierarchy of use; furthermore implementing pedestrian paths, cafes and markets instead of offering parking lots and crowded streets (Benton-Short & Short, 2008; Low, 2005). Designating "congestion zones" which is paying a fee for entering crowded zones in order to reduce the car traffic while simultaneously enhancing the bus and taxi usage is an efficient measure (Benton-Short & Short, 2008).

The so-called 'city of short distances' is a model that calls for compactness (Reicher & Schauz, 2009:183) which is at the same time an essential sustainable aspect of cities and neighborhoods.

In-fill. Occasional iconic buildings as a new addition to an existing context is legitimate, however the concern increases when this type of architecture turns to be a substitute of the historic assets, shifting exceptions into rules which can have severe implications on the functioning of the city (van Oers, 2010:12). This is called In-fill when *Building within the existing tissue* (Haughey, 2001). It is any *new ... construction on vacant or redeveloped land as part of a mixed-use project, the meticulous renovation of historic structures, and the conversion of structures* (Haughey, 2001).

6.3.5 CULTURAL SUSTAINABILITY

'Without memory there is no imagination' (Pérez-Gómez, 2006). In that concern architecture is the bearer of cultural significance making it very challenging (Temple, 2012:xxii). Urban architecture has a significant role in shaping culture, its values and by traditions and

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[49] '*Many urban and suburban areas experience elevated temperatures compared to their outlying rural surroundings; this difference in temperature is what constitutes an urban heat island'*. United States. Environmental Protection Agency. Climate Protection Partnership Division. (2008).

aspirations. It is as a testimony for what has happened in the past and how it was done; (Temple, 2012: xix).

The strength of legislation and the level of political support leads to an effective heritage building or space preservation (A Guide to Delineating the Edges of Historic Districts, 1976 in Gale, 1991). Not only the embodied energy is to be counted but also *the embodied cultural history* (Cooper, 02/03/2010).

The City Identity along with the city image are important aspects in urban design that affect the attractiveness and marketability of certain places (Reicher & Schauz, 2009:183)

Under the umbrella of sustainable development resources may be *critical* and *compensatable* (ARUP, 1995; Strange, 1996 in Strange 1997:229). Critical resources are either natural or man-made which are not replaceable and cannot be lost. While the compensatable resources are resources that can be replaced opening a door for neighborhood development and growth (ARUP, 1995). There are different approaches to deal with these resources; purist and ameliorist approaches to sustainability. The purist sustainability approach calls for a retention of all resources identified as critical with an extreme restriction on physical and economic growth within the designated neighborhood boundary, however this approach could result into atrophy and stagnation of the neighborhood, weakening its fabric and decreasing the economic return (Strange 1997) reaching a kind of stagnation while the ameliorist approach on the contrary allows the loss and replacement of some compansatable buildings, keeping critical resources, adopting a selective scenario for change (ARUP, 1995 in Strange 1997:232). The success of neighborhoods to achieve the desired goals depends on the cooperation of planners and logic in addition to all related parties. Thinking of integrative concepts can guarantee success when intervening (Meisel, 2014).

6.3.6   OVERARCHING CONCEPTS

This compartment is formed to put emphasis on necessary pre-requisites such as the importance of the existence of a long-term plan, land-use plan and a vision for the neighborhood and the city as a whole. Effective land-use and development planning policies are important and should be recognized by local authorities embracing strategic environmental assessment of all plans. Providing efficient public transport, higher densities, mix of functions reduce the need for mobility (Aalborg Charter, 1994). In the *Estidama* documents it is stated that any project carried out should be in compliance with the relevant Plan 2030 aiming *to conserve, preserve, and restore the region's critical natural environments and habitats* (Abu Dhabi Urban Planning Council, 2009).

6.4 RECONCILIATION OF HISTORIC PRESERVATION AND SUSTAINABILITY

'Sustainability and preservation principles are complementary' (Campagna, 2013)
"*Incorporating historic buildings into a development project is a green building strategy*"
(USGBC, 2013).

Sustainability is not only concerned with what is new, it also includes strategies that aim to mitigate the negative impact on the environment that could work perfectly in the case of historic preservation (Cooper, 02/03/2010). Historic buildings are unique, and they inherently are sustainable in some way conforming to the local conditions (Cooper, 02/03/2010); such as having high ceilings and canopies, arcades and so on.

The insertion of sustainability concept with conservation and development in historic cities is a challenging task (Strange 1997:232). The success of it lies in an increased awareness that can make beneficial use of the synergy and develop a common ground for work (Cooper, 02/03/2010) trying to find a point half way were the preservation can benefit from the sustainability measures and were the sustainability respects and integrates cultural values that are also important for a holistic consideration of all aspects, where they both share the values of preserving the valuable resources for future generations (Cooper, 02/03/2010). Being careful guards of the valuable and finite resources, this is the thing preservation and sustainability have in common (Cooper, 02/03/2010).

Culture is basically not obliged to think of feasibility and economic, social and environmental matters but sustainable planning does; it focuses on all aspects of future life. Nevertheless, the act of preserving historic structures, landmarks, and landscapes is a gift to future generations, so that they may appreciate the rich and complex foundation on which modern society has been built. Retrofitting historic buildings using green building practices provides a unique opportunity to stitch past together with future and create vibrant places that are socially and culturally connected, and responsive to the needs of the communities they serve (USGBC, 2013:4).

'One movement seeks to wisely use energy, water, and materials, while the other seeks to revitalize historic buildings for current use in ways that maintain their rich heritage' (Cooper, 02/03/2010). Some planning and preservation professionals may believe there is no connection between historic preservation and livable cities. However, these two fields which seem to be in opposition are put together to protect the cities for people (Allison & Peters, 2011). The importance of historic preservation as part of sustainable urban development started to gain more recognition as it has proven that it is not preserved for nostalgic motives only, but also to achieve harmony of the complete whole and preserve the embodied energy avoiding extra polluting emissions.

Heritage preservation is not an independent activity to be carried out, on the contrary it is a process that should be best included on an integral sustainable development strategy on the different scales, best manageable on a neighborhood level. Sustainable Preservation is "*part of an economic development strategy and part of an energy conservation and renewable resources utilization strategy*" (Girard, 2006:2). The preservation and reinvestment of the current building stock saves a great amount of energy, avoids demolition and generate more jobs than constructing from scratch, increases tourist revenues and above all *conserves the historic identity and socio-cultural heritage* of a neighborhood (Hutchison, 2010).

Reinvesting in old neighborhoods takes advantage of compact design, develops existing communities, preserves open space, mixes land uses, and creates walkable neighborhoods that possess a sense of place (Rypkema 2005 in Hutchison 2010:9). United States Green Building Council (USGBC) has come to accommodate and complement historic preservation standards stating that *'preserving existing buildings is a critical component of sustainable development'* (Hutchison, 2010, 2-3).

Sustainable preservation strategies are designed to protect and improve the architectural and urban values providing social and economic benefits and at the same time aims to improve the quality of the urban environment increasing the use of renewable resources and reducing energy consumption (Girard, 2006). Strange (1997) suggests applying sustainable development policies to the physical and social fabric of historic cities considering localized regulations for economic and physical growth reconciling between the conflicting demands of preservation and development (Strange, 1997:219-227). The conflict between development and preservation can be solved through better comprehensive planning and research. The functional integration of the different everyday activities such as housing, work, and leisure and minimizing the daily mobility-journey will contribute to a decreasing consumption of infrastructure, and energy (Girard, 2006:2).

It is important to abandon *the current compartmentalization of planning specialties (i.e. housing, transportation, land use, etc.),* working instead on a more holistic integration as advised by Benton-Short & Short (2008:254). Moreover, it is emphasized that the success of any sustainability goal is highly tied up into political and governmental issues, where a political will can promise a certain guarantee towards sustainable preservation when included in political agendas (Benton-Short & Short, 2008). Another aspect that see necessary in cases of threats upon valuable historic buildings are the protective ordinances[50] which help anticipating the future needs (Tyler, Ligibel & Tyler, 2009:176).

Duxbury (2004) explains that the presence of motivators is important in dealing with development (Duxbury, 2004:8–9)

- The collective will, political and public will
- Shaping a suitable community vision
- Strong Community Networks between organizations and individuals
- Strategic Resources: money, skilled people, aware community, connections
- Time distinguishing between what must be done immediately and what could be achieved in a further phase creating long term plans
- Flexibility: implementation that is reactive to problems and potentials while putting plans and visions

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[50] Protective ordinances are very useful measures to orient the development in the desired path without resorting to demolition and loss of historic buildings (Tyler, 2000)

SUMMING-UP THE THEORETICAL BACKGROUND

In this part II, the research illustrated the main elements that construct the research study work consisting of the existing heritage neighborhood approached by sustainable preservation (chapter (5)). The Neighborhood has two facets the physical spatial and the social that form together a complete entity. The neighborhood scale is a significant scale for intervention bigger than a building and smaller than a city. The recent heritage neighborhoods that have emerged in the 19th and early 20th century are seen as living heritage were people live, work, go out and shop. The recognition of recent heritage in the U.S. and in Germany started to gain attention early before in the Middle East; distinguishing between legislative attention and societal resistance to protect the heritage. Community-based Initiatives offer context-relevant and customized solutions to the citizens for a sustainable living.

In chapter (6) sustainable heritage preservation was discussed. Sustainability is a broad concept which basically consists of three pillars; the social, economic, and environmental pillars where some scholars call for the inclusion of a fourth pillar the cultural one. And for the purpose of the study criteria related to the urban aspects were put in a separate pillar and last but not least essential pre-requisites were put in a separate compartment called overarching concepts. Finally, this chapter argues that sustainable heritage preservation does not only encourage the building up-keep for cultural reasons and for the irreplaceable values but also for its embodied energy; thus, sustainability functions as an embedded concept in the practices of historic preservation. *By combining preservation principles and the concept of embedded energy a stronger argument for the environmental benefits of building reuse can be made* (Jackson, 2005:51).

How this theory will be utilized for the sake of the research study requirements will be clarified in the next part: Concepts, Operations & Methods.

Part III: Concepts, Operations and Methods

PART III: CONCEPTS, OPERATIONS AND METHODS

This part is mainly concerned with explaining how the research study will proceed in order to obtain answers to the research questions. Chapter (7) presents the conceptual framework of this dissertation which has adapted the DPSIR-framework to enable breaking down the research problem into smaller elements for a better understanding of the causal relations preparing for further steps. In chapter (8) Operational Sustainability Instruments different instruments are discoursed such as the sustainability certification instruments with a specific delineation of the LEED-ND which assess neighborhood performances against sustainability standards. This will help constructing the localized criteria-based catalogue which is proposed in this chapter (section 8.2) resulting from the investigated theories, concepts and principles translated into a simple criteria list working as a prelude to a maturer approach attained in chapter (10). Moreover, soft tools will be extracted mainly from the German experience in urban regeneration projects, such as strategies and measures adapted to control and assure a sustainable and well preserved urban environment which can be adapted by the study for further recommendations to relevant responses (R) within the Egyptian heritage neighborhood. Last but not least the research design and methodology are explained in chapter (9) explaining the mixed method approach based on a single case study elaborating which data collection methods are utilized.

Chapter (7): Conceptual Framework

'*Setting out bins, naming them and getting clearer about their interrelationships lead you to a conceptual framework*' (Miles & Huberman, 1994:18)

7   CONCEPTUAL FRAMEWORK

This chapter presents the Driving Force-Pressure-State-Impact-Response framework (DPSIR) adapted for illustrating the conceptual framework of this dissertation. It presents its origins and defines its different elements explaining why it is significant for the research at hand. In a following step the framework will be developed further by the researcher adding an extra element (SS) standing for the desired sustainable state sought for within the heritage neighborhood in addition to breaking down the response (R) into three different ones. The chapter then concludes with mentioning the schematic framework that will be applied in detail in chapter (11).

7.1   USING THE DPSIR-FRAMEWORK

The more complex and multifold the issue of sustainability and historic preservation within recent heritage Egyptian neighborhoods, the more it is important to set the current problems as clear and simple as possible to enable a smart approach to deal efficiently with the topic. Coming across the DPSIR framework developed by the European Environment Agency (EEA), was like finding the right keys to a closed door that the research wished to enter. The compartmentalization of the introduced framework will enable a clear categorization of the huge sometimes confusing information within the tackled issue at hand explaining some causal relations whenever necessary. That is why the research has adapted the DPSIR framework and developed it further in order to satisfy the research inquiries for a more comprehensive study with its specified problems which will be explained below.

In this DPSIR framework there are drivers that force human activities to exert pressures on the environment which affects the state resulting into impacts prompting a societal and governmental response through various policies and actions. The DPSIR organized structure highlights the interplay between environmental and socio-economic activities clarifying these sequential links supporting decision-making bodies and civil society to win an overview of the whole situation and gaining an evaluative feedback about the undertaken issue without overlooking important interconnections by indicating a clear step by step linkage in the causal chain where the chain can be broken by policy action (see OECD, 2012; EEA, 2007).

7.1.1   ORIGINS

In the 1970's the Canadian statisticians Friend and Rapport developed a stress-response model (SR) which is considered the base-stone for the DPSIR framework (Carr et al., 2007:544; Lin, Xue, & Lu, 2007:290; Susi-Wolff, 2010:51). Later in the 1990's the Organization for Economic Cooperation and Development (OECD) has developed the PSR-model (Pressure-State-Response) (Carr et al., 2007; Lin et al., 2007; Susi-Wolff, 2010; Wolfslehner & Vacik, 2008). This model was developed to help identifying relational causes and effects between the human being and his environment, organizing and assessing the interrelation among them illustrated through indicators (Bowen & Riley, 2003:303; Carr et al., 2007:544), see also (Lin et al. 2007:290).

Further developments to the model were carried out by the United Nations Committee for Sustainable Development expanding it into Driving Force-State-Response (DSR) framework (Carr et al., 2007; OECD, 2012) aiming to solve the problems occurring in the PSR by expanding the scope of pressure switched into a driving force and pressures (Carr et al.,

2007). Last but not least, the PSR has faced other developments to overcome its drawbacks reaching the DPSIR framework (Bowen and Riley 2003; Carr et al., 2007).

7.1.2 DEVELOPMENT

The DPSIR-framework was developed by the European Environmental Agency (OECD, 2012) to improve the socio-economic and socio-cultural aspects of environmental reporting (Bowen & Riley 2003; Lin et al. 2007) for wider use and application. *The DPSIR represents a systems analysis view: social and economic developments exert pressure on the environment and, as a consequence, the state of the environment changes. This leads to impacts on e.g. human health, ecosystems and materials that may elicit a societal response that feeds back on the driving forces, on the pressures or on the state or impacts directly, through adaptation or curative action* (EEA, 2007).

The DPSIR-framework has been criticized for creating a group of stable indicators that serve the analysis without considering possible changing dynamics of the system (Carr et al., 2007). It was also seen as a linear unidirectional causal chain of dealing with complex problems and that it cannot capture trends except by repeating the study of the same indicators (Carr et al., 2007:546). Carr confirms that the above mentioned critique of the DPSIR-framework lies on misunderstanding the framework by the critics and the ones trying to apply it to their own research. Carr et al., (2007) explain that it is not a model but rather a mean for categorizing and distributing information concerned with certain environmental problems. Karageorgis and his co-authors (2006) point out that in order to understand the causal relations within the framework one has to concentrate on the links between the different compartments (Driver, Pressure, State, Impact, Response) which makes it possible extracting some social and physical aspects out of the drawn framework (in Carr et al., 2007:546), and this is why this study aims to use the DPSIR-framework.

Within the DPSIR-framework there are elements that can affect the driving forces such as *national governments and international organization. They are the actors capable of addressing the 'root causes' of the environmental problem at hand* (Carr et al., 2007:546)*,* the response (R). It is a decision-support tool that breaks down a certain phenomenon into its different components that are linked together, identifying the driving force (D) usually economic and political conditions, human activities that create a certain pressure (P) which changes the physical state (S) having a clear impact (I) that can be divided into social, economic and environmental Impact. Stimulated by the impact a political response-action (R) is in process where prioritization, target setting, and using indicators takes place. This response can be structural (capital) or non-structural (legislative) (see Kristensen, 2004).

The DPSIR-framework gives a structure for the needed indicators to enable the feedback and response by the decision and policy makers who can manipulate the flow of the framework either to improve or worsen the state (S) and the resulting impacts (I) (Kristensen, 2004).

The arrows in the graph in Figure 7-1 reflect the chain of causation assumed by the framework, where a driving force (D) creates a certain pressure (P) that happens to change the state (S) which results into an impact (I) on the environment. The negative impacts stimulate a response that aims to ease the pressure improve the state and mitigate the negative occurring impacts (see Kristensen, 2004, Hák, Tomáš, 2007). As advised by Carr et al. (2007) the repetition by carrying out this exercise and by identifying the DPSIR-elements of the investigated case at even intervals can enable to capture trends in addition to giving efficient feedback or response (Carr et al., 2007).

Although the DPSIR-framework is used dominantly in solving environmental problems it can be also used in solving problems related to the physical environment such as cultural heritage. Hukkinen (2007) used the PSR-model to articulate scenarios with indicators in order to identify the value of built heritage. He illustrates his idea using the PSR-model stating that 1) there is an existing pressure (P) that induces 2) a change in the state (S) calling for 3) a conscious response (R) from people. Further, he mentions an example in the Finish context where different stakeholders can see pressure and state differently and accordingly assign totally different responses which he calls scenarios. Having a compromising or a synthesis response, they are both acceptable (Hukkinen, 2007:29-30).

The DPSIR-framework is widely used in solving natural environment related issues, while in this study similar to other studies it will be used applied on the built environment. It is adopted as the conceptual framework as the issue tackled in the study is quite complex and intertwined needing a method that puts the different elements of the problem in its right place showing the causal effect between them. Thus it is basically a problem structuring method (PSM) as introduced by (Bell, 2012). The previously mentioned critics are not touching the flow of the work as it will be used as a (PSM) which is interpreted as follows.
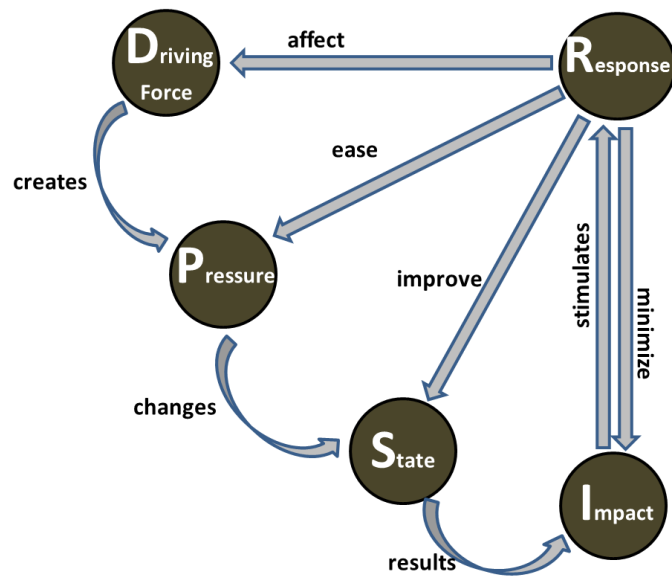
Figure 7-1 The generic DPSIR-framework as proposed by EEA (1999)

7.2 DPSIR ELEMENTS

The conceptual framework (a) identifies what will be included in the study,(b) describing relationships based on theory and logic, (c) enables the researcher to assign general constructs into intellectual compartments (Miles & Huberman, 1994:18).

7.2.1 DRIVING FORCE

A 'driving force' is a need. Primary driving forces for example the need for shelter, food, and water, while secondary driving forces are the need for mobility, culture and leisure (Kristensen, 2004). The driving force can be also explained divided into two types of causes; the underlying causes and immediate causes (Kristensen, 2004). The immediate cause is the cause clearly appearing on the surface of a specific problem, yet this problem is not the sole one; there are underlying causes that might have caused or exacerbated the immediate one. The underlying causes are the root causes found when digging into the problem trying to discover actions leading to the creation of the problem, investigating old political, social or economic decision that were made in the past and might have their effect seen on the surface now.

7.2.2 PRESSURE

Normally the driving force leads to certain activities to compensate needs, such as food or transportaion production. These human activities exercise a certain pressure on the environment; a) excessive use of environmental resources (such as emissions to air, water and soil; production of waste and production of noise), b) changes in land use, and c) emissions to air, water and soil (Kristensen, 2004). In the case at hand pressure can be also excercized on the society and the urban setting.

7.2.3 STATE

The state of the environment is affected through these exerted pressures resulting in a worse quality of the natural and built environmental elements (Kristensen, 2004; & OECD 1994 in Lombardi, 1998:179).

7.2.4 IMPACT

'Impacts are the ways in which changes in state influence human well-being' (Carr et al., 2007:545). The change in the environmental nature of things, called the state; has environmental and economic impacts on the functioning of the ecosystems, and human health in addition to the impact on the economic and social performance of the society (Kristensen, 2004).

7.2.5 RESPONSE

Responses are institutional efforts carired out to face negative impacts occuring to the state setting up priorities (Carr et al., 2007:545). The response is the reaction stimulated by the society or policy makers against undesired impacts and it has the ability to influence any element of the DPSI chain. It aims to change the state into a better one, simultaneously working on easing the pressure which led previously to the undesired state that resulted in different negative Impacts. Responses can modify the pressure and also affect the social and economic drivers (Vacik; Wolfslehner; Seidl & Lexer, 2007) depending on the effectiveness of the response (Kristensen, 2004). The response draws a strategy, it is translated into an operational plan (Vacik et. al, 2007).

7.3 INTRODUCING THE EXTENDED FRAMEWORK: DPSIR$_{(1,2,3)}$-SS

The generated conceptual framework is based upon a '*theory-driven*' framework which is extended in order to include all the main issues that need to be studied and explained showing the presumed relationships between them clarifying what will be studied (See Miles & Huberman, 1994:18).

In this part the author has developed further the DPSIR-framework in order to satisfy the requirements of the study, answering the main questions put and fulfilling the objectives aspired. As the research work seeks a definition of the sustainability-related qualities which describe the Egyptian heritage neighborhoods an extra compartment (SS) was necessarily added to the known DPSIR-framework. This should represent the sustainability qualities sought for within heritage neighborhoods and is called 'sustainable state' (SS). This (SS) is

put as the targeted goal for the state (S) that could be reached gradually through an efficient response (R). The extended DPSIR-SS-framework acts as a tool and conceptual framework. According to this advanced framework, it is hypothesized that the continuous feedback and evaluation of the response trying to find out suitable solutions for the occurring problems will change the state from a deteriorated unsatisfactory state (S) into a better state (S_1) seeking to reach a sustainable state (SS). In this case the state (S_1) is better than (S) resulting into an impact (I_1) better than (I). In this framework the state (S), the sustainable state (SS), and the response ($R_{1,2,3}$) are thoroughly explained as they build the main inquiries for answering the research questions.
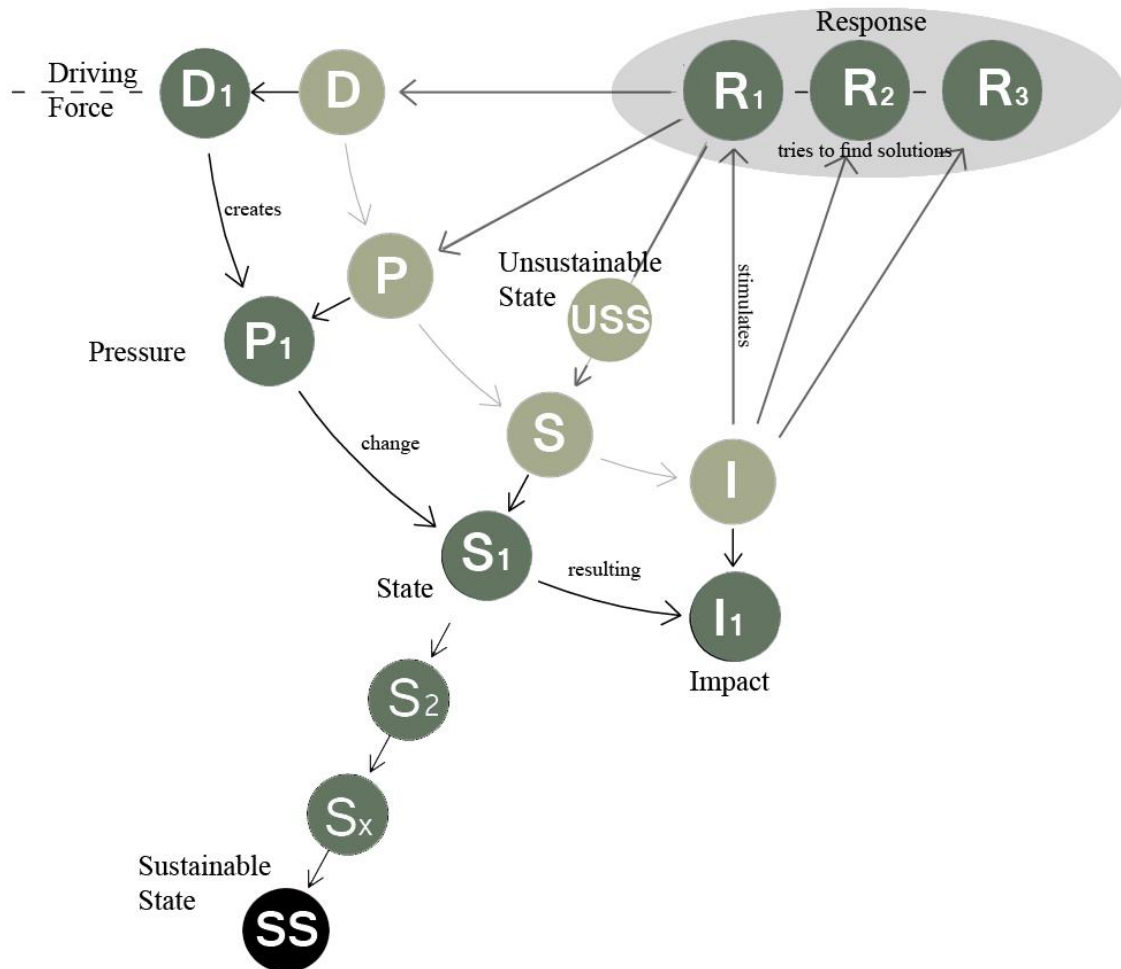
Figure 7-2 Extended DPSIR-SS-framework with the desired Sustainable State SS and the Response differentiating three types of powers as suggested by author

7.3.1 STATE DELINEATION

Evaluate the neighborhood (Ist-Zustand)

For the research study the state is defined as the status quo which can be specified and analyzed; distinguishing between *internal* and *external appraisal* of the Site under investigation. The Strength, Weakness, ("*Internal Appraisal*") opportunity and threat ("*External Appraisal*") will be identified carrying out a developed SWOT-analysis of the site put in a matrix with a detailed criteria-catalogue of urban, environmental, social, cultural, economic and overarching aspects developed by author.

The "*External Appraisal*" deals with broader scale impacts such as the political and socio-economic condition of the country that could manipulate and influence the historic preservation process of any designated neighborhood (see Doratli et al, 2004). In addition, the external appraisal is also vulnerable to any decisions on the city (governorate) scale that might harm or benefit the neighborhood and its assets. In this scale aspects are perceived as threats and opportunities that come from outside the neighborhood but have a direct impact on it. It is seen as the external pressure exercised on the neighborhood changing its state. If the external pressure is positive it can help leading towards a better State and if it is politically unstable, it can lead to negative state destinies. The internal appraisal on the other hand deals with the intimate scale of a neighborhood identifying the different qualities (see Doratli et al., 2004) dealing with environmental-, urban-, cultural-, social-, economic-, and overarching aspects. In this scale aspects are perceived as strengths and weaknesses.

#	**SustainabilityCriteria**	*Internal Appriasal*		*External Appriasal*	
		Strength	*Weakness*	*Opportunity*	*Threat*
1	Historic Resource Preservation				
2	Recording &Documenting Historic Buildings				
3	Walkable Streets				
4	Preserving Unique Urban Fabric, 'Identity'				
5	Heritage Image				
6	Energy-efficient Transport				
7	Infrastructure				
8	Community Safety & Security				
9	Sustainability & Cultural Awareness				
10	Regulating Demolition of Historic Buildings				
11	Accessible Public & Green Spaces				
12	Sustainable Building Guidelines/Code				
13	Plan for Long-term Renewal & development				
14	Public Health Provision				
15	Reuse of Historic Listed Buildings				

Table 7-1 state (S) assessment using sustainable state (SS) criteria developed by author

7.3.2 RESPONSE BY POWER DIVIDED INTO R1, R2, AND R3

Power and violence has an influence, however the first has a legitimate influence while the second a non-legitimate one (Lukes, 1974:29). Anthony Giddens defines power as the action that makes a difference in the world having two faces the social and the institutional; being everywhere in our everyday life (Hukkinen, 2008:103). Many scholars and theorists where and are interested in theorizing the term 'Power'. They are roughly divided into four groups. The first is the Socialist group or also known as *Elitist* who believes that power is highly centralized where the power structure is stable over time.

The second group known as the one-dimensional view to power: The political scientists or the *Pluralists* believe that power is diffused in their community where the decision[51] making power is mainly exerted from governmental positions after Dahl and Polsby (Parenti, 1970; Bachrach & Baratz, 1962:947). "*A has power over B to the extent that he can get B to do something that B wouldn't otherwise do*" (Dahl, 1957:202-203).

The third group known as two-dimensional view of power, are the criticizers of the previous view developing the two faces of power, they believes in the decision making power in addition to considering another non-decision-making power. According to Bachrach & Baratz the Power has two faces (Bachrach & Baratz, 1962:947). The second face the non-decision one occurs through the determination (shaping) of the agenda to be discussed and accordingly implemented, some elements are included and others are excluded. This kind of covert manipulation that can influence the decision as seen by Bachrach & Baratz (1968/1970)

The fourth group, the three dimensional view of power as explained by Lukes (1974:29) consists of the decision-making and control over political agenda (not necessarily through decisions); issues and potential issues; observable (overt, covert) in addition to latent conflict; subjective and real interests.

This contribution of Lukes in 1974 became a landmark in social reality of power, seeing the power as a multi-dimensional social factor where power and democracy are paradoxically related, showing that there are important non-coercive sources of power that are also important and worth considering (Little, 10/14/2010; Lukes, 1974) Lukes 2006. Both the agenda controllers and preference shapers are powers existing in institutions (Hukkinen 2008). Lukes emphasizes that power can occur when conflict is latent or potential (Lukes, 1974:23). Hukkinen explains the three types of power originating form (Lukes, 1974) as follows (Figure 7-3):
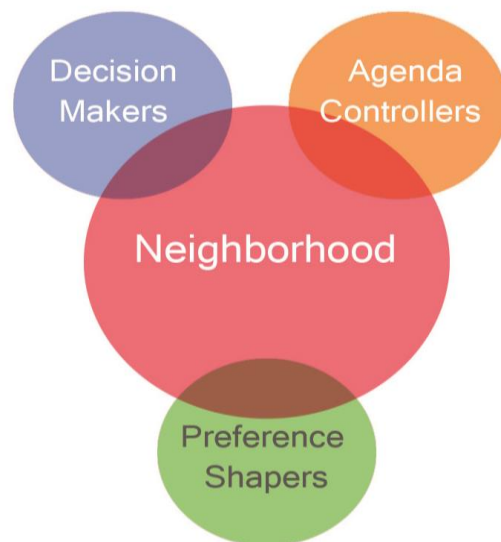
Figure 7-3 Schematic illustration of the three Responses investigated by the study within the heritage neighborhood

Agenda-controlling power (non-decision-

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[51]'*Decisions are choices consciously and intentionally made by individuals between alternatives, whereas the bias of the system can be mobilized, recreated and reinforces in ways that are neither consciously chosen nor the intended results of particular individuals' choices* '(Lukes, 1974:21).

making) where some people have the authority or credibility to control what issues to be considered and what not specifying their wants and preferences (R1) (Hukkinen 2008:103)

Preference shaping power (ideological) is when entities influence consumer and end-user behaviors on the basis of perception of what they desire (R2) mobilizing the wants and preferences. (Hukkinen 2008:103)

Decision-making power of an individual or group whose view wins and their decision is implemented (R3) (Hukkinen 2008:103)

While Lukes explains the three facets as originating from the governmental body; Hukkinen interprets them as three types of power possibly carried out by different entities which comply with the conceptualization used in the current research study breaking down the Response (R) into three different ones.

Each power has a field of influence; together the powers accumulate to contribute to the proposed scenario that aims to improve the state by manipulating current driving forces (D) and pressures (P) hoping for a sustainable feasible scenario. According to Hukkinen, sustainable development combines scenarios and powers (Hukkinen, 2008). In trying to find sustainable scenarios for the future it is important to integrate in the scenarios what the three possible powers can and should do.

Applied on a neighborhood scale it is important to identify the different powers (responses (R)) on this urban unit and accordingly forming scenarios that satisfy the overarching goal of sustainability with a serious consideration of the actual driving forces (D) and pressures (P) that gave rise to the current state (S) which is not satisfying the different sustainability pillars. An efficient Response aims to orient the driving force (D) towards the desired direction creating a (D_1) where the new form of pressure (P_1) is more under control leading towards a better State (S_1). Following this closed and continuous follow-up scheme it is possible to evaluate responses (R) and modify their actions through prioritizing actions and setting up targets, attaining every time a state (S_x) closer to the desired sustainable state (SS) and better than the state (S_{x-1}) .

Scenarios articulate unknowns and uncertainties mapping out future options assisting today's decision-making (Hukkinen 2008:102). Scenarios have to do with (descriptive) prediction and (prescriptive) planning. This middle ground between description and prescription permits the use of a scenario as a unique instrument of power (Hukkinen 2008:101).

7.3.3 SUSTAINABLE STATE AND FUTURE SCENARIOS

"*Nothing bends opinions, poses questions, or creates needs as efficiently as a normative vision shrouded in a veil of science or a scientific finding extolled in a visionary rhetoric.*" (Hukkinen, 2008:101). As Hukkinen states, '*publicly announced scenarios'* affect and shape the attitude, in other words enlightens the awareness. Having proper precautions and a preventive plan is very useful.
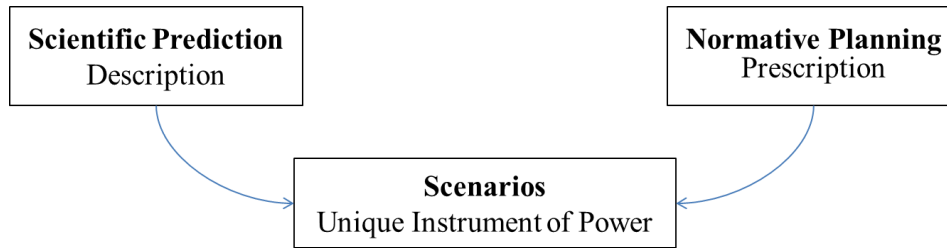
Figure 7-4 Scenarios as the middle ground between scientific Prediction (what is there) and Normative planning (what should be there) (illustrated by author after Hukkinen, 2008)

The scenarios have a two-sided character, on the one hand they are objective descriptions and on the other they are committed prescriptions of the future, in addition it helps individuals understand and act to the surrounding world (Hukkinen, 2008:101), helping in decision making. Scenarios move societies by different instruments, above all, the power. The scenarios usually inspire the society and influence the culture and institutions (Hukkinen, 2008:102).

Scenarios deal with unknowns in order to be prepared for the anonymous future, connecting the present to the future by taking conscious decisions today, being in conjunction with both concepts; prediction and planning. Hukkinen elaborates that in order for a scenario to be plausible and reasonable it should be based on a scientific prediction and a normative plan (Hukkinen, 2008). However, it depends on the context that identifies the relative proportion of both within a scenario. Climate change scenarios are *predictive scenarios* relying on plausible knowledge based information. Economy scenarios are *planning scenarios* where there are 'threat scenarios' and 'positive developments' and the normative bias is not hidden (Hukkinen, 2008). Planning scenarios compare positive and negative possible impacts seeking a balanced solution that proofs long-term sustainability. A Vision or Plan is what is more desirable, while the forecast or prediction is what is most likely to happen, based on data and in between there is a spectrum of Scenarios (see Figure 7-4).

Planning is future oriented and "seeks to connect forms of knowledge with forms of action" (Friedman, 1993). The proposed sustainable state (SS) lies under the normative planning which is *prescriptive* in nature, if combined with scientific prediction which is descriptive it can form a promising scenario.

The desired localized sustainable state (SS) is a hypothetical targeted goal for the state (S) of the neighborhood to reach. Defining the key criteria important for a sustainable state (SS) is one of the essential objectives of the study which is attained going through sequential steps described in the coming methodology chapter. The desired sustainable state (SS), which is defined through a criteria-based catalogue, has been primarily formulated which will be transformed into a questionnaire disseminated on experts in related fields to be able to gain credibility for further development and usage.

According to Zapryagaev (1999:3), strategic planning within heritage contexts tends to be idea driven, it is more qualitative, and seeks to provide a clear vision or focus with an overall assessment of a historic area (Griffith and Romaya, 2000 in Doratli; Hoskara & Fasli, 2004) seeking to find out 1) What is valuable, qualities to be protected, & enhanced; 2) Determining negative factors to be removed or mitigated, 3) Opportunities for enhancement (Doratli et al., 2004) such an approach is useful forming the recommendations after partially determining

the state (S)of Heliopolis neighborhood identifying strengths, weaknesses, opportunities and threats.

7.4   SIGNIFICANCE OF DPSIR-SS FRAMEWORK

In the scale of the neighborhood there are different factors that affect the overall situation and future of the heritage assets, the lives of the inhabitants, the environmental quality and economic situation. The proposed development and delineation of the framework into DPSIR$_{(1,2,3)}$-SS enables a clearer distinction of the different elements within the heritage neighborhood. The proposed state (S) evaluation will show strong and weak points for further interventions. The sustainable state (SS) formation will act as a visionary ultimate goal put for the heritage neighborhood, it is a benchmark for reaching sustainability goals within the neighborhood; moreover, it will be utilized from the response bodies (R) as a self-censor to tell whether the taken decision or action is in harmony or in conflict with the put Sustainable State qualities. Last but not least breaking down the response (R) into three different ones provides a better distinction when addressing a certain response body or assigning a suitable action.

When applying the DPSIR-SS framework on a certain neighborhood it is possible to discover causal relations between different factors (see chapter 11). This attained understanding of the relational connection enables the research then to exactly specify the points were intervention is needed in addition to that it is also possible to specify the kind of intervention necessary in a given context. The response (R) is in this case the intervention possibilities by the different actors within the designated heritage neighborhood.

Internationally there is an increasing focus on the development of the neighborhood, working on increasing the quality of life while mitigating the environmental footprints of any carried action (see sustainability assessment tools such as LEED-ND, CASBEE, and *Estidama* etc.). Though these concerns are basically focusing on the new developments of neighborhoods it is of a great importance to look at existing neighborhoods, how they function, what are their current conditions and how is it possible to develop them considering sustainability and its pillars. As the research is focusing on heritage neighborhoods it makes the case more complex due to the relative rigidity of a heritage setting however rescuing a building from demolition is an environmental action per se.

In Egypt, the weak economic situation is one of the most obvious driving forces (D) that affect decisions and actions of decision makers, governmental bodies, owners and investors to boost economic projects that are not necessarily coping with the surrounding environment, creating an extra pressure (P) on the surrounding environment instead of easing it. The state (S) is changed by the produced pressure (P). The state (S) represents the status quo of 19th & early 20th century Egyptian neighborhoods. The strong emerging problem of distinctive building demolition leads to loosing irreplaceable assets resulting in a state (S) of wiped identity thus as Salah states, depriving the right of future generations in the possession of a wealth witnessing on their predecessors, and passed times (Salah, 06/01/2012). After identifying the state (S) of a heritage neighborhood the research seeks to propose suitable responses (R) to improve the state (S) towards reaching a desired sustainable state (SS). The desired sustainable state (SS) is composed of a set of agreed-on sustainability criteria. It does not aim at reaching minimum requirements; however it thrives reaching a certain quality standard within the neighborhood.

Drivers

| Underlying Causes
Immediate Causes |

Response

Pressure

Economic-driven investments
High land-value
Law circumvention

Threats & weaknesses

Opportunities & Strengths

Decision Makers — Agenda Controllers — Neighborhood — Preference Shapers

State

#	Sustainability criteria	Internal Appraisal		External Appraisal	
		STRENGTH	WEAKNESS	OPPORTUNITY	THREAT
	Cultural Sustainability				
	Urban Sustainability				
	Environmental Sustainability				
	Social Sustainability				
	Economic Sustainability				
	Overarching Concept				

Impact

- Environmental
- Economic
- Social
- Cultural
- Political

Sustainable State

#	Sustainability criteria
1	Cultural Sustainability
2	Urban Sustainability
3	Environmental Sustainability
4	Social Sustainability
5	Economic Sustainability
6	Overarching Concept

Figure 7-5 The DPSIR-SS scheme as utilized by the research study (author)

The research study believes that the conceptualization of historic preservation problems, modes and challenges illustrated in Figure 7-5 obviously present some aspects that should be considered by scientific effort to support sustainable historic preservation strategies, determining prioritized actions and set targets. A delineated application of the DPSIR framework is carried out on Heliopolis cases study in chapter (11).

Chapter (8): Operational Sustainability Instruments

8 SUSTAINABILITY OPERATIONS AND SYSTEM

This chapter at hand is divided into two sections, the first section illustrates the indicator-based sustainability assessment instruments which are developed and used on a neighborhood scale for sustainability evaluation. This part helps formulating the criteria for sustainable heritage neighborhood preservation (SHNP) within the Egyptian context; concluding by proposing the 'sustainability-related criteria-based catalogue' resulting from the investigated theories, concepts and principles translated into a simple criteria list working as a prelude to a mature approach that will be used and developed further in the coming parts of the study seeking the determination of a localized sustainable state (SS) (see chapter (10)). The second part of this chapter deals with strategic sustainability measures carried out in the German context such as strategies and measures adapted to enhance neighborhood heritage performance or social quality etc. which could be useful for reflections on the responses (R) and the possible recommendations for each response within the heritage neighborhood.
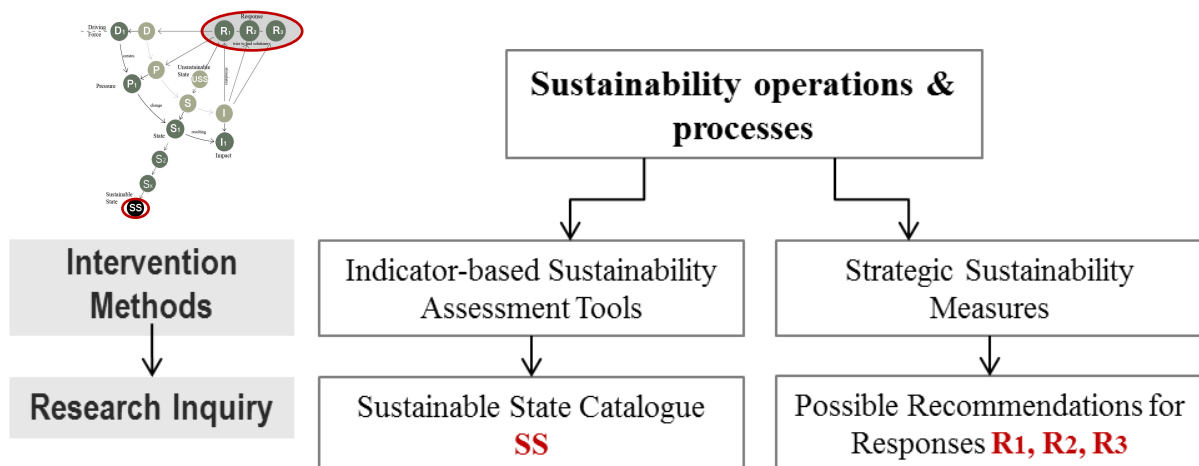
Figure 8-1 Schematic illustration of the importance of the different Instruments investigated in this chapter, developed by author

8.1 STRATEGIC SUSTAINABILITY MEASURES TOWARDS CONSIOUS RESPONSES

8.1.1 GERMAN PLANNING AND HERITAGE STRATEGIES[52]

It is said that Germany is 'fully built'(Verbands Magazin, 2014). Being rich with its existing neighborhoods, Germany forms a wide experience and knowledge in the existing city- and neighborhood-renewal with all its facets, '*Stadtsanierung*', '*Stadterneuerung*', '*Soziale Stadt*', '*Stadtebauliche Denkmalschutz*', '*Wartung*', '*Instandhaltung*' etc. This rich neighborhood-context is a strong motive to focus more on the German case and appreciate how the different actors (responses (R)) deal within the neighborhood setting adopting which strategy or measure. In recent years, the discussion about building culture reflects more an increased awareness in dealing with the quality of the built environment which becomes clearer when solving fundamental problems of urban development (Reicher & Schauz, 2009).

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[52] The ideas and concepts filtered from the german experience can be advised to Responses.

Urban heritage preservation, '*Staedtebauliche Denkmalpflege*' functions as instrument to secure the urban quality and to protect the identity embedded in historic assets (Otten, 2013). In Germany the intervention programs offered to urban areas and neighborhoods are an interesting and effective issue in the course of preserving the urban heritage.

8.1.2 STRATEGIES AND SOFT MEASURES

According to Mainzer (2007) architectural preservation requires planning and conservation concepts that are seriously translated. Following are some ideas for measures encouraged in Germany which are useful to propose within the Egyptian context.

- Brochures which explain solution-options for the '*Instandsetzung*' maintenance, '*Erneuerung*' renewal and addition-possibilities are very helpful in preservation (Mainzer 2007:12).
- In North Rhine-Westphalia, the inclusion of the settlements into the 'Route der Industriekultur' defining important stops for a tour is a good message for saying that the appreciation of a certain settlement comes from the local community and from visiting tourist (Mainzer 2007:12).
- The actors interested in the preservation and conservation should consider the settlement as a livable potential for present and future generations that should be respected and maintained, this is the strong motive that can make heritage buildings have a future (Mainzer 2007:12).
- The shared experience of experts in a network should enable addressing the multiple tasks that are tied to the specific requirements for the preservation of the cultural heritage and its careful and future-oriented development (Historische Stadt- und Ortskerne[53]).
- Another simple but yet effective measure taken in the German arena is the concept of 'the building of the month (year)'. The heritage responsible in that case '*Denkmalbehoerde*' put on their internet-page 'the building of the month' choosing a building every month and give a quick synopsis about it. They conclude with a praise of living in a historic building stimulating enthusiasm for heritage ownership. This approach promotes competitiveness and

Figure 8-2 Internet-page of Denkmalbehoerde Dortmund showing 'the building of the month'

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[53] Historische Stadt- und Ortskerne. Available online at: http://www.hist-stadt.nrw.de/

increases pride and sense of belonging between communities (Dortmund.de /Denkmalbehoerde[54]).

8.1.3 '*GESTALTUNGSFIBEL*' REGULATING ORDINANCE

The Gestaltungsfibel is a regulating policy guideline funded by the responsible municipality and developed by a consultant office for dealing with Heritage settlements and neighborhoods (Euskirchen, 2007). It answers all heritage-related questions and regulates it. It is a manual or guide that is appreciated by the inhabitants (Euskirchen, 2007) and must be accordingly respected. The Gestaltungsfibel is an instrument against the negative impact of housing stock privatization in order to control the individual renovation and development measures. It is binding and considered as a complementary part of the regulating law '*Gestaltungssatzung'* (Euskirchen, 2007). In a Rehabilitation (*Sanierung*) catalogue the original historic State is presented illustrating the arrangement of the building elements, green surroundings and characteristics of the urban condition then preservation- and building objectives of each historic condition are mentioned (Euskirchen, 2007:116).

The research at hand investigated more than 10 Gestaltungsfibel, their structure is mainly based on a historic synopsis for the designated area specifying its boundaries and stating its significance. It is then followed by a part talking about the different building types within the designated area and how they should be treated. Proposals for building elements are given such as for Windows, Ceilings, Doors, Facades, private gardens, fences, outdoor finishing, color schemes and possible materials etc. in order to assure the unified outcome for the neighborhood of the designated area clarifying the preservation steps. Some of them also explain the different possible exemptions and percentage financial support when carrying out specified work (see Gestaltungsfibel Gochsheim[55]). It then concludes with recommendations addressing the different actors within the area above all the inhabitants as the main manipulating actor (see also Euskirchen, 2007:114).

As for contributors and beneficiaries; the heritage entity 'Untere Denkmalbehoerde' develops the ordinance with historians and architects. This handbook is useful for local inhabitants, Owners, and their Architects, offering tax subsidies from the Denkmalfoerderungsprogramm (Heritage Promoting program) (see Euskirchen, 2007:116). A major condition to be financially supported is to have a heritage building according to the SS 3 Denkmalschutzgesetz NRW or lies within a heritage zone according to SS 5 Denkmalschutzgesetz (Ringbeck, 2007:118). The owners of heritage can ask for consultancy in detailed renovation items in the local responsible bodies (oertliche Behoerde) (Ringbeck, 2007:120). An important aspect for its efficiency is the regular update which can be offered every 10-15 years to cope with the changes and new technologies (see Broschüre für Siedlung Oberdorstfeld[56])

Mainzer emphasizes the importance of conveying the architectural value of the single buildings in the context of a unified settlement to the new owners of the buildings and stress on the importance of the preservation of these buildings through enlightening the owner it is possible to find useful preservation relevant solutions (Mainzer, 2007:10). The problem of private ownership exists in Egypt which makes the situation hard to keep the image of the

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[54] http://www.dortmund.de/de/leben_in_dortmund/planen_bauen_wohnen/denkmalbehoerde/nachrichten_denkmalbehoerde/news_detail_denkmalbehoerde.jsp?nid=323738
[55] http://www.gochsheim.de/cms/upload/broschueren/gestaltungsfibel.pdf
[56] http://www.dortmund.de/de/leben_in_dortmund/nachrichtenportal/nachricht.jsp?nid=52629

neighborhood as desired. Owners of listed buildings are asked to inform, take advice and register every change or the task of a revision of the heritage list. Assets that are no more representative or exemplary for a heritage were removed from the list (Euskirchen, 2007:113).

8.1.4   'FOERDERINSTRUMENTE' INSTRUMENTS PROMOTING GRANTS

The Städtebauförderung is a diversified funding program of the Federal Government and the states in Germany for the promotion of cities & villages (Jasper, 2011). Since 2009 Foerderung des städtebauliche Denkmalschutz is in every German State (Jasper, 2011:174). Current *‚Staedtebaufoerderunprogramme'* promoting programs are *Sanierung und Entwicklung*, *Stadtumbau, Soziale Stadt*, *Staedtebaulicher Denkmalschutz*, *Aktive Zentren* (Jasper, 2011).

In the 80s the preservation and renovation of historic settlements became an important Land-political goal supported through public funds (Foerdermittel) through which settlements were modernized and preserved (Ringbeck, 2007:118). In 2001, the Land NRW has asked the Institute for construction to investigate the existing worker-settlement reaching to document and register 740 settlements that characterize the city-image (Ringbeck, 2007).

Grants are offered to renovation and retrofitting measures following the stipulated guides and regulations including thermal insulation (Ringbeck, 2007:119). The grant is for financing necessary renovations and is given through a loan with low interest (the special loans from Darlehen der Wohnraumfoerderung of the Land) with an amount reaching 40.000 Euro with a maximum percentage of 50 percent of the total cost. The financial promotion offer is valid for individual owners, who want to renovate their house or flat heritage-just irrelevant from the income limits or social-level (Ringbeck, 2007:119).

Direct grants and subsidies are other possibilities for a grant for renovating a heritage asset through the Denkmalfoerderungsprogramm of the Land NRW (Ringbeck, 2007). Other grants through *'verlorenen Zuschuessen'* straight grants are offered for private, church-related or municipal owners when carrying out any restoration or 'Instandsetzung' repair measures. This program is established by the Ministry of Construction and Transportation as the 'Oberste Denkmalbehoerde'. The grant rate is usually between 20 and 30% of the renovation-cost; however an absolute grant-right does not exist (Ringbeck, 2007:122). The Tax-relief is another privilege beside the direct grants. The tax-relief is in the Income-tax-law made to attract private capital in the preservation of heritage. They compensate the load, as the preservation of the heritage assets is an interest of the whole community (Ringbeck, 2007:122).

The *Deutsche Stiftung Denkmalschutz* is a non-profit endowment which offers supporting grants. It has the role to protect cultural heritage under serious threat and works on advertising the concept of Heritage-conservation. The endowment is available in cases where the state-grants do not exist or are not enough (Ringbeck, 2007:123).

Sustainable development is more than the adaptation of a building to the climate; moreover it is asked to fulfil also the diverse physical requirements of its residents (Meisel, 2014). The measure of success for a sustainable development in that case is not only about quantitative measurable sub-goals more important are qualitative elements and the perception of the urban neighborhood and the housing stock by its inhabitants where a case-based priority-study appears necessary (Meisel, 2014).

According to the law the city is asked to compensate owners of disadvantaged buildings and is obliged to take over the building if the renewal-measures are financially exhausting to owner (Buergerhaushalt Gelsenkirchen[57]).

In the city of Gelsenkirchen the Staedtebaufoerferungsprogramme of the Land NRW have supported the implementation of renewal in 8 different granted districts. Action plans are developed forming a *'Quartiersmanagement'* where urban, economic, and social-integrated projects are initiated for the upgrade and stabilization of the city-districts (see Figure 8-3) (Rommelfanger, 2013).

Figure 8-3 Program-regions Gelsenkirchen
(Rommelfanger, 2013)

The Key-Elements of the city-neighborhood Program

- An integrated action-plan (conceptual plan) with urban pilot-projects and a bundle of social and economic projects
- cross-departmental funding means
- decentralized Management of projects on site (Neighborhood management through district offices)
- the cross linkage between local actors with help of neighborhood bodies
- activation and contribution of the inhabitants (Neighborhood fund, modernization consultancy) (Gelsenkirchen city, 2007)

A General Urban Plan

The city-administration of Gelsenkirchen has analyzed all its districts and sectorial investigations; such as the social-space study and the housing market study. This has achieved in the end a strategy of the general urban plan for the city-renewal (Rommelfanger, 2013). Through this investigation it is possible to determine the percentage of the city stock and infrastructure that needs renewal and other issues.
Some neighborhoods in Gelsenkirchen are struggling with problems such as the existence of vacant-units, scrap-property, dilapidated buildings, lack of investment-readiness from private building owners and the concentration of poor families and traffic load.
The high vacancies and the absence of negotiation-pressures, and the absence of marketing and renting perspectives for the buildings to be renewed are intensifying the problem. This applies for the city-district of Bochumer Strassein Ueckendorf, Gelsenkirchen; it is under the Grant-program '*Soziale Stadt*' (Rommelfanger, 2013). Measures carried out in this concern
- grants for the renovation of facades

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57 Buergerhaushalt Gelsenkirchen: http://buergerhaushalt.gelsenkirchen.de/

- grants for modernization consultancy
- Art-projects done in vacant shops
- Diverse social projects and the establishment of a city-district office

All these measures did not attract private owners and investments to contribute to the sustainable city renewal. This was because elder inhabitants are not interested in investing in renewal actions. Due to the hard conditions of a high number of inhabitants they are not capable of organizing a modernization plan and implement it (Rommelfanger, 2013).

This situation has urged to search for new concept plans to tackle the different problems using external experts seeking to stimulate private-investments and to calculate needed investments, renting possibilities specifying the most suitable instruments such as the *Stadterneuerungsgesellschaft* (Rommelfanger, 2013).

8.1.5 *STADTERNEUERUNGSGESELLSCHAFT* **PUBLIC-PRIVATE PARTNERSHIP**

The city of Gelsenkirchen has established a City-renewal society '*Stadterneuerungsgesellschaft GmbH& Co KG'* 2011 that is responsible for urban fail-developments or Renewal-demand. The *Stadterneuerungsgesellschaft* (SEG) *(the brain of ideas)* aims to buy real estate in disadvantaged city-districts. Through its engagement it tries to get incentives encouraging private investors and individual-owners to take part in the renewal projects. The SEG aims to form attracting models and stimulate imitation impulse to promote the city development (Rommelfanger, 2013:103).

The upgrade and support of neighborhood-development is not limited to maintenance (refurbishment) and modernization; it also includes demolitions and new-construction which are in tune with the strategic master plan and after the thorough investigation of buildings.

The SEG buys an entity for retrofitting and reuse then the idea is to sell it again in order to buy other entities and so forth. SEG money is a contribution from the community[58]. For single objects and non- rentable entities the SEG applies for Staedebaufoerderungsmittel.

Each area has its own problems and challenges that is why the instruments can change; in the case of Gelsenkirchen the establishment of the SEG was a way to overcome certain problems (Rommelfanger, 2013).

8.1.6 **SHORT AND LONG-TERM INSTRUMENTS**

Lemgo had various social problems, in 1998 a social-spatial analysis was carried out offering suitable social, economic and urban activities and measures (Tölke, 2003). Living in the historical city-core guarantees today the preservation and up-keep of the old and new city of Lemgo. In Lemgo there are 845 buildings with 1350 apartments where 3200 inhabitants live. The conditions for an attractive living exist, which was not the case in former times. 40 years ago with the start of the City renewal the situation for residence was miserable which pushed inhabitance to move out (Struessmann, 2013).

Short-term Instruments, strategies and measures (Struessmann, 2013:89-92)

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[58] in that case of the city of Gelsenkirchen, Sparkasse Bank Gelsenkirchen and the urban Housing society 'ggw' and also through mortgage lending (loan) of the attained plots.

- Transport-concept developed and implemented, where individual usage of cars was downsized and limited. Providing more pedestrian paths and low traffic areas, in addition to the construction of 4 parking areas. On the peripheries the prior authorization of the local residence parking in neighborhoods and residence streets.
- The development and launching of a City bus, bringing people directly to the city core serving people with no car and elder once. Inhabitants of the city-core can reach quickly and comfortably surrounding destinations. (2mill passengers/year)
- The individual usage of vehicles was decreased once more (in phases)
- In a further step bicycle and pedestrian ways were promoted and the extension of many streets for a barrier-free city-core.
- For an attractive residential environment a private open space is important, a so called 'green room'. In the development plans it was important to keep available and create new spaces even in service and retail areas.
- Following the Parking statute, max. 20% of the unconstructed plot area is for parking and its access roads the rest of the plots should be green areas.
- For developing a Residential-quality in the historic city-core the extension of green areas and creating new ones was very essential, for jogging, walking, playing and relaxing.
- Through Urban development promotions a street was transformed into an alley, facilitating walking and cycling mitigating the traffic pressure on this street (Engelbert-Kaempfer Strasse)
- 4 green areas are available to residence, 2 in the commercial area and the other two within the residential zone serving as extra space for playing, relaxing, feasts, and cultural events.
- For further growth of the Quartier neglected plots and building slots were built offering apartments for the elderly, renting and ownership apartments carried out through architectural competitions. 250 barrier-free (disabled-friendly) buildings were built.

These strategies and instruments must be kept to assure the quality of the housing within the city-core. The preservation of the historic city core is of high significance for the development of the whole surrounding.

The urban development concept emphasizes on the importance of upgrade and renovation of the residential entities and valuable buildings with respect of elderly and handicap (barrier free) respecting the demographic change happening (Struessmann, 2013:94).

The idea of combining land-uses was considered; where the ground floor has a commercial use and the above storeys are residential. The redesign and renovation suggested is financially covered by 'Staedtebaufoerderungs-mittel' where the owners should agree on the proposals (Struessmann, 2013).

Long-term measures

- The improvement of specified residential areas[59]
- Densification of certain areas
- Living within the 'green' with accessibility of kindergartens, schools, a wide variety of services and commercial offers in addition to a valuable high-quality relaxing spaces and a theater, all reachable by foot (Struessmann, 2013:97).

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[59] Schuhstrasse/Stiftstrasse with 150 dwellings and 470 inhabitants

In former times in Germany, demolition took place on big scales, now approaches call for more up-keep of heritage buildings and integrating the demographic change and satisfy environmental aspects (Overhageboeck, 2013). The goal today is not exclusively rescuing and securing the existing buildings for the improvement of the lively and working conditions, but rather a renewal that requires and integrates approaches (Overhageboeck, 2013).

Overhageboeck (2013) states, that at present days it is important to carry out a balanced investigation of problems within the historic city-core. A public discussion about the actual problems and the optimal or more suitable intervention methods is important; whether it is demolition, preservation or new construction in addition to considering demographic conditions and the possibility of an environmental-friendly renewal. The key issue for a successful renewal project is to make out of the problems and development possibilities an important political issue to have a discussion on effectiveness of possible instruments. It is also very important to tackle the valuable buildings as an ensemble and not individually which will result in a more powerful urban heritage renewal project. This kind of approach will reorient the recognition of heritage from only appraising a well-done façade into an improved urban quality within the neighborhood (Overhageboeck, 2013:106).

This part has shown various instruments used within German neighborhoods and quarters to reach a successful city renewal. The concept of Urban Promoting Programs 'Städtebauförderung' is very essential and effective for encouraging heritage owners to keep and maintain their assets. On the other hand, the protective ordinance '*Gestaltungfibel*' was developed against privatization to keep the image of the area or neighborhood. Sometimes extra measures were needed such as the emergence of SEG to focus on attracting private investments. Other examples have also shown that there are important meareas such as transport and provision of enough parking in addition to cycling and easy mobility offering a city bus; all are important to elevate the conditions within the old city area.

8.2 INDICATOR-BASED SUSTAINABILITY ASSESSMENTS TOWARDS A SUSTAINABLE STATE CATALOGUE

As an action to the global concerns about climate change and the impact of GHG[60] emissions along with the scarcity of natural resources; the concept of sustainability has evolved and parallel to it the sustainability assessments have been developed becoming important on regional, national, and global levels (Hamedani & Huber, 2012). Sustainability Assessments work as an instrument that evaluates the various aspects and actions in compliance to sustainability principles (Adinyira et al., 2007; Devuyst, 2000). The outcome of the assessment is a certificate that expresses the "degree of satisfaction" (Heyder et al., 2012:199). Moreover, attaching a label that reflects the environmental performance motivates and increases its market value (Cole et al., 2005:1). Sustainability assessment in literature and practice are used in two different ways; the first is concerned with an impact assessment process, to assess the impact of proposed projects using the sustainability principles, assessing their plans, policies or legislation before implementation contexts while the second deals with checking if the community or organization is progressing towards sustainability, testing its performance; (Adinyira et al., 2007; Devuyst, 2000) which lies within the scope of the study.

8.2.1 CERTIFICATION FROM SINGLE BUILDING TO URBAN SCALE

Since the early 90's, the environmental assessment methods with a focus on single buildings have grown rapidly (Ali-Toudert, 2008). As the consideration of a single building was not enough to achieve environmental and sustainability goals; the responsible agencies started to develop urban assessments to suit broader scales, such as neighborhoods and urban settlements (USGBC, 2009; Ali-Toudert 2008). Since 2006, different certification systems were developed for the neighborhood scale reflecting an increased awareness for the diverse aspects of sustainability (Heyder et al., 2012:199) and evaluate the objectives and strategies of sustainable urban development (Hamedani & Huber, 2012:122). The importance of the neighborhood scale lies in that it is the level of investigation between city and building which contains all the aspects and criteria for sustainable urban development. In addition, achieving sustainability in neighborhood level is a step towards sustainable development at higher levels (Hamedani & Huber, 2012).

A certification for the city development will lead to quality control in countries with low environmental standards (Nelson et al., 2010:12; Heyder, 2012: 199) which could be useful on the Egyptian ground. Eberle (2000) confirms that standardized sustainability labels have the potential to support sustainable development (in Heyder et al., 2012). They define accepted standards of good practice in planning and development of sustainable neighborhoods and thereby enable transferability to cities of various types as well as a comparison between different neighborhoods (Heyder et al., 2012). The criteria of the neighborhood-level assessment instruments focus mainly on renewable resource use, prevention of urban sprawl, and preservation of local natural resources (Heyder et al., 2012). Certification systems *consist of a set of defined criteria and measurable indicators and a rating system to score them* (Hamedani & Huber, 2012:121). The Rating system shows the evaluation methods (quantitative or qualitative), the criteria importance factor (weights), and the maximum/minimum score to attain, ranging from platinum, gold, silver, bronze, and

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[60] Green House Gas

certified (Hamedani & Huber, 2012:123-124). They differ from building codes because '*codes show minimum requirements for development and construction, whereas certificates rate buildings and projects according to quality and predefined criteria, and they can show the maximum*' (Hamedani & Huber, 2012:123).

The assessment instruments aim to assure the quality of emerging sustainable neighborhoods and strengthen the sustainable development of the construction sector and present an economic value which is important in developer-driven contexts and also in countries with low environmental standards (Nelson et al. 2010 in Heyder et al. 2012:199). Heyder et al. (2012) suggest two types of processes to achieve sustainable neighborhoods where the two types can supplement and complement each other 1st) indicator-based Standardized planning using the wide-spread sustainability certification systems, & 2nd) community-based initiatives increasing emergence of local, civic organized initiatives (Heyder, et al. 2012:197).

The sustainable development was rarely coupled with existing neighborhoods, it used to focus mainly on new construction applying sustainability measures (Hopfner & Zakrzewski, 2012:46; Rey, 2011; Mayer, Schwehr, & Bürgin, 2011). Research projects dealing with sustainable development in existing neighborhoods were basically focusing on life-cycle management and sustainable reuse of single buildings (Hopfner & Zakrzewski 2012:46) such as in Carroon's 'Greening existing buildings' (2010).

Although the certification instruments investigated here are basically for rating and certification purposes, however they consist of a list of criteria developed for the neighborhood scale that could work as a benchmark when dealing with heritage neighborhoods serving the formulation of a comprehensive localized criteria-based catalogue for sustainable heritage neighborhood preservation within the Egyptian context. As there is no rating system designed specifically for heritage neighborhoods, the research has investigated existing rating systems developed for neighborhoods in general, examining possible adaptation and application in existing heritage neighborhoods.

Four systems where investigated and mainly one was taken into account. The LEED-ND[61] from the American continent as the most widely known and used system; the CASBEE-UD [62] from the Asian continent as a system in which the assessment approach differs majorly from all other rating systems in the way of categorizing its criteria; *Estidama*[63] (Abu-Dhabi) from the Arab world checking for possible transferability; and last but not least the German DGNB-NSQ[64] from the European continent as the newest rating system in the course of emergence. The common feature of the four systems is that they are all concerned with the urban neighborhood scale, assessing mainly the performance of new neighborhoods against sustainability measures and standards (Heyder et al. 2012: 200).

The in-depth study of the criteria and the compartmentalization of the different methods was a basic task to see which would be more relevant to context and has a bigger potential for transferability in order to develop the localized sustainability catalogue. After investigation, the research chose to focus mainly on LEED-ND followed by *Estidama* and excluding the others. The DGNB-NSQ was excluded as it is not planned to consider existing neighborhoods, in addition it is still in its early pilot phases (Hopfner & Zakrzewski, 2012). CASBEE was excluded because of its complex criteria formation having two categories '*the*

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[61] Leadership in Energy and Environmental Design for Neighborhood, USA
[62] Comprehensive Assessment System for Building Environmental Efficiency, Japan
[63] Estidama is the arabic translation of the taxonomy 'Sustainability'
[64] *Deutsche Gesellschaft für Nachhaltiges Bauen*

environmental quality' and *'the load reduction'* were the scores of one is divided by the other resulting in a coefficient (JaGBC/JSBC, 2007). This is a type of complexity that is not needed for the research study inquiries at hand. Last but not least, *Estidama* was used occasionally for having criteria tackling the pre-requisites such as a future vision or plan for the neighborhood otherwise it does not include criteria that consider heritage or existing buildings and settings (see Abu Dhabi Urban Planning Council, 2010).

In Egypt the HBRC[65], has developed an assessment method called Green Pyramid for building and neighborhood scales, but again only focusing on new developments. However, existing neighborhoods with valuable assets were not seriously considered within a sustainable framework. As Haapio (2012) states the assessment of heritage neighborhoods should include the buildings; the built environment, public transportations, and services. He elaborates that *'The assessment of urban areas enables the comparison of municipalities and urban areas, and notably supports decision making processes'* (Haapio, 2012:165). Each neighborhood development project has very particular and specific characteristics. But they all have to meet a number of "sustainability-related" criteria indispensable to earn a designation (Schweizerische Eidgenossenschaft, 2011). It is important to include the cultural heritage preservation in urban planning processes that lack coordination between the different actors in Egypt (Stewart, 2003:129) were the criteria-based method for sustainable preservation is one of the two[66] processes that contribute in achieving sustainable neighborhood preservation (see Heyder, et al. 2012:197).

This was a motivation to work on developing a criteria-based catalogue to be used by developers, architects, planners, consultants, and NGO's such as NOUH experts, or HHI in Heliopolis, being the actors within the neighborhood. Haapio has compared different systems together and states that LEED-ND *promotes complementary building, and retrofitting existing sites* (Haapio, 2012:166); however it is strongly directed to the North America area (Haapio, 2012:168) which motivates the researcher to learn from it and develop a localized catalogue possible to apply on Egyptian heritage neighborhoods.

8.2.2   LEED-ND RATING SYSTEM

The LEED assessment instruments aim "[*t*]*o transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life*" (Campagna, n.d.). It also aims to encourage the adoption of sustainable qualities which made it gain respect and spread in a couple of years (Campagna, n.d.). LEED-ND tries to gradually consider existing neighborhoods in the scoring and interpretation of its criteria-based certification. The LEED-ND is based on the concepts of new urbanism, smart growth, and green building (Camagna, 2013) A so called Sustainable Preservation Coalition was formed by the National Trust for Historic Preservation seeking a better integration of preservation issues into LEED poles (Cooper, 02/03/2010). Although it is mainly designed for new developments, however there was a partial consideration of existing neighborhoods answering the question of *'how LEED-ND can improve your community'* offering possibilities to be used in existing neighborhood settings as a guide for improvement. It suggests using the LEED-ND checklist as a kind of *"crib sheet"[…] assessing existing neighborhoods'* (USGBC, 2009:3)

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[65] Housing and Building Research Center (HBRC) in Egypt
[66] The second is the Community-based initiatives Increasing Emergence of local, civic organized initiatives (Heyder et al., 2012)

1. *Smart Location and Linkage (SLL)* - Prerequisites and credits for neighborhoods to decrease negative environmental impacts and avoid urban sprawl
2. *Neighborhood Pattern and Design (NPD)* – Prerequisites and credits for mixed use compact neighborhoods with connectivity to surrounding areas.
3. *Green Infrastructure and Buildings (GIB)* - Prerequisites and credits for minimizing environmental impacts of infrastructure and buildings.

The two bonus categories are:

4. *Innovation and Design Process (IDP)* - Credits given for outstanding performance more than the requirements or extra innovative performance
5. *Regional Priority Credits (RP)* – Credits given to projects located within areas recognized by USGBC as regionally important.

Each credit is described and explained pointing out the possible points to attain with a maximum of 110 points where 40-49 is certified, 50-59 Silver, 60-79 Gold and 80+ Platinum (See Appendix 6).

In a document called '*LEED 2009 for Neighborhood Development - Frequently Asked Questions (FAQ)*[67]'answering a question about the possibility of an existing neighborhood to use the LEED-ND system, among other points it has said that 50% or more of the total project must be undergoing substantial development. Seeing it as an obstacle this document issued by USGBC/LEED-ND and GBCI[68] stated that within the *Green Infrastructure and Buildings* section there are credits hard to apply on existing projects such as the *certified green buildings* (LEED or ISO/IEC Standard 17021), and *water, energy and construction activity waste reductions for new buildings or major renovations* (USGBC, 2011). Another difficult to attain credit is the *imperiled species and wetland & water body* prerequisites in the *Smart Location & Linkage* section.

On the other hand, there are credits of the LEED-ND supporting concepts of the wise use of resources considering an existing neighborhood a setting with built-in resources that should be improved for a better management such as 'Reuse of existing Buildings' (GIB[69] C5) and the 'Historic Resource Preservation and Adaptive Use' (GIB C6). Under (GIB C6) it says '*Do not demolish any historic buildings or contributing buildings in a historic district, or portions thereof, or alter any cultural landscapes as part of the project*' (www.usgbc.og). It encourages the use of as many buildings as possible; entire building, external shell or even some valuable components of it. The LEED-ND states that it offers unique urban places for gathering; in addition it generates the interest for investors to invest within the existing neighborhood (USGBC, 2009).

Focusing on the part of using the LEED-ND as a guide for improvements within the existing neighborhood, the LEED-ND explains that it can be used for guiding planning and investment within the existing neighborhood; suggesting three main steps (USGBC, 2009:18):

1) Evaluate the neighborhood
    Working with local governments and community organizations carry out an inventory (assessment- audit) for the designated neighborhood.

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[67] *LEED 2009 for Neighborhood Development - Frequently Asked Questions (FAQ)* Available under:
http://www.usgbc.org/Docs/Archive/General/Docs7188.pdf
[68] GBCI: Green Building Certification Institute
[69] GIB: Green Infrastructure and Building

2) <u>Focus on the strengths and weaknesses</u>
Specify zones and places where the neighborhood reflects a strong sustainable performance and others where it shows weak performance asking the stakeholder contribution to satisfy community needs

3) <u>Respond with a plan</u>
Suggesting renovations, directed redevelopment, infrastructure improvement and other aspects that help strengthen the neighborhood's performance and mitigate or avoid the weaknesses. '*…Informal list of suggestions to a detailed design and policy proposals that becomes the backbone of a neighborhood plan*'

If a neighborhood is going through a development process such an evaluation becomes valuable in order to plan consciously protecting the elements of strength of the neighborhood and work on solving the weaknesses of it.

The LEED-ND shows more flexibility using its criteria-based certification instruments stating that it is even possible to focus on specific criteria related to the desired assessment topic one is conducting such as only 'cycling' or 'walkable streets' or *assessing a policy document like a water efficiency ordinance or parks and recreation plan* (USGBC, 2009:23). Such flexibility is good and will be considered in the sustainable state catalogue of the research study.

In a second phase of modification to the LEED-ND, in March 2013 the USGBC released a newer version called *LEED for Neighborhood Development and Historic Preservation* where Preservationists have helped to revise the LEED-ND (USGBC, 2013). It is emphasizing again on the possibility of using it for existing neighborhoods with little new construction (in-fill) or major renovation. It can be then useful as a base informal assessment offering possible future planning improvements to the neighborhood (USGBC, 2013). Stitching the past together with the future creating convivial places is one of the major intentions of rehabilitating historic buildings in an environmentally responsive way. Including adaptive re-use and preservation in general is an added value to the green building approach (USGBC, 2013). It also states that creating unique places is a common concern of historic preservation and green building, where the relation to the neighborhood is encouraged by respecting its past in planning the future. Demolishing listed historic buildings is prohibited unless granted permission by the responsible body (USGBC, 2013).

> '*elevate history into the public eye and foster an attitude of environmental stewardship* ' (USGBC, 2013:4) and '*creating continuity for neighborhoods that celebrate the past while preparing for the future* ' (USGBC, 2013:13)

Campagna confirms that using sustainability instruments combined with preservation methods lead to more *efficient environmental actions* planning for *long-term stewardship* (Campagna, 2013). Following are case studies of existing neighborhoods using LEED-ND. Although no project directly resembles the case study of Heliopolis, each project provides an insight into a certain aspect that might be useful to draw the sustainability corridor for Heliopolis neighborhood.

8.2.3   INNER-CITY NEIGHBORHOOD BOSTON

According to Benfield[70] (2012) an inner-city neighborhood in Boston is considered one of the most successful models for how to improve the community conditions through applying the LEED for Neighborhood Development approach which helps decision makers in determining strength, weaknesses, threats and opportunities of the neighborhood. Different actors worked together, the Neighborhood Development Corporation and local initiatives and others to evaluate and improve the living conditions within the inner-city using the LEED-ND as a guide. A commuter rail station was intended to open connecting the community of the neighborhood with downtown, offering new opportunities for the neighborhood people (Benfield, 2012).

In the neighborhood many buildings are neglected and in bad conditions, in addition to few remnants of older light industry, ready for restoration and redevelopment. The Neighborhood Development Corporation (NPO) located inside the neighborhood has purchased many of the properties having the right to develop them. According to Benfield (2012) even if the scoring does not seem important for some community members it is, he believes that the system is well structured in a way that it does not skip a major aspect worth tackling when developing a neighborhood, mentioning the complex range of criteria in an ordered way, urging the user to be strict to follow and respect. In this existing context the LEED-ND is mainly interested in how to develop the empty plot in an environmentally efficient way. The criteria system is flexible enabling continuous updates and improvements by its users and administrators who gain experience integrating new knowledge and best practices (Benfield, 2012).

8.2.4   SYRACUSE (NY) 'SALT' ARTS DISTRICT

Another example is the Syracuse district which has developed a plan for upgrading within the existing neighborhood. It is a turn-of-the-century historic neighborhood characterized by the old housing and a traditional fabric. Being evaluated by the LEED criteria it encompasses various characteristics mentioned in the criteria system such as: *walkable streets, a mix of housing and commercial space, access to open space, and ample linkages and connections to the surrounding urban fabric, including proximity to a major economic center* (USGBC, 2013)

Withdrawals of investments have caused a deterioration and abundance of the housing and commercial stock. A plan was put for the Salt district including incremental revitalization of these spaces for artist housing and studio space. The LEED-ND plan recommended *extensive reuse and rehabilitation of existing buildings, energy and water efficiency retrofits, redevelopment in targeted locations, and green building requirements for new construction* (USGBC, 2013) in addition to offering new streets and pedestrian facilities, new parks and improve transport services (Benfield, 2011). Last but not least, intending to minimize energy use and create green collar jobs people of the environmental sector of the economy (Benfield, 2011).

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[70] Kaid Benfield is the director of the Sustainable Communities and Smart Growth program at the Natural Resources Defense Council, co-founder of the LEED for Neighborhood Development rating system, and co-founder of Smart Growth America.

After illustrating the indicator-based certification systems that have shown how an instrument such as LEED-ND could be partially used for evaluating existing neighborhoods recommending further needed development measures towards sustainability, however these indicators are rather location specific following the American standards which makes transferability not an easy task. That is why a criteria-based sustainability catalogue was formed in order to attain a localized criteria catalogue.

8.3   PROPOSED SUSTAINABILITY CRITERIA-CATALOGUE

The proposed sustainability criteria catalogue is shaped using different resources. As mentioned before in chapter 6, New Urbanism as a sustainable urban design concept is used with its thick-line principles as an overall umbrella. Barton's checklist for neighborhood sustainability deals with the same principles mentioned by new urbanism moreover is a well-structured list providing a draft to start with for further development. Last but not least, Benfield's criteria repeat some of the new urbanism and Barton's principles in addition it considers sustainability in dense urban settings which is relevant to the urban context under investigation. These three resources have formed the first layer towards the sustainability criteria catalogue considering social, economic, environmental and urban criteria of sustainability. As this research is concerned with existing neighborhoods with distinct value which is rarely tackled in practice (see Hopfner et al., 2012); it is important to add another pillar representing the cultural sustainability criteria which was not properly taken into account in the checklists above. In the second layer the research has considered Stovels definition of historic quarters. He discusses the different principles and criteria important for nomination to the world heritage list. 52 sustainability related criteria in total were gathered in the following Table 8-1 dividing them into 6 main compartments shaping the sustainability catalogue; '*Environmental Sustainability*', '*Urban Sustainability*', '*Social Sustainability*', '*Cultural Sustainability*', '*Economic Sustainability*' and '*Overarching Concepts*'.

The '*Environmental Sustainability*' pillar includes all criteria related to energy efficiency, climate responsiveness and competent resource management. The '*Urban Sustainability*' pillar comprises of urban design qualities such as walkability, accessibility and infrastructure. Moreover, the '*Social Sustainability*' pillar included notions important for community satisfaction within a neighborhood such as health, safety, security, citizen participation, equity etc. While the '*Cultural Sustainability*' pillar embraces concepts of preservation of valuable buildings, their documentation, categorization and guidelines in addition to notions that define a heritage asset such as *Wholeness, Intactness* and *Genuineness*. '*Economic Sustainability*' contains promoting job opportunities, valorizing cultural identity, mixed land-use neighborhood etc.; and last but not least the '*Overarching Concepts*' compartment includes essential principles about conscious future planning and important sustainability-related strategies.

The following Table 8-1 was developed assigning the different gathered criteria into 6 different compartments. The table consists of the five pillars environmental, social, urban, cultural, and economic while the 6th section was created to emphasize on the essential pre-requisites for neighborhood sustainability.

Table 8-1 The developed criteria-based sustainability catalogue showing the source of each criterion developed by author

1	**Environmental Sustainability**	New Urbanism principles	Barton, 2000 Sustainability checklist	Benfield, 2013 principles of making high density cities	Historic Quarter Stovel, 2007	Estidama Abou Dhabi	LEED-ND, 2009	Streck, 2011 ÖÖS[71]
1.1	**Climate responsive neighborhood planning** New construction considers the distinctive climate *Benton short & short 2008*		✓ Energy-efficient built form & layout			✓		
1.2	**Urban Heat Island Reduction** Minimize increased heat in the urban city centers	✓				✓	✓	
1.3	**Biodiversity** Flora & Fauna Protection of wildlife within urban settings (Birds, etc.)	✓	✓					
1.4	**Energy-efficient transport** Well served variety public transport (maps) Safe infrastructure for walking and cycling less cars, save money & environment on the long run	✓	✓	✓ **implied[72]**		✓	✓	
1.5	**Energy-efficient In-fill** Energy-efficient built form, layout material & constr. Development of community renewable energy	✓	✓	✓ **implied**		✓		
1.6	**Energy-efficient retrofitting** Possibly using existing materials, energy-efficient built form, using renewable energy	✓	✓	✓ **implied**		✓		
1.7	**Air Quality:** traffic reduction & air quality management	✓	✓					
1.8	**Water:** local sourcing &water demand management, Surface water sewage, Sewage treatment	✓	✓					
1.9	**Land:** compact land management to reduce urban land-take	✓	✓			✓		

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[71] Entwicklung eines Bewertungssystems für die ökonomische und ökologische Erneuerung von Wohnungsbeständen ÖÖS
[72] implied means that it talks about same concept however using other words

| 1.10 | **Minerals:** recycling building materials \and using local material | ✔ | ✔ | | | | | |
| 1.11 | **Local composting:** recycle organic materials at home– reducing trash disposal, save money, and conserve natural resources | ✔ | ✔ | | | | | |

₂

2	**Urban Sustainability**	New Urbanism principles	Barton, 2000 Sustainability checklist	Benfield, 2013 principles of making high density cities	Historic Quarter Stovel, 2007	Estidama Abou Dhabi	LEED-ND, 2009	Streck, 2011 ÖÖS
2.1	**Smart Heritage Neighborhood** High number of heritage buildings, well connected to other areas, reflects layers of history						✔ adapted **73**	
2.2	**Walkable Streets** Provision of attractive pedestrian-scale local streets with enough sidewalks & proportionate building height to street width	✔	✔				✔	
2.3	**Relieve density with variety (permeability)** In highly dense areas, a relief through green areas, height of buildings, % of construction area on plot			✔			✔ rational Compactness	
2.4	**Green roof** Promotion of green plantation on roofs and terraces Aesthetic, environmental & financial aspects (Benton-Short & Short, 2008:240).						✔	
2.5	**Access to facilities** (by foot or public transport) Accessible good quality health, educational, retail & leisure facilities, attention to children & disabled	✔	✔			✔	✔	

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[73] Adapted in this context means that the criterion was modified to suit the new context

| 2.6 | **Accessible Public spaces & green areas**
Reviving dead spaces for use, providing space for basic activities (playgrounds, parks, etc.) | ✔ | ✔ | ✔ implied | | ✔ | ✔ | |
| 2.7 | **Infrastructure**
Easily maintained road & utility networks (energy, tele-networks, phone, etc.) | ✔ | ✔ | ✔ implied | | ✔ | ✔ | |

3

3	**Social Sustainability**	New Urbanism principles	Barton, 2000 Sustainability checklist	Benfield, 2013 principles of making high density cities	Historic Quarter Stovel, 2007	Estidama Abou Dhabi	LEED-ND, 2009	Streck, 2011 ÖÖS
3.1	**Health** Pollution-free environment	✔	✔					
3.2	**Sustainability & Cultural Awareness** Enable residents, workers & visitors of the NHD to appreciate, understand & contribute to conscious resource use & heritage protection					✔ **adapted**		
3.3	**Community Safety & Security** Safe traffic-calmed streets with good visual surveillance & light A well-thought-out urban design & government intervention giving residents a strong sense of security - 'visual access' to spaces preserved		✔	✔ implied		✔		
3.4	**Equity & Choice** Access to Housing local facilities enrich choice for less mobile people, help compensating public transport inadequacies reaching NHD social balance		✔					
3.5	**Citizens participation** Participation in community life giving input and feedback and further decision making	✔		✔ implied			✔ Community Outreach &Involvement	

3.6	**Inclusion of private partnership** City government and all stakeholders work together promoting innovative Ideas attracting investors reusing old buildings			✔**adapted Forge "3P" partnerships**				
3.7	**Local Food Production** To be able to produce the needed food locally (Allows growing of foodstuffs, including in-yards, balconies, patios, or rooftops)	✔						✔	

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4	**Cultural Sustainability**	New Urbanism principles	Barton, 2000 Sustainability checklist	Benfield, 2013 principles of making high density cities	Historic Quarter Stovel, 2007 WHS nomination	Estidama Abou Dhabi	LEED-ND, 2009	Streck, 2011 ÖÖS
4.1	**Historic Resource Preservation** Protecting valuable buildings from demolition						✔	✔ **implied**
4.2	**Recording and documenting historic buildings** Developing an Inventory of valuable buildings Making photos, gathering Information, etc.							✔ **implied**
4.3	**Categorizing valuable buildings** **Ameliorist approach to sustainability** Preserving only what is unique and irreplaceable (critical), while replacing compensatable objects for future development.							✔ **implied**
4.4	**Regulating demolition of historic buildings if needed** Only buildings doomed to fall							✔ **implied**
4.5	**Reuse of historic listed Buildings** Encouraging innovative reuse possibilities						✔**adapted**	✔
4.6	**Preserving the unique urban fabric, its 'Identity'** **Genuineness of organization of space and form** Protecting the urban layout of streets and spaces which contribute to its value and character				✔			

4.7	**Heritage Image: Legible unifying Architectural character with sense of place 'Continuity of setting'** Maintaining the quality of the old setting		✓		✓			
4.8	**Aesthetic quality: attractive pedestrian-scale local environments**	✓	✓					
4.9	**Sustainable Building Guidelines / Code (boundaries and guidelines)** Defining land-uses, targeted population density, allowed building height, etc. for conscious development (in compliance with future plan for the NHD)					✓		
4.10	**Setting up renovation phases** Intervention in phases, decided upon priority. Priority(valuable building under major threat, economic return with no environmental disturbance)							✓
4.11	**Convey memory of place 'Wholeness' provision** The ability to convey the neighborhood significance: signage- information @ buildings- informative hardscape				✓			
4.12	**Stable State of NHD 'Intactness'** Controlling the impact of deterioration process				✓			
4.13	**Material genuineness** protect the material testimony of successive phases of use over time				✓			
4.14	**In-fill projects reflecting distinctive heritage** New Constr. considers historic & social aspects		✓**adapted**					
4.15	**Continuity of function** Encourage compatible functions or at minimum those functions which do not obliterate the evidence of significant earlier functions				✓			

5	**Economic Sustainability**	New Urbanism principles	Barton, 2000 Sustainability checklist	Benfield, 2013 principles of making high density cities	Historic Quarter Stovel, 2007	Estidama Abou Dhabi	LEED-ND, 2009	Streck, 2011 ÖÖS
5.1	**Promote Heritage-related Job Opportunities** Diverse & accessible job opportunities		✔					
5.2	**Economic revitalization** Encouragement of private, small business: galleries, small museums, B&B, etc.	✔	✔					
5.3	**Develop affordable Diverse Housing opportunities** Provision of a variety of housing within NHD Appropriate accommodation for everybody (Social housing/ rental/ first time buyers/ mid-range and executive buyers, etc.) locational choice increase91		✔	✔				
5.4	**Mixed land-use neighborhood** Provision of different land-uses and commercial and institutional services	✔	✔	✔			✔	
5.5	**Marketing the Heritage neighborhood** Fund-raising possibilities, branding and trademarking ideas for sustaining the heritage Assets *(Duxbury, 2004) (Temple, 2012:xix)*	✔						
5.6	**Promotion of Incentives to encourage owners** financial support helping to retain the buildings *From German heritage law*							
5.7	**Valorize cultural Identity: beauty, attractiveness (quality of life)** (Girard 2006:3-4) Promoting social activities in the neighborhood that explains the meaning & uniqueness of the place (carnival, child-activity, sport activity, etc.) (Duxbury, 2004)8		✔ **implied**					

6

6	**Overarching Concepts**	New Urbanism principles	Barton, 2000 Sustainability checklist	Benfield, 2013 principles of making high density cities	Historic Quarter Stovel, 2007	Estidama Abou Dhabi	LEED-ND, 2009	Streck, 2011 ÖÖS
6.1	**Plan for long-term renewal & growth** The efficient use of available resources & knowledge to plan development scenarios for the future			✔		✔ **implied**		
6.2	**Land-use Plan** Continuous development & regulation of existing land-use plans, Calculating parking, densities, etc.					✔ **implied**		
6.3	**Sustaining Density's threshold** Scenarios for relieving densities in high dense NHDs			✔adapted				
6.4	**Promote innovative & non-conventional solutions 'technologies'** Resource-efficient technologies (Water supply, waste treatment and energy supply)	✔		✔				
6.5	**Promote the concept of the triple 'R'(Carroon, 2010)** **Reuse** of existing **Recycle** wasted **Reduce** consumption of scarce resources						✔	

2

Chapter (9): Research Design & Methodology

9   RESEARCH DESIGN AND METHODOLOGY

This chapter is designed to position the methodological frame that guides the development of this doctoral work. The organization has a clear thread beginning with echoing the *research objectives* and the emerging *research questions* linked to the *conceptual framework*. After that the *research strategy* will be explained adapting a mixed methods approach followed by the *research process*. After that, the rationale for choosing a *case study* approach of Heliopolis neighborhood is thoroughly described. Moreover, this chapter provides an overview on the data-collection methods used. The carried out data-selection of primary and secondary nature are presented; the *literature review, semi-structured interviews, Leitfaden In-depth interviews, field observations, photos* and *maps* concluding the chapter by discussing the adopted validity and reliability instrument and possibilities of generalization.

9.1   LINKING RESEARCH OBJECTIVES TO CONCEPTUAL FRAMEWORK

✓ The research seeks to detect and identify the different issues within the heritage neighborhood of Heliopolis using the DPSIR-elements (see chapter 11); striving a better understanding of the causal relations between the different elements of the problem; determining the state (S) revealing strong and weak aspects.

Figure 9-1 State (S), sustainable state (SS) and response (R) as the main inquries of the research study

(developed by author)

✓ It then aims to contribute in constructing a localized Sustainable Preservation Vision for the future of the Egyptian heritage neighborhoods through identifying the different qualities important for the designated context of the study. Developing the localized sustainable state (SS) for Heliopolis and similar neighborhoods.

✓ Last but not least, studying the Actors' different actions and powers, in order to enable suggesting apt recommendations for their functional & decision-making improvement; formulate suitable responses (R1, R2 & R3) (see Figure 9-1)

9.2   LINKING RESEARCH QUESTIONS TO CONCEPTUAL FRAMEWORK

In this part of the research study after formulating the Conceptual Framework in the previous chapter defines what will be studied and what not (Miles & Huberman, 1994); Research Questions are linked to it. The study includes main questions that tackle the broader research

issue and Sub-questions which are rather operational and explain certain subject matters within the context of the study. The 1st and main question of the study is exploratory in nature asking '*What*' (Yin, 2003:6). Other research questions asking '*How*' and '*Why*' are explanatory in nature that seek '*to explain the presumed causal links in real-life interventions*' (Yin, 2003:15). The research questions operationalize the conceptual framework (Miles & Huberman, 1994:22) linked with the objectives.

9.2.1   GENERAL HERITAGE NEIGHBORHOOD LEVEL QUESTIONS

1. What are the sustainability-related criteria important for preserving the heritage neighborhoods of 19th and early 20th century Egypt? (localized sustainable state (SS)) (Exploratory)

2. How can these sustainability-related criteria be translated & applied in order to avoid current encroachments and proceed towards a Sustainable State? (Operational, Exploratory, Explanatory)

3. Why do heritage owners resort to selling their assets let it demolish and a new huge investment is replacing the old building? (state (S)) (Explanatory)

9.2.2   HELIOPOLIS LEVEL QUESTIONS

4. What is the anticipated response (R) within the prevailing context of Heliopolis to avoid the current encroachments? (response (R))
5. Why is sustainable heritage neighborhood preservation (SHNP) based on a criteria catalogue beneficial for Heliopolis and similar neighborhoods? (Explanatory, Causal)
6. How do both actors, NOUH and HHI prioritize sustainability criteria and thus recognize sustainability within Heliopolis? (Exploratory, Evaluative, Explanatory)
7. What are the measures to be carried out towards sustainability in Heliopolis neighborhood? (state (S) vs. sustainable state (SS)) (Operational)
8. How did different responses (R) affect Heliopolis since its emergence in the early 20th century? (DPSIR framework) (Explanatory) (Causal)

9.3   RESEARCH PROPOSITIONS

The research study at hand uses research propositions (see section 1.6) that promise a staying within 'feasible limits' (Baxter et al., 2008) having a *distinct focus and purpose which guide the data collection and discussion* (Baxter et al., 2008:552) that helps systemizing the researcher's thinking (Miles & Huberman, 1994:75). They help to 'focus the data collection', 'determine direction and scope of the study' (Miles & Huberman, 1994:76; Baxter et al., 2008). They lead to the conceptual framework guiding the study (Yin, 2003) in addition they reflect the research findings and conclusions (Miles & Huberman, 1994:75).

9.4   RESEARCH STRATEGY

At this point of the dissertation the research strategy is drawn out in a way that seeks to achieve research objectives and answer research questions justifying the different steps (see Figure 9-3). The research at hand is a blend of the two methodologies defined under mixed

methods research MMR: an *iterative, cyclical approach to research* (Teddlie & Tashakkori, 2011:288), combining qualitative and quantitative approaches to research. The research is divided into two stages where the first is *the context or logic of discovery [Qualitative]* to thoroughly understand the phenomenon, choosing the suitable theories and propositions. The second stage of the research is the *logic of justification* where testing the assumptions, theories and proposition is done (Teddlie & Tashakkori, 2011:288). In other words, the research at hand is based mainly on a case study that seeks to explain present circumstances, in addition it also '*allows retaining holistic characteristics on… neighborhood change*' (Yin, 2009:4) which is sought for in the chosen case of Heliopolis. The case study is partially of an exploratory nature, aiming to explore important sustainability qualities for sustainable heritage neighborhood preservation. Meanwhile, the research seeks to evaluate previous and current Responses carried out on the local and country levels that have affected (either positively or negatively) the case study of Heliopolis. The research has also an explanatory nature, trying to explain causal relations within the case that might have led to the current state using the DPSIR-framework. seeking '*to explain the presumed causal links in real-life interventions*' (Yin, 2003:15) where the various methods used are not mutually exclusive (Yin, 2003:9). After coming up with quantitative data conversions and conclusions; the research assesses the Heliopolis state (S) against sustainability principles of the localized sustainable state (SS).

It is essential '*to clarify just what is being mixed—and how it is being mixed* (Bazeley, 2004: 141). In the case of this dissertation carrying out a '*sequential use of different methods'* is used (Caracelli & Greene, 1997 cited in Bazeley, 2004:141) (see Figure 9-2). This mixing expands the
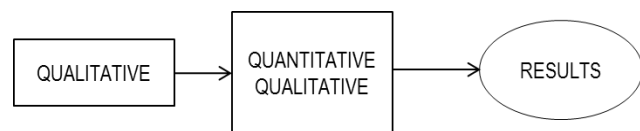
Figure 9-2 Sequential mixed method approach edited fromCreswell, Plano Clark et al., 2003:215

scope and breadth of research to offset the weaknesses of either approach alone (Greene, Caracelli, & Graham 1989; Driscoll et al. 2007); to provide a better understanding of the research problem (Creswell, J. W., Klassen et al., 2011; Creswell, 2011:271; Bergman, 2011). It can cross-validate or complement individual findings, and it may be able to combine different strands of knowledge, skills, and disciplines (Bergman, 2011). The research develops a design that answers the research questions within the constraints and boundaries of the study context (Driscoll et al. 2007); yet reflecting a positive choice of the methodology adapted as argued by Howe & Eisenhardt (1990) (in Bazeley, 2004).

This study at hand seeks to develop a criteria-based catalogue as a base for further inquiries of research. It was then analyzed converting qualitative coding (the categorized criteria) into quantitative figures that can be interpreted; also called *Quantatizing*[74] (Bazeley, 2004). *The statistical analysis provides … access to patterns, trends and underlying dimensions in the data not readily evident in the detail of the qualitative analyses;* treating the same data *hermeneutically & statistically.* This serves the dual purposes of generalization (on the conceptual level) and in-depth understanding (Bazeley, 2004).

While qualitative indicates an emphasis of the quality of issues seeking to find answers for 'how' experiences, quantitative implies measurable issues and analysis of causal relationships between variables.

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[74] *Quantatizing* describe the process of transforming coded qualitative data into quantitative data (Tashakkori and Teddlie, 1998:126

The underlying philosophical paradigm of this dissertation is based mainly on *Pragmatism*, yet dealing also with *Interpretevist/Constructivist* Paradigms. Pragmatism searches for *workable solutions through the practice of research;* it carries out mixed research, adapting criteria applicable to the context of the study meanwhile answer the questions offering *workable improvements in our world* (Onwuegbuzie, & Johnson, 2006:54). As argued by Teddlie & Tashakkori (2011:296), a *Pragmatic* paradigm provides the underlying philosophical framework for mixed methods research MMR; focusing on the '*how*' & '*what*' of the research topic placing the research problem in the focal point of the study adapting possible approaches (data collection & analysis methods) to understand the problem (Creswell, 2003:12) as in the case at hand. Moreover, as the research uses a 'Leitfaden' in-depth interview; the *Interpretevist/Constructivist Paradigm* appears also relevant; tending to rely on respondents views about the issues under investigation (Creswell, 2003:9), in addition to the data analysis which also includes interpretations (hermeneutics) (Mackenzie & Knipe, 2006). This paradigm *recognizes the importance of the subjective human creation of meaning,* without totally rejecting objectivity (Baxter, 2008:545).

The logic employed by the research (see Bazely, 2004:142) is complementary using *deductive* and *inductive* approaches. It is deductive in the sense that it is testing a theory (using propositions) in a case for validation or falsification where using the theoretical concepts lead to new relevant contextual definitions (see Yin, 2012:94). Meanwhile it is *inductive* in the sense that it generates new principles to an existing theory, from facts within the case to come up with a localized conceptualization theory amenable in Egyptian contexts and is ready for generalization (on the conceptual level). In testing a theory a door opens for new elements and concepts to attain a local conceptualization of the utilized theory (see Johansson, 2003:10).

Derek Layder (1998:35) argues that theory testing can also lead to a reformulation of the older or existing theory; such as the study at hand where the initial proposal of the sustainability catalogue is first tested and confirmed by experts in the field and then partially tested on the case of Heliopolis. A more reliable catalogue will need more testing and pilot projects that can be urged by further studies. Qualitative results usually don't suite for generalization on a 'sample-population level' because dimensionality identified in a small sample drawn no probabilistically may not include all relevant dimensions (Bergman, 2011: 274) that is why generalization is done to theoretical propositions (Yin, 2003:10).
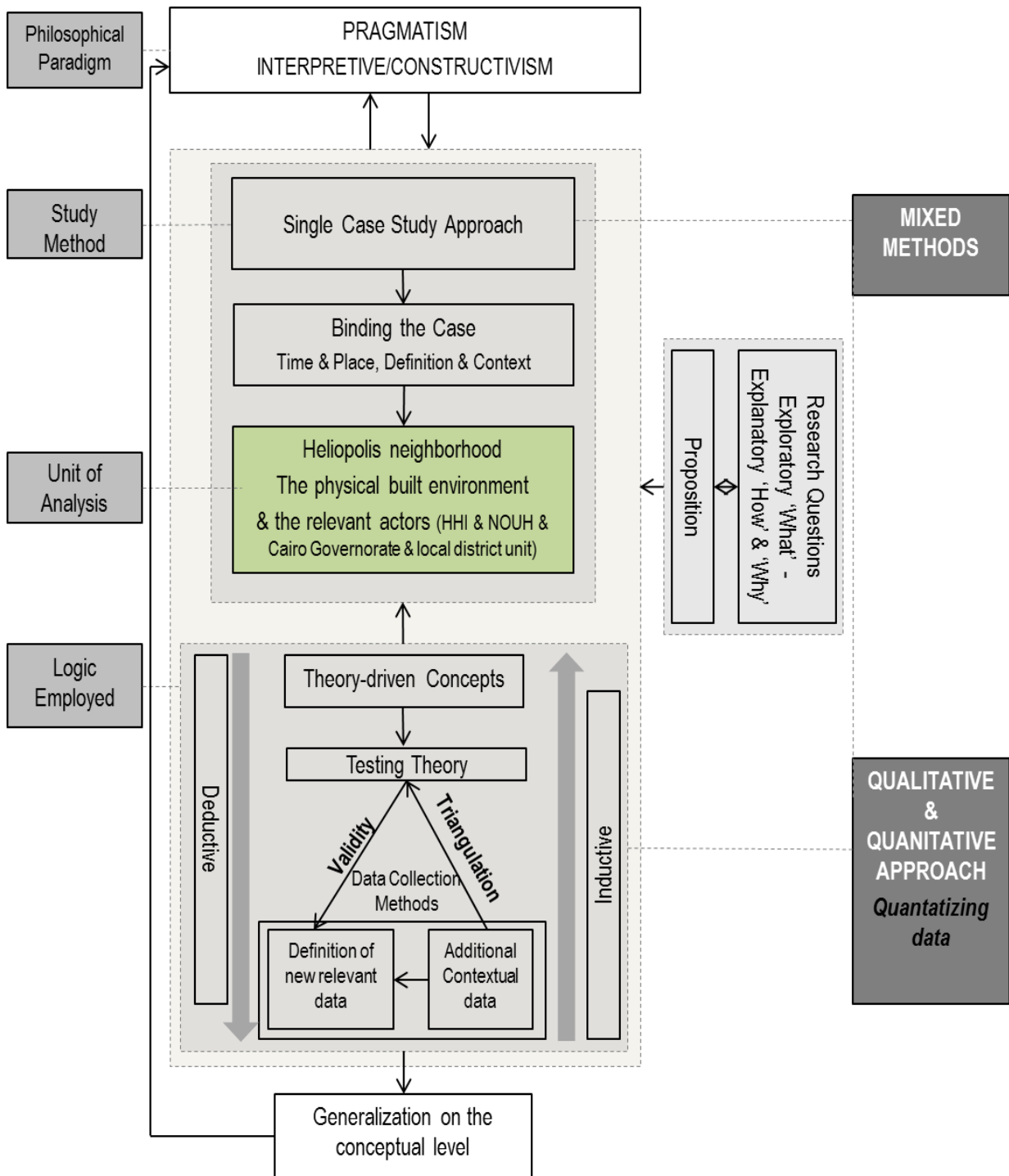
Figure 9-3 A graphic illustration of the research strategy developed by author

9.5   RESEARCH PROCESS

After outlining the research strategy that guides the dissertation at hand; the process to attain the different inquiries as sought in the research questions will be explained in the following part using data ranging from primary to secondary data collection methods.

The formation of the catalogue will be through a two-steps process. Initially a thorough literature review was carried out from which related concepts deal with the sustainable neighborhood development and heritage preservation were extracted and adapted. In order to avoid subjectivity of the research, it was important to carry out an expert-interview seeking confirmation and reliability on the catalogue developed. This was the kernel for the 'two round' semi-structured expert interview based on a questionnaire that was carried out with experts in relevant fields to come up with a refined catalogue; reaching the definition of the sustainable state (SS) criteria. The product of this process will be an adapted and localized catalogue of criteria that draws a sustainable heritage neighborhood preservation SHNP approach for the Egyptian context. This catalogue presents the localized sustainable state (SS) as hypothesized in the conceptual framework as the ultimate state of sustainability striven. It could be put as a benchmark for the state (S). The catalogue aims to form the basic knowledge for what constitutes a sustainable heritage neighborhood preservation clarifying prerequisite conditions that must be fulfilled in order to build on it for advanced levels of sustainability.

The chosen case study of 'Heliopolis' will be dealt with as suggested by LEED (USGBC, 2009) when dealing with existing neighborhoods. It will be first assessed against the sustainability catalogue qualities developed for the sustainable state (SS). Secondly, a closer focus will be placed on the strengths and weaknesses of the designated area specifying zones and places where the neighborhood reflects strong sustainable performance and where it shows weak performance seeking the contribution of relevant actors to satisfy the community needs opening new sustainability corridors for the neighborhood development. Thirdly, a plan can be proposed; suggesting renovations directed redevelopment, infrastructure improvement to higher the performance of the neighborhood and mitigate weaknesses proposing policy as a backbone for its success.

The research works on different levels as explained in the conceptual framework. It aims to evaluate current responses (R) of the different stakeholders within the heritage neighborhood which will be attained through secondary and primary data; such as governmental documents, literature and conducting in-depth Leitfaden interviews with key experts from NOUH, Cairo Governorate and HHI (response).

After precisely defining the requirements of the study, contact was carried out with relevant key-actors within Heliopolis neighborhood; mainly with the National Organization of Urban Harmony (NOUH) as the '*Agenda Controllers*' (R1), and the Heliopolis Heritage Initiative (HHI) as the '*Preference Shapers*' (R2) and the governmental entities (Cairo Governorate & Heliopolis Local District Unit) as the *'Decision Makers'* (R3). And to avoid biasing the study, respondents of different views were also interviewed as suggested by Yin (2012:88), such as academic professors and the working team on the Green Pyramid for Neighborhoods (similar to U.S. LEED-ND) affiliated to the Housing and Building Research Center (HBRC); although they do not have direct relevance to the Case of Heliopolis such as NOUH and HHI.

9.6   SINGLE CASE STUDY (SCS) APPROACH

While the exploratory nature of the study offers the adaption of any research strategy (Yin, 2003:6); the explanatory part of the study makes a case study (CS) approach more suitable compared to the other methods. Gerring (2004:341) argues that case study '*is the best defined as an intensive study of a single unit… with an aim to generalize across a larger set of units*' and this is what the PhD dissertation seeks to do. Case study goes beyond being a type of qualitative study; it can use '*a mix of quantitative & qualitative evidence*' (Yin, 2014:19). Yin (2011:6-10) suggests three steps for designing the case study; (1) defining a 'Case', (2) choosing the case study type (3) and using theoretical propositions to complete essential methodological steps (defining data to be collected) which will be done in this research.

CS combines other research strategies considered as a 'meta-method'. In practice oriented fields of research, such as architecture and planning, the case study has a special importance contributing to the building of a professional repertoire (Johansson, 2003). A case study comprises more detail, completeness, richness and variance. The case study '*tries to illuminate a decision or a set of decisions: why they were taken, how they were implemented, and with what result.*' (Schramm, 1971); focusing on contemporary events (Yin, 2014)& (Johansson, 2003). The research captures the complexity of a single 'case' as the object of study (Johansson, 2003).

The case study approach is considered when (a) the research questions seek the 'how' and 'why' (more explanatory questions) of some social phenomenon requiring extensive 'in-depth' description (b) requiring no control on behavioral events however focuses on contemporary events (Yin, 2014:9); (c) the need to cover contextual conditions relevant to the investigated contemporary phenomenon, (d) boundaries are not clear between the phenomenon and context (Yin, 2003).

The case study approach is exploratory in nature, asking 'what' but it is also explanatory seeking the answer of 'how' and 'why' (see Yin, 2014:7). It enables the understanding of the situation and include '*important contextual conditions*' pertinent to the work (Yin & Davis, 2007 in Yin, 2014:16). This definition shows how encompassing the method can be including the '*logic of design*', '*data collection techniques*', different '*approaches to data analysis*' (Yin, 2014:17). This variety of data sources is very helpful to explore the case phenomenon of heritage neighborhood encroachments within the context of Heliopolis. The case study provides the possibility to discover the issue using a variety of lenses to reveal the multi-facets of the phenomenon and ease understanding it (Baxter et al., 2008:544). Using the DPSIR-framework to be applied on Heliopolis revealing strengths and weaknesses + the criteria catalogue evaluation + Leitfaden in-depth interviews + semi-structured expert interviews based on a questionnaire; are all data collection methods that enriched the study. They provide internal validity triangulating the different data sources to prove convergence in a variety of aspects but also show divergence in few other aspects that appear to be comprehensible and traceable. This research strategy and chronology achieved a better understanding of the topic of research answering its research questions and testing its propositions. Case studies '*are generalizable to theoretical propositions and not to populations or universes… [as it] does not represent a "sample*". It is rather an *analytical generalizations* not a *statistical* one (Yin, 2014:21; Johansson, 2003:8).

The rational of choosing Heliopolis as a single case study is its representativeness as both a unique and representative case. It is a *unique case* (Yin 2003:40), where the case of

Heliopolis with its high number of listed valuable buildings and the existence of an active civil societal resisting initiative (HHI) forms a unique case (generalizable on the conceptual level). On the other hand, it is a *representative* case that aims to capture circumstances and conditions of a commonplace situation. It is then informative about the situation of Egyptian heritage neighborhoods of the same type (see Yin 2003:41).

SCS is a form of explicative (as opposed to experimental) strategy, having a single case using various variables making the empirical world amenable for investigation (Johansson, 2003).

Although the chosen case of Heliopolis is a representative and unique case, however results are not directly transmittable to other cases, yet the transmittal of the theoretical approach to other neighborhoods is possible. In other words, using the same sustainability catalogue that will result of this study can be used for other neighborhoods; however the preferences and priorities put for Heliopolis are not necessarily the same for other neighborhoods. Each neighborhood has its strengths, weaknesses, opportunities and threat that accordingly define their preferences.

The case study carried out aims to protect the research against threats of validity, maintaining a chain of evidence. It also investigates and tests rival explanations, and finally it is important to openly acknowledge the strength and limitations (Yin, 2009).

9.6.1 UNIT OF ANALYSIS: THE 'CASE' BOUNDING

As important as formulating the research questions, it is important to 'consider what the case is (Baxter, 2008:546). Yin (2003) suggests placing boundaries for a case to prevent pitfalls. Binding the unit of analysis can be through *time and place* (Creswell, 2003) and *definition and context* (Miles & Huberman, 1994) to ensure that the research remains reasonable and bind to a scope (in Baxter, 2008:546). The units of analysis in the research at hand are *physical artefacts* as named by Johansson (2003:5), comprising of buildings and urban areas in Heliopolis in addition to the direct actors within the neighborhood. Actors are the local community represented by the *Heliopolis Heritage Initiative* (HHI) in addition to the influencing governmental bodies within the neighborhood, such as the *National Organization of Urban Harmony* NOUH, Cairo governorate and the local district unit of Heliopolis. Only the HHI, as a heritage driven initiative within the neighborhood is included in the study; other initiatives and association in the neighborhood are not part of the study. As for the scope of the NOUH; the study will be mainly concerned with all the processes, plans and laws that have to do with protecting the valuable distinctive buildings and areas within Heliopolis and similar neighborhoods, other activities of the NOUH do not lie within the scope of the study. Moreover, the study does not intend to study Heliopolis heritage neighborhood state specifically during the revolution period in Egypt, because the research problem does exist from before. However, the revolutionary atmosphere may have affected the course of the study, affecting the case and the respondents. Concerning the respondents they could be affected by surrounding happenings, either feeling happy, hopeful, pessimistic, afraid, expecting radical changes, etc. The case as a bounded entity is *special* covering a distinctive event a '*dramatic neighborhood change*' as suggested by Yin (2011:7) such as the case of Heliopolis.

9.6.2 RATIONALE OF CASE STUDY SELECTION

The case study shows a rigorous methodological path with a thorough preparation of the literature review, attentive research questions and objectives posing.

Heliopolis has an inventory map of valuable buildings categorized as A, B & C developed for by NOUH (2009) in addition to another value map of valuable areas A, B & C (accredited December 15, 2013). Heliopolis has an active civil society represented in the *Heliopolis Heritage Initiative* (HHI) which tries to win acknowledgment and recognition from the intimate local community and the society as a whole to form a strong backbone for preserving the heritage and the character of the neighborhood reviving the common memory that the Heliopolis-residents share. Heliopolis has faced various encroachments and demolitions; however the percentage may be low in comparison to other areas. The high value of land plays as a jeopardy and opportunity. On the one hand, owners tend to tear down their buildings and sell the expensive land, but the very high value ofd land make investors do not dare to construct high-rises on un-licensed land which will prohibit the selling of the apartment units in the market (A. Aly NOUH, personal communication, March 26, 2013), where circumvention would be their way out (see chapter 11).

Heliopolis is a *representative case* for what the research tries to find-out fulfilling the requirements of: high number of valuable buildings, designated valuable areas, having a resisting civil society (intellectual society form a potential for success), reflecting a unique urban character worth preservation. Limitation of the case is that it is a representation within a class.

19th & early 20th century architecture	yes
Presence of grassroots initiatives	Heliopolis Heritage Initiative
Citizen participation	HHI give opinion
NOUH accredited valuable ND	Yes
Number of listed buildings	732 listed buildings, dense with valuable buildings / Representative case
Social structure	High/middle Provides potential for possible sustainable approach
Residential /commercial	Yes
Encroachment level (demolition acts)	Medium
Accessibility (due to political situation)	Yes

9.7 DATA COLLECTION (AND ANALYSIS) METHODS

One of the strong benefits of adapting a CS approach is that it can use a wide variety of evidence and in the end it aims to '*expand and generalize theories*' (Yin, 2003:11-12) as in the case at hand. Data collection methods used in this study, range from primary data to secondary ones as shown in (Figure 9-4).
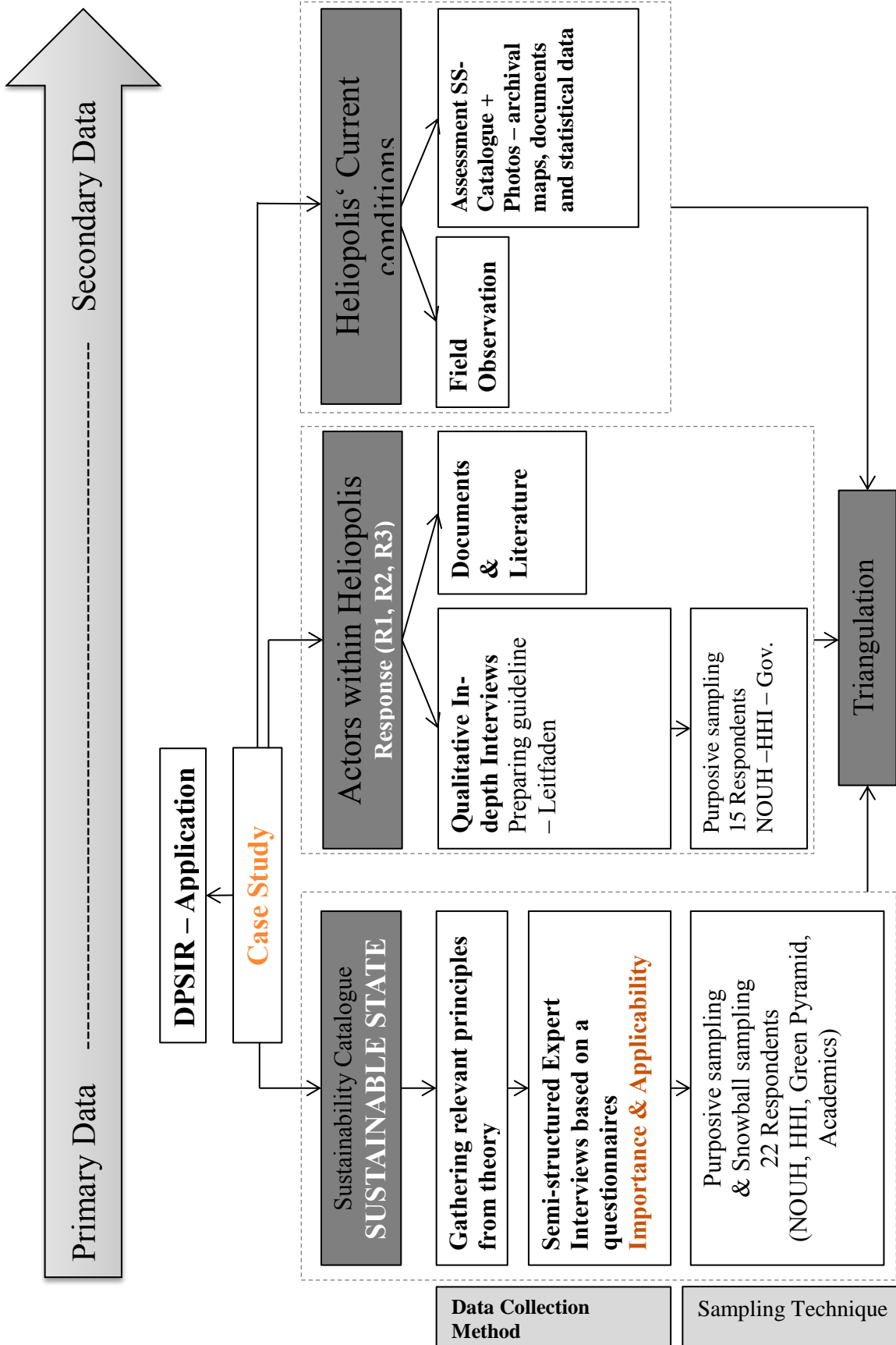
Figure 9-4 Methodological Research Process developed by author

Primary data are extracted mainly from the semi-structured expert interview based on a questionnaire (Qualitative-Quantitative nature) asking experts about the importance of sustainable preservation of Egyptian heritage neighborhoods. The Leitfaden in-depth interview (Qualitative-nature) is another data source of primary level asking experts key open-ended questions concerning the same issue (see Appendix 3), and last but not least, field observations carried out within the case study area of Heliopolis both direct and verbal such as while walking in its streets or in meetings carried out by the HHI-members. Alongside, secondary data is also used, such as statistical data about Heliopolis, related articles and archival documents and maps; in addition to documents about the NOUH organization, its structure and responsibilities, relevant laws, and documents about other actors within the neighborhood

9.7.1 LITERATURE REVIEW

Literature review is an important research tool that guides the researcher (Mertens, 2010:89) which is extensively carried out in this study. It provides an overall framework to enable positioning the research where it really fits in the *'big picture' of what is known about the* topic (Mertens, 2010:90).

Yin (2011) identifies three sequential types of literature reviews to have a final robust literature review relevant to the designated topic; the *study bank, comprehensive* and *selective review,* as illustrated by.

The *study bank* in the research at hand is the first step which supports considering the *topic* of sustainable heritage neighborhood preservation SHNP along with further relevant *data collection method & possible sources of data* (Yin, 2011:49). It encompasses a wide span of completed recent articles as the topic is not mature yet to enable a possibility of filling a certain scientific gap (Yin, 2011:54). Using the referencing program Citavi, enables the researcher to gather the studies for the bank putting labels (such as *strongly relevant, relevant*, etc.,) to ease retrieving the literature later on. After categorizing the studies, classifying some as preferred studies; a familiarization to the topic is carried out (Yin, 2011:53). The second step is the *comprehensive review* which summarizes what is known on the designated topic (Yin, 2011:64), while

Figure 9-5 The three sequntial narrowing down steps of Literature Review reaching the study Concept (Yin, 2011) illustrated by author

the *selective review* aims to sharpen the initial considerations about the research *topic, method, and data source narrowing down the* studies; deliberately targeting studies that are directly related to the topic (Yin, 2011:62).

9.7.2 THE DPSIR-SS FRAMEWORK

The DPSIR-SS framework proposed is used in this research for two purposes. The first is for illustrating the conceptual framework in a clear and comprehensive way showing the required elements for the study, which is mainly determining the state (S) of Heliopolis, defining the sustainable state (SS) qualities and assigning suitable responses (R) to enhance the state (S). However, in order to have an efficient response (R) for the state of a neighborhood towards

the desired sustainable state (SS) a better understanding of the driving forces (D) and pressures (P) within that neighborhood is needed. That is why the DPSIR-SS is also used in chapter 11 for a thorough investigation of Heliopolis.

9.7.3 A SEMI-STRUCTURED EXPERT INTERVIEW BASED ON A QUESTIONNAIRE

The localized sustainable state (SS) criteria catalogue was basically based on sustainability principles gathered from relevant literature such as the principles of New Urbanism, Barton (2000), Benfield (2012) and LEED-ND among other additional qualities relevant to the preservation of the heritage buildings and neighborhoods. The sustainability-related criteria catalogue proposed by the researcher was then initially formulated after the illustration of the theoretical part (see Table 6-1 & 6-2 in chapter 6 then Table 8-1 in chapter 8). In a second phase it was reshaped into a questionnaire type to enable the expert-interview conducted with preservation and sustainability-related experts on the national and local level seeking to avoid the subjectivity of choice of the criteria to win confirmation and reliability from experts asking the respondents to take a position in the asked issue.

The semi-structured interview based on a questionnaire as a method was chosen for the same reasons mentioned by (Barriball & While Alison, 1994)

- They fit best when exploring the perception or opinion of respondents about complex issues, where it covers a wide spectrum of issues (in this case sustainability criteria) in a structured form
- Different actors of different professions are asked the same questions to reveal what is considered as the major concern for each actor

Validity and reliability depend, upon conveying equivalence of meaning (Denzin 1989 in (Barriball & While Alison, 1994)*, which help to standardize the semi-structured interview and facilitate comparability* (Barriball & While Alison, 1994:330).

Using a standard '*interview guide*' of questions in the semi-structured interview provides a clear set of instructions for interviewers (Bernard, 2006:212) offering reliable, comparable qualitative data (Robert Wood Johnson Foundation[75]); *best used with high-level bureaucrats and elite members such as experts* (Bernard, 2006:212). In the beginning of the questionnaire it is stated clearly that the research is concerned mainly with living heritage neighborhoods of the 19th and early 20th century such as *Zamalek*, Heliopolis, *Garden City*, *Manial*, *Abbasseya*, etc. and while asking the HHI-members the answer was focusing only on Heliopolis.

The set of structured questions in the questionnaire are followed by one open-ended question explicitly linked to the preceding set of questions (as in Driscoll et al., 2007). It *provide the opportunity for identifying new ways of seeing and understanding the topic at hand* (Robert Wood Johnson Foundation). That is why the open-ended question put at the end of the questionnaire gave respondents the possibility to express her/his opinion differently and using their own terms. It makes sure that nothing has been skipped in the course of the questionnaire. It asks for additional information and general impression or opinion to sum-up the topic in a couple of words. This data collection strategy has several advantages for mixed methods, as to make sure that the respondent has tackled all the issues proposed, without neglecting his opinion (as in Driscoll et al., 2007:21). The Semi-structured questionnaires

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[75] Robert Wood Johnson Foundation: http://www.qualres.org/HomeSemi-3629.html

were distributed on 22 respondents and representative results were able to be collected from structured and unstructured data for the analysis phase in chapter 10 and 11 and significant conclusions are drawn to determine the final localized sustainable state (SS) catalogue for preserving the heritage neighborhoods of 19th and early 20th century Egypt suggesting possible sustainability corridors; fulfilling one of the main inquires of the study.

The analysis of the outcome of the semi-structured interview will lead to a refined and confirmed formulation of the localized sustainability catalogue resembling the ultimate vision for a sustainable state (SS) sought for within Egyptian heritage neighborhood.

The questionnaire of the semi-structured interview was formulated carrying out two rounds. In the first round a pre-test is carried out with 4 respondents asking about the *importance* of each criterion and with other 4 asking respondents about *applicability* to test the questionnaire. Significant comments received from interviewees were taken into consideration; enabling the research to develop the criteria of the catalogue using simplified terms to make sure that conveys the same meaning to all respondents which can in the end result in a significant output valued in the research analysis phase. As called for by Cole (2005) the criteria based method should be simple and practical to allow a wide accessibility (Cole, Howard, Ikaga, & Nibel, 2005). It was possible to create typologies from the input of the interviewees to state why a certain criterion is not applicable creating the categories *technical, administrative, physical* and *socio-cultural*. Some additional necessary refinements were carried out reaching the final version (see Questionnaire Appendix 2). The criteria used are rather principles than measureable indicators (indicators are currently not attainable on the Egyptian ground). Although measurable indicators could be valuable for assessment there is a necessity to agree first on the basic principles for Egyptian heritage neighborhoods then dig into the details of each 'agreed-on' subject checking for further measuring and detailing possibilities, which can be a work of a further study. The questionnaire was designed dividing the sustainability principles into 6 different compartments asking experts on two stages:

- **1st stage of questionnaire: What are the qualities -----*Importance*?** This part of the questionnaire was carried out with 22 respondents.
- **2nd stage of questionnaire: How to translate these qualities------*Applicability*?** This part of the questionnaire was carried out with 17 respondents.

The questionnaire is designed to ask the expert on two stages; where the first asks about the '*Importance*' and the second about its '*Applicability*'of each criterion. Asking about the importance will answer the first research-question of the study about 'the important sustainability related qualities within Egyptian heritage neighborhoods; while the second part of the questionnaire asks about the applicability which answers the second research-question concerned with 'how to translate and utilize the criteria catalogue'. To answer the questions about the importance of each criterion an ordinal 5 point Likert-scale was used comprising of interval-scaled measurement levels (Langer, 2000:10). The chosen Likert-type scale involves a series of statements where respondents can choose from to rate their responses to the questions as suggested by (Vogt & Johnson, 2011:208). It ranges from extremely important (5), important (4), and fairly important (3) as the neutral stance, not important (2) and extremely not important (1) automatically assigning values to each ordinal response to ease the analysis process (see Appendix 2). Having a midpoint is significant to avoid pushing the respondents towards positive ends (Worcester and Burns, 1975 in Garland, 1991). Choosing a 5 point-Likert scale offers people a wider choice where the researcher decides on how to proceed further with analysis (Method space[76]). This part of the questionnaire seeks to answer

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[76] http://www.methodspace.com/forum/topics/3point-or-5point-likert-scale

the main research question; '*What are the sustainability-related criteria important within the heritage neighborhood*?' thus defining the sustainable state (SS). A quantitative approach was chosen for further analysis of this part. This approach has two roles, the first and main role is to distinguish between important and less important sustainability criteria as recognized by the Egyptian experts through calculating the average importance of each criterion (see section 10.1.2). This can help coming up with the sustainable state (SS) catalogue sought. The second role, which alters from case to case, is that it could give a sense of chronology and order; giving signs for relative importance of certain qualities within a certain neighborhood, at a certain point in time that could guide responses (R) in a desired direction. This can be withdrawn from the analysis even if the number of experts asked is not high.

Figure 9-6 The semi-structured questionnaire divided
into stage I (Importance) & stage II (Applicability)
developed by author

The second stage of the questionnaire asks about the applicability possibility of each criterion within the Egyptian heritage neighborhoods of the 19th and early 20th century, with the chosen case study of Heliopolis. Analyzing this part will lead to answering the operational question asking about the applicability possibilities and obstacles of the different discussed criteria within the prevailing Egyptian context.

It also enables assigning tasks for each response (R1, R2, & R3) formulated as recommendations that help achieving a localized sustainable state (SS). In the applicability part of the semi-structured questionnaire a nominal category type question is used offering six categories to respondents to help her/him assign for each criterion a specific measure that could be applied[77].

If a certain criterion does not suit in the Egyptian context, respondents then tick on '*not applicable*'. In case it could be applied; further elaboration is asked; whether it is a *technical, administrative, physical, socio-cultural measure or others* that should be carried out in order to achieve the designated criterion. '*Applied*' means that the mentioned criterion is already applied within the Egyptian context, stating that it is partially applied was also possible. The '*Technical*' category embraces technical issues such as the know-how of the responsible

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[77] These categories were formulated after carrying out the 1st round of questionnaires

bodies, their weak capacity, the needed talents or experiences for a certain job etc. The '*Administrative*' category includes executive challenges or problems, Law related matter such as lack of law, absence of enforcement, the need to change the Law; Codes and also financial affairs such as lack of financial support or need of incentives or lack of sufficient funding etc. '*Physical*' comprises of all elements related to the physical environment of the urban neighborhood starting from rigidity of the existing context, reaching the need of redesigning or re-planning, the need of physical elements to be implemented such as trees, hard-scape or change in the urban elements such as paving etc. The '*Socio-Cultural*' category includes challenges related to the community people, such as lack of awareness, lack of knowledge about certain issues, potential contributions of NGO's, participation, cultural constraints etc. '*Other*' was an additional category in case another reason is given such as socio-economic which was proposed by one of the experts in the final round stating that a lot of criteria are socio-economic related and should be tackled on these two scales.

The results of the analysis in chapter 10 will help understand what the experts consider important for sustainable development and how they see application possibilities for developing existing heritage neighborhoods. Interviews are to confirm the reliability of the proposed sustainability criteria. The resulting catalogue aims to show the important sustainability-related principles not to be overlooked in any development project, as evaluated by experts. In addition, it can be used as an initial evaluation list or guide to sustainability planning determining the state of the designated neighborhood and identify its strengths and weaknesses without neglecting any important element and finally respond with a plan and develop suitable responses (R) for solving occurring problems. Moreover, it can provide preliminary corridors for possible intervention programs needed for the designated neighborhood towards sustainability according to the pre-defined strengths and weaknesses, where social weaknesses call for a predominant social intervention, while an acute cultural and urban problem calls for preservation and upgrade etc.

9.7.4 EXPERT "LEITFADEN IN-DEPTH INTERVIEW"

As Hopf clarifies Interviews are not necessarily used in their pure defined modes they can be also formed from combined ones (Hopf, 2000:353 in Reuber& Pfaffenbach, 2005: 131). The Leitfaden Interview type was chosen for the in-depth interview as it is more structured and more oriented towards the interests of the Interviewers then narratives. Interviewer is a narrative-stimulant in that case (Reuber & Pfaffenbach, 2005). 'Problem-centered partially structure' Interview-type under the Leitfaden Interview approach was more relevant to the required Information-nature sought from Interviewees. It works as an 'Interview-guide' with no real rigid scheme (Reuber & Pfaffenbach, 2005:133), the main sense behind it is to control by the end of the interview that all relevant topics were discussed and no essential aspects were
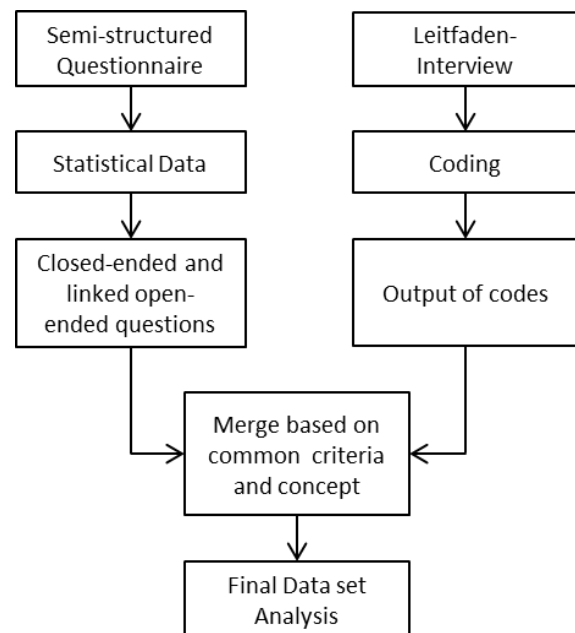
Figure 9-7 Sequential Design edited from Driscoll et al., 2007:21

overlooked (Lamnek, 1995:77 in Reuber & Pfaffenbach, 2005)**.**

The Leitfaden interview was carried out with respondents from the different stakeholder groups within a neighborhood (responses(R)). The aim was to form an idea about their different views and concepts towards the issue of sustainable heritage neighborhood preservation (SHNP). 15 respondents in total, 9 related to NOUH, 3 related to Cairo governorate, one from the local district unit of Heliopolis and 2 from HHI. Interviews were recorded after taking the permission of the respondents, except for the respondents from governmental authorities (Cairo Governorate, and local district Unit of Heliopolis) who refused the recording.

The advantage of this approach is that it allowed respondents to liberally talk about the proposed topics giving their input. This strategy is time requiring; designing and conducting separate tailored questions for respondents depending on their affiliation (NOUH, HHI, Cairo Governorate) but it collects rich data.

9.7.5 SAMPLING: SELECTION OF INTERVIEWEES

The total number of the respondents who took part in the semi-structured Interview based on a questionnaire is 22 and 22 complete questionnaires were filled. The research population consisted of ten experts of the National Organization of Urban Harmony (NOUH), four experts of the team who worked on the project of development of the Green Pyramid for Neighborhoods (similar to the known LEED-ND), two academic experts, in addition to six key-members of the Heliopolis Heritage Initiative.

The coding and analysis was done using excel computer program. The findings are presented and discussed in chapter 10 by using bar charts and illustrative pie charts, in addition to tables showing groupings of important criteria resulted of the quantitative discussion.

Two sampling techniques were mainly used here, the Purposive Sampling and the snowball sampling. Purposive Sampling technique (Dawson, 2009) is the most suitable to carry out to *'yield the most relevant and plentiful data'* (Yin, 2012:88). And the snowball sampling is selecting respondents *based on referrals from one source to another* (Yin, 2012:312). These techniques helped interviewing the different experts of different fields. The NOUH-experts either presently or formerly working there were asked using initially a purposive technique supported later by snowballing seeking additional relevant information (Yin, 2012:89); asking for further names, with the help of an organization chart. The NOUH-experts asked are knowledgeable responsible experts in the field which makes the sample representative being able to reach reliable results. The HBRC team working on the Green Pyramid for Neighborhoods consists of a chef and three co-workers, with whom the interview was carried out (the whole population) using the purposive approach. HHI respondents were reached through using current social-media techniques (Facebook), asking the 6 key-members of the initiative. The different respondents were asked about the importance and applicability of the sustainability principles within 19th and early 20th century Egyptian neighborhoods in general and Heliopolis in specific giving their input. And as suggested by Turoff (1975) to include a couple of liberal thinkers as respondents in order to extend the coverage of the topic, the research study added two academic professors in the fields of environmental architecture and urban planning.

9.7.6   FIELD OBSERVATION

The researcher has carried out three Field-study trips to Cairo, Egypt where different activities were carried out as follows:
1st Field Study Trip: July 2012-September2012
- Visiting Heliopolis Case in a fact finding mission along with other neighborhood visits, taking pictures documenting status of buildings and land-uses, making notes on the neighborhood characteristics such as walkability, the existence and quality of paving; newly built high rises, demolitions in progress, deteriorated valuable buildings.

2nd Field Study Trip February 2013-April 2013
- Leitfaden In-depth Interviews, pre-test for semi-structured Interviews based on a questionnaire, proceeding with observation in Heliopolis taking pictures tracing changes (land-use changes, demolitions and new construction), attending HHI meetings in Heliopolis
- Going to Heliopolis Company premises in Heliopolis asking for information, old maps and asking related questions.
- Going to Cairo Governorate and Heliopolis local district unit

3rd Field Study Trip November 2013-January 2014
- Second and Final round Interviews, new observations documenting new encroachments, land-use changes, constructions,
- completing missing data

9.7.7   MAPS AND PHOTOS

AutoCAD Maps of the chosen case study are being used to process different important maps such as the valuable buildings map from (NOUH), density of valuable buildings and street network, the urban fabric, and the land-uses. Old maps from Heliopolis Company and online-Sites are used for documenting the development of the neighborhood.

9.8   ETHICAL CONSIDERATIONS

When conducting a scientific research, the researcher must be aware of some ethical considerations. It is important to avoid subjectivity in the course of conducting the interviews the questions are put in a neutral non-manipulative composition. Biases and opinions of the researcher were kept unrevealed throughout the interview process. In order to ensure cultural appropriateness, respondents were informed about the study verbally, in the native language 'Arabic' using a "conversational approach." Consent was obtained by signature (Liamputtong, 2008). Moreover, respondents were chosen mainly purposefully and not because of personal convenience of their accidental availability. This type of research does not include confidential information that must be kept discrete; however experts were asked a permission to conduct a research involving them; where in all except for three respondents recording was also permitted asking them for a signature on an interview list the researcher has prepared in advance. Last but not least reporting the results, the researcher represents what she accurately observed or was told.

9.9   VALIDITY, RELIABILITY AND GENERALISATION

Validity acts as a *key quality control issue* for the study and its findings (Yin, 2012:78). To ensure the authenticity of data used in the dissertation at hand, it will carry out triangulation as an internal validity tool. Validity stems from the appropriateness and effectiveness in applying the methods (Bazeley, 2004:9). The research is partly explorative, exploring important qualities within the heritage neighborhood. The research then seeks a generalization of the findings on the conceptual level only, to overcome the decline within these unique neighborhoods. Denzin (1989) argues that triangulation overcomes personal biases from single methodologies (in Bazeley, 2004). Triangulation implies collecting converging evidence from different sources (qualitative & quantitative) (Yin, 2012:79); yet divergences can be used to qualify the research findings (Bergman, 2011). External Validity tests if the research findings could be generalized beyond the chosen case (Yin, 2003:37)

Reliability aims to check whether it is possible to carry out the same research process, using the same case study by another researcher (investigator), however come up with the same findings and conclusion; *with the main intention to minimize errors and biases in a study* (Yin, 2003:37). An analyst should try to generalize findings to "theory" (Yin, 2003:38).

The triangulation is double checking on the different results by comparing them together seeing any compliance or divergence in the resulting outcomes and conclusions. *Case studies rely on analytical generalization* where the *investigator is striving to generalize a particular set of results to some broader theory. The theory used with the first case is the same theory that will help identifying the other cases to which the results are generalizable* (Yin, 2003:37).

This study has focused on Heliopolis as a possible example for dealing with sustainable heritage neighborhood preservation in Egypt presenting the fragile state (S) recommending different corridors for enhancing the state towards a visionary sustainable state (SS). Identifying the similar type of neighborhood will be the domain to which the results could be generalized (Yin, 2003:37) on the theoretical level. As in Yin (2012:98), the desire of generalizing the study findings from the study at hand is there. Any study has always a limited amount of data and uses limited data collection units (Yin, 2012:98). Yet it is possible to derive a significant value out of the attained findings and conclusions that have implications going beyond the data collected, which then reflect the extent to which the study is generalizable (Yin, 2012:98) (see section 11.3.3).

Analytic generalization (Yin, 2009:43) is advised when carrying out a qualitative study (Yin, 2012:100). Defined as a two-step process; 1) has a *conceptual claim, whereby investigators show how their study's findings are likely to inform a particular set of concepts, theoretical constructs, or hypothesized sequence of events. 2) applying the same theory to implicate other similar situations where similar concepts might be relevant.* In that case generalizing from a single case becomes accepted (Yin, 2012:100).

SUMMING-UP: CONCEPTS, OPERATIONS AND METHODS

This part started with a thorough presentation of the conceptual framework in chapter (7), it then explains some internationally used instruments for operational use in chapter (8) that help coming up with a preliminary catalogue as shown in section 8.2 Table 8-1 in order to finally attain the sustainability criteria catalogue for Egyptian heritage neighborhood preservation (see chapter 10) which is one of the basic requirements of the research study towards a localized sustainable state (SS). This part was concluded with the presenting the research methodology, its nature, strategy, process and different data collection methods used, closing with presenting validity, reliability, triangulation and generalization possibilities of the attained findings. At this point, part III: of the PhD study is accomplished providing the clear scheme for the empirical part to come.

Part IV: Empirical Analysis

PART IV: EMPIRICAL ANALYSIS

This chapter is mainly concerned with the thorough investigation of the Heliopolis case on different levels. As mentioned previously in section 9.7.2 Heliopolis will be investigated using the DPSIR-SS elements. The following chapter (10) will deal with analyzing the expert interviews based on a questionnaire with the intention to come up with a refined sustainable state (SS) catalogue showing the important qualities of sustainability important within the Egyptian heritage neighborhoods.

Second, chapter (11) *Heliopolis between sustainability and loss* shows a detailed analysis of Heliopolis, the case study. This chapter uses the elements of the DPSIR-framework in order to attain an elaborated evaluation of the neighborhood conditions where data was collected from carried out Leitfaden-Interviews, observations, and documents amongst others. Concluding this chapter the state (S) of Heliopolis is defined more in detail using the sustainability criteria catalogue; one time having an in-depth investigation (see 11.3.1) while in the second a quick assessment is carried out (see 11.3.2). The findings of this part pave the way for the concluding chapter (12).

Chapter (10):

Towards A Localized Sustainable State

10 TOWARDS A LOCALIZED SUSTAINABLE STATE

This chapter illustrates the analysis of the sustainability-related criteria; their *importance* and *applicability* as a result of a semi-structured expert-interview based on a questionnaire (see Appendix 2). The analysis is based on filtering the proposed set of 52 criteria to determine the ones important to the context of Egyptian heritage neighborhoods through interpreting the resulting average importance. The answers of experts are transcribed and analyzed and significant conclusions are drawn. The important criteria under each sustainability pillar are discussed developing a re-arranged catalogue as confirmed by the experts. The criteria with low average importance will be also discussed explaining why they were less important to the designated context. The outcome of both discussions aims to define the qualities important for the localized sustainable state (SS) as sought for in the conceptual framework (see chapter 8) preparing the normative planning part of a scenario (see section 7.3.3). In addition, the experts propose applicability measures for each criterion providing ways to achieve sustainable heritage preservation of Egyptian neighborhoods which will be mentioned by discussing the different criteria. Last but not least, the answers of NOUH are put juxtaposed to the answers of HHI to come up with certain reflections about the relative interest of both actors within the heritage neighborhood of Heliopolis.

10.1 PROCESS OF ANALYSIS

The proposed questionnaire was developed through two rounds. In the first round, the proposed sustainability criteria gathered thoroughly from the related literature was discussed with 8 Egyptian experts to test relevancy and validity of criteria, while the second round consisted of the refined questionnaire which was finally conducted with 22 respondents. This was important to avoid the subjectivity of choice and to test relevancy and importance by asking the experts. Respondents were asked about the 52 sustainability-related criteria divided into six main compartments; environmental, urban, cultural, social, economic and overarching concepts as discussed in section 8.3. The developed questionnaire had an extra column with the Arabic translation of each criterion in order to avoid any misunderstandings.

10.1.1 PROFILE OF RESPONDENTS

The respondents sample was selected using different sampling techniques as explained in the methodology chapter (9) (see section 9.7.5) depending on the respondent group and affiliation with a total of 22 respondents. Ten experts from the NOUH[78]; either currently working or were previously working there, four experts represent the team who worked on the Green Pyramid for Neighborhoods from
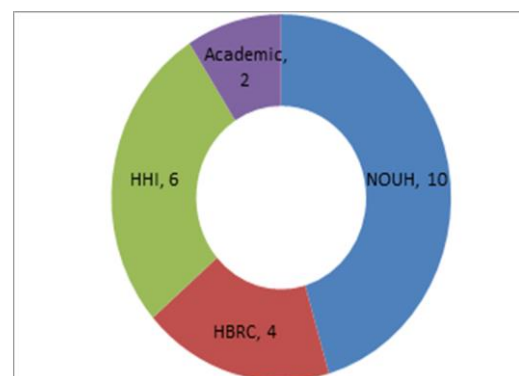
Figure 10-1 Respondents' affiliation and representativeness

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[78] National Organization of Urban Harmony (NOUH)

HBRC[79], six key-members of the HHI[80] and finally two academic experts from the field of planning and environmental architecture (Figure 10-1).

10.1.2 ANALYSIS CONSIDERATIONS

The 5-likert scale chosen for this semi-structured questionnaire has two extreme sides, (5) *extremely important* & (1) *extremely not important* and a center (3) reflecting a rather *neutral stance*. The numbers (4) & (2) are the transitions into the extremes of each side. While analysis it is important to take into account the difference between the personalities of experts. Some tend to give absolute clear opinions, finding no problem in assessing a criterion as extremely important giving grade (5) or extremely not important (1), others tend to be more conservative in giving extreme answers giving grade (4) if they see it important and giving the grade (2) if they see it as not important, where a third type is rather medial tending to be neutral in his/her opinion. In order to avoid any bias results, the research uses the assigned values to each response (which is already there ranging from 1-5) to come up with the average importance for each criterion and also for the overall pillars taking into account all the respondents responses. This is an easy way to read and accordingly analyze the data (see the example in Table 10-1). The average importance above 4 will be considered as important to context while criteria with average importance from 3 to 3.99 are less important and criteria below 3 are not important.

Sustainability criterion	5 *extremely important*	4 *important*	3 *fairly important*	2 *not important*	1 *extremely not important*	
Energy-efficient transport	**17**	**4**	**1**	**0**	**0**	**Average**
		((17x5)+(4x4)+(1x3)+(0x2)+(0x1)) / 22 =				**4,727**

Table 10-1 Example for the average importance calculation

10.2 DISCUSSION OF RESULTS

This stage of analysis will consider the answers of all the 22 respondents in order to attain a comprehensive outcome that can be used by different responses (R). Results show that some of the proposed sustainability criteria emphasize a high importance within the context of research, while other criteria reflect less importance even if these criteria are originally essential for sustainability in other contexts. In the coming sections a delineated *Quantatizing*[81] explanation of the findings is presented and the conducted semi-structured interviews are analyzed. The below presented results are divided into 6 main sections reflecting the 5 sustainability pillars in addition to the overarching concepts put in a separate compartment, for extra emphasis. In the following discussion each section is discussed separately where inside each sustainability section the different results for the *importance* of the criteria/qualities are discussed. For a better overview on the different criteria *applicability* each discussed criterion will be followed by the proposals given by experts on how to apply the tackled criterion, this will be underlined. Moreover, criteria naming that where modified by experts will be given the **color blue**.

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[79] Housing and Building National Research Center (HBRC)
[80] Heliopolis Heritage Initiative (HHI)
[81] *Quantatizing* reflects the process of converting the qualitative data to numerical codes that can be statistically analyzed (Miles & Huberman, 1994; Teddlie & Tashakkori, 2011:285)

10.2.1 IMPORTANT ENVIRONMENTAL SUSTAINABILITY CRITERIA

This pillar of sustainability deals with eleven aspects related to the environment and its protection such as climate considerations, preservation of renewable resources, energy efficient building and transport, etc. As a general observation it is possible to grasp from the below graph (Figure 10-2), looking at the answers (4) & (5) that the different environmental criteria are perceived as important for the Egyptian neighborhood context as indicated by experts even if there are no current traces for a conscious environmental planning on the Egyptian ground.
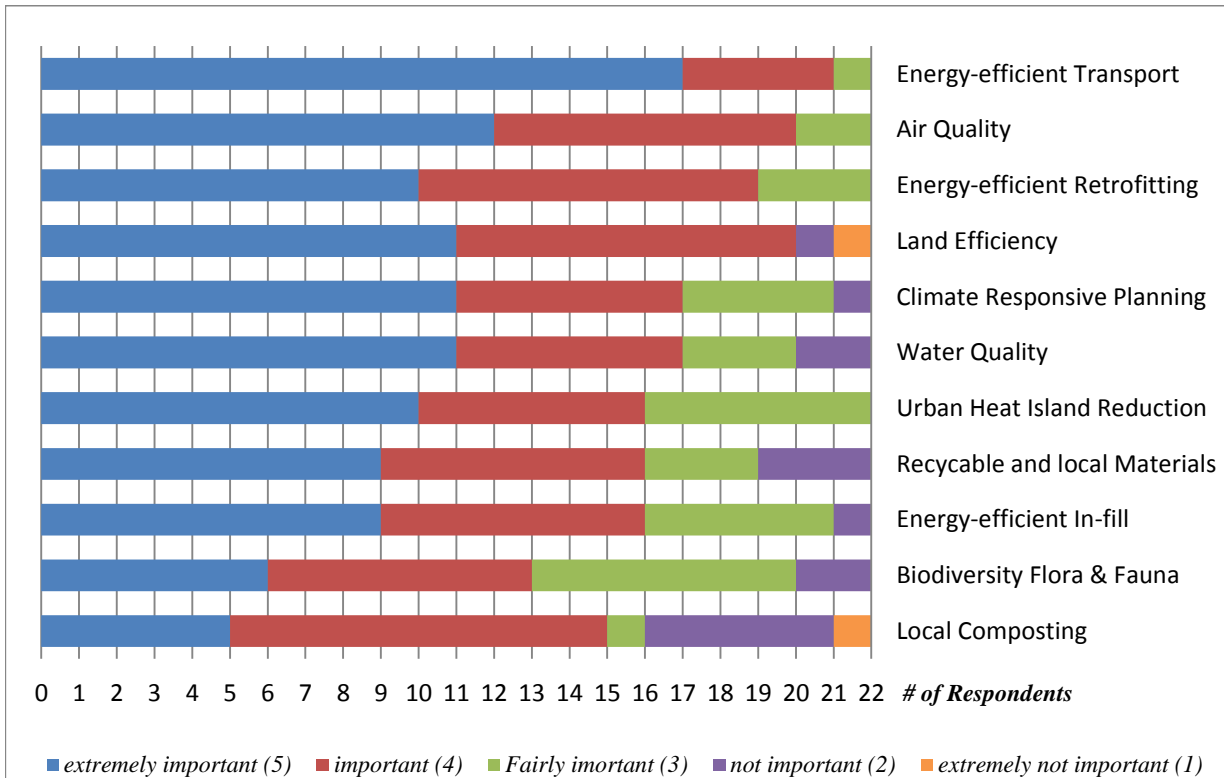
Figure 10-2 Bar Chart of Environmental Sustainability showing respondents' answers about importance

There are criteria where the importance is explicitly shown such as in '*Energy efficient Transport*' and '*Air Quality*' as the respondents ticked mainly 5&4 having almost consensus; 21 and 20 respectively. While there are other criteria where respondents showed diverse views ticking on 5, 4, 3, 2 &1 such as '*Land Efficiency*' and '*Local Composting*' reflecting a relative dispute upon tackled criteria.

Looking more into detail using the averages converting the ordinal responses into numerical values it is easy to recognize the relative importance of the different criteria (see Table 10-2). The criterion '*Energy-efficient Transport*' is on top of the importance list with the average of 4.73. This result gives an insight on the problem of traffic and transportation in existing Egyptian neighborhoods. This criterion encourages minimum dependence on cars and the provision of clean public transport instead. According to the experts there are no strong policies for supporting '*Energy-efficient Transport*'. In addition, alternative innovative means of transportation must be introduced working with solar energy or electricity to be controlled by strict regulations. In Heliopolis, the HHI-Initiative wishes to maintain and revive the old

Tram which is a clean mean of transportation working with electricity causing no pollution; however the government removes big parts of it.

With 4.45 the *'Air Quality'* criterion is the next on the importance list. It calls again for traffic reduction and air-quality management and monitoring. In order to achieve a better '*Air Quality*'; experts emphasized on the importance of applying mainly *administrative* (8) measures followed by *technical (3)* and *physical (2)* ones. They urge enforcing existing regulations and ratified agreements which are not fully respected. In order to improve the ecological foot-print as an essential step some experts propose the banning of vehicles in the old city, offering more innovative solutions providing green means of transportation working with electricity and solar energy. Providing more shaded areas and tree-lined paths. In addition, good quality pavement for pedestrian and cyclers will encourage walkability & cycling aiming to mitigate CO_2 emissions. The land-use control and the provision of more green areas within the existing fabric could enhance the quality of air and relieve densities, however it is very challenging. Last but not least, the public private partnership can support the application and control of regulations and policies.

#	**Environmental Sustainability**	*Average Importance All*
1	Energy-efficient Transport	4.73
2	Air Quality	4.45
3	Energy-efficient Retrofitting	4.32
4	Land Efficiency	4.27
5	Climate Responsive Planning	4.23
6	Water Quality	4.18
7	Urban Heat Island Reduction	4.18
8	Energy-efficient In-fill	4.09
9	Recycable and local Materials	4.00
10	Biodiversity: Flora & Fauna	3.77
11	Local Composting	3.59

Table 10-2 Environmental sustainability pillar showing the average importance of each criterion considering all the 22 respondents

'Energy-efficient Retrofitting' with the average importance of 4.31 is ranked third on the list of the environmental pillar where 19 out of 22 respondents see it as important and extremely important (5&4). It calls for environmental excellence and sensitivity in retrofitting processes, incorporating strategies like energy and water efficiency, high indoor air quality, sustainable sources or recycled materials (LEED-ND, 2009). Experts state that such a measure is totally missing in the current code which needs to be seriously included. Another measure towards achieving *Energy-efficient Retrofitting* is removing current subsidies put on energy; which will motivate more energy-saving measures. Last but not least preparing the technical expertise for this field along with the readiness of the industry to feed it is a pre-requisite.

The next important criterion is '*Land'* modified to *'Land Efficiency'*. 21 experts see it as important and extremely important with an Importance average of 4.27. It calls for the wise management of scarce available land, and the promotion of high densities for optimal urban

land-take. In Heliopolis and other similar neighborhoods, the land is scarce and has a high value to an extent that strongly manipulates the urban market resulting in exploitation approaches trying to make the highest profit possible by investors. Experts propose mainly, *administrative* measures followed by *technical* & physical ones. There has to be a well-studied vibrant land-use Plan for wise Land management which will enable completing missing services within the neighborhood or remove un-needed ones. Regulation must be very deterrent giving no space for circumvention or breaches. At the same time, owners of valuable buildings must be compensated. The experts accentuate the urgency of amending the current laws 144 & 119 to include financial incentives & tax exemptions for building owners, illuminating the importance of benefiting from preservation. Investors breaking the law must be punished, they use the whole land-plot available leaving no green area putting '*Land*' in a more critical situation and affecting other aspects such as '*Access to Public spaces & Green areas*', 'Air Quality', '*Transport*', '*Infrastructure*', etc.

'*Climate Responsive Planning*' where new developments respect the distinctive climate; '*Water*' *modified to* '*Water Quality*'; '*Urban Heat Island Reduction*' minimizing the increased heat in the urban city centers; '*Energy-efficient In-fill*' encouraging wise consumption of energy in the construction field *and* '*Minerals*' modified to '*Recyclable and local Materials*' promoting using recycled and local building materials come next on the list respectively with averages above 4 which reflects their importance to the context.

On the other hand, '*Biodiversity, Flora & Fauna*' with 3.77 and '*Local Composting*' *with 3.59* took the least averages reflecting less importance. Although these criteria are essential in 'neighborhood sustainability principles' they did not really attain a high score possibly due to following reasons. '*Biodiversity Flora & Fauna*' which minimizes ecological footprint by offering more green to protect the natural environment; doesn't seem to be realistic within highly urbanized neighborhoods having currently other overwhelming challenges within the Egyptian neighborhoods that put urban and social problems on top of interest. '*Local Composting*' which minimizes the waste that goes to landfills and meanwhile make use of it in available gardens (Barton, H., Grant, M., & Guise, R., 2005:167) is not highly relevant and applicable because of a socio-cultural obstacle that hinders people from knowing about its benefits.

10.2.2 IMPORTANT URBAN SUSTAINABILITY CRITERIA

The Urban pillar talks about seven important characteristics as extracted from literature such as walkability, infrastructure, green & public spaces, vicinity to basic facilities, acceptable densities within neighborhoods, and the number& quality of heritage buildings within an existing neighborhood.

Four urban criteria out of seven were chosen as extremely important *(5)* by 11 or more of the respondents. These are *Walkable Streets 18, Infrastructure 18, Accessible Public spaces & green areas 16* and *Access to facilities 11 respondents*. When adding responses of important *(4)* another three additional criteria become also important within the designated context, *Relieve Density, Access to Facilities* and *Smart Heritage Neighborhood* (see Figure 10-3).

Looking at the averages in Table 10-3; '*Walkable Streets*' is the criterion with highest score, 4.82. It deals with the quality of streets and pavements in addition to traffic rules that ease the process of walking within the neighborhood. It is again relevant to the problematic issue of

traffic mentioned in the environmental sustainability pillar dealing with transport which re-emphasizes the crucial need for a serious and quick solution within the Egyptian heritage neighborhood.
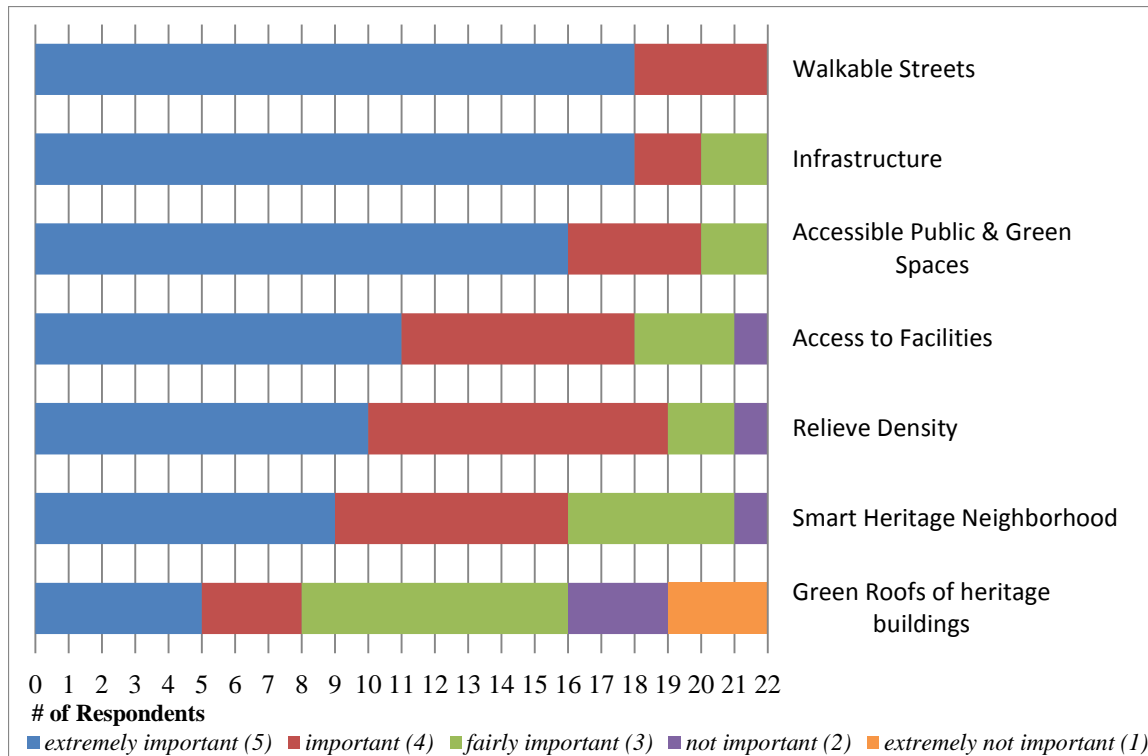
Figure 10-3 Bar chart of urban sustainability showing respondents' answers
about importance

Experts state that streets are partially walkable in Egyptian neighborhoods, not necessarily for the good quality street provision but for the real need to access some services on foot. Although some urban factors are rigid and not easy to change in existing neighborhoods, however conscious interventions can fairly enhance the quality of walking and encourage more people to prefer walk to other means of transport. Experts suggest *physical* and *administrative* measures such as providing planning solutions for paving and turn some streets into pedestrians along with improving the transport conditions; all this must be done including the community represented in its civil society.

'Infrastructure' modified to **'Green Infrastructure'** is the next on the importance list with 4.73, which implies easily maintained road & utility networks. It mainly needs, as contributed by experts *administrative*, *technical* and *physical* control. In spite of the relative rigidity dealing with existing infrastructure networks; they propose regular maintenance and the application of new technologies which needs a serious financial support in addition to following strict rules to avoid any sudden disasters.

The criterion '*Accessible Public and Green spaces'* with 4.64 calls for reviving dead spaces for use in dense neighborhoods such as Heliopolis, and providing space for basic activities such as playgrounds & parks. Experts see that this criterion should be solved working on *administrative, physical, technical* and *socio-cultural* axis together. On top it is important to develop the Land-use plan for the neighborhood that draws its future development path. Protecting open spaces will control occurring over densities, and enable complete missing basic facilities such as children playgrounds. The rigidity of working in existing settings will

limit this quality, but if it became part of the political interest, strict regulations will be enforced and front and backyards of old buildings should be kept untouched. Moreover, opening fenced and closed gardens will increase social inclusion of the close community and raise their sense of place. Last but not least the inclusion of the civil society is a key-issue in all the above processes that can help reaching goals more efficient.

#	Urban Sustainability	Average Importance All
1	Walkable Streets	4.82
2	Infrastructure	4.73
3	Accessible Public & Green Spaces	4.64
4	Access to Facilities	4.27
5	Relieve Density	4.27
6	Smart Heritage Neighborhood	4.09
7	Green Roof on Heritage Buildings	3.18

Table 10-3 Urban sustainability pillar showing the average importance of each criterion considering all the 22 respondents

'Acces to Facilities' and *'Relieve Density with Variety'* had the same score of 4.27. Concerning Heliopolis neighborhood, the criterion '*Access to facilities*' is achievable having a wide variety of services (see section 10.2.5.*Mixed land-use* and the given walkscore). A well-studied service coverage is a key issue for the current criterion, in addition to the '*Mixed land-uses*' and the '*Land-use Plan*' which are all depending on the same factors that should be controlled against over-services. On the other hand, the important criterion very relevant to Egyptian overcrowded cities and neighborhoods is *'Relieve Density with Variety'* 4.27. It entails the relief of dense areas through green areas, controlling the height of buildings, and the percentage of built-up area. This criterion is not included in any well-known criteria-based sustainability instrument, however it was proposed by Benfield (2012) when dealing with dense cities. That is why the research at hand substituted the main sustainability criterion of 'Compact Development' with this one to suit the nature of the designated neighborhoods under investigation as it is already compact in nature. Every city with its smaller units, the neighborhoods have thresholds for densities. Low densities are not sustainable, nor are over-dense urban areas which exceed maximum acceptable levels and stimulate a set of problems (Benfield, 2012). Reaching a balance where services offered are enough for people living and meanwhile no quality of life aspects are negatively affected is a challenging task. Achieving this goal is not an easy task within highly dense Egyptian neighborhoods; however an *administrative* plan mainly could make a gradual relieve achievable. Respecting the regulations stipulated by NOUH concerning valuable areas within Heliopolis, is a top priority. The NOUH guidelines specify permissible building heights margin of possible renovation and change stressing on protecting existing intermediate spaces and gardens. The control is mainly the role of the local district unit '*hay*' of Heliopolis.

'Smart Heritage Neighborhood' modified to *'Smart Heritage Neighborhood Competitiveness'* 4.09 is another criterion only applicable in heritage neighborhoods which encourages the protection of the highest number possible of valuable buildings within the heritage neighborhood. This can create a sense of competitiveness between different neighborhoods that leads to better preserve the valuable building stock and the simultaneous

increase of the sense of pride belonging to a distinct neighborhood. The empowerment of the civil society by the responsible governmental bodies is much recommended to support achieving this quality.

On the other hand, the least important within the heritage context according to the asked experts was the criterion of '*Green Roofs*' which calls for enlarging the green areas within neighborhoods by planting on roofs. With 3.18 as average importance, only 5 respondents considered this criterion as extremely important stating the feasibility using light materials and easy irrigation systems which shouldn't harm the old building. However, the majority of experts are worried of making green roofs above heritage buildings that might harm the precious constructions more than they can benefit as they might not be ready for extra dead loads doubting its durability and maintenance. In addition, they have elaborated that plumping is a general problem in Egyptian housing which would be more intensified by implementing the criterion of '*Green Roof*'.

10.2.3 IMPORTANT SOCIAL SUSTAINABILITY CRITERIA

This pillar deals with the elements needed by the neighborhood society to achieve a desired level of satisfaction with health, security and safety, citizen participation, etc. Five socio-related criteria out of seven are above 50% extremely important (see Figure 10-4). These are *Community Safety & Security 17, 'Sustainability & Cultural Awareness' 16, 'Health' 15, 'Citizens participation' 15,* and *'Inclusion of private partnership'* 13respondents. The criteria of '*Equity and Choice*' and *'Local Food Production'* show a dispute issue where experts differently accept these qualities for the designated context. In addition, the criterion of '*Equity and Choice*' with an average of 3.86 reflects the concept of offering residential units fairly without pre-conceived labeling. This low average shows how experts see heritage neighborhoods as special areas that should be dealt with differently. They explain that maintaining a valuable building is an expensive exhaustive issue which makes living in such gems a luxury and not like living elsewhere. In other words, they emphasize that people who decide to live in these valuable areas must be prepared for spending. Finally, the *'Local Food Production'* was not accepted by the majority of experts having the lowest score of the whole criteria, 2.55. This can be explained as mentioned by some experts that due to high transportation and pollution in the old center planting won't be a healthy thing; on the other hand the available open spaces are scarce tending to extinction due to high rates of land-consumption as the land value is very high, in addition such an activity will face managerial obstacles of who controls and manages the whole process.

On the other hand, the '*Community Safety and Security*' criterion had the highest average 4.73 apparently as it is a key factor for the success of any neighborhood development. It can be achieved mainly through *physical* measures followed by *administrative* and *socio-cultural* ones as recommended by experts. Studying areas with less control and develop design elements such as lighting, traffic plans etc. The local district unit as the responsible body should organize social workshops and solve prevailing community problems raising awareness (e.g. *Soziale Stadt*). During the revolution people used to keep the light of the Ground-Floor balconies on and trim the trees for more transparency, compactness is in this case a good urban element.
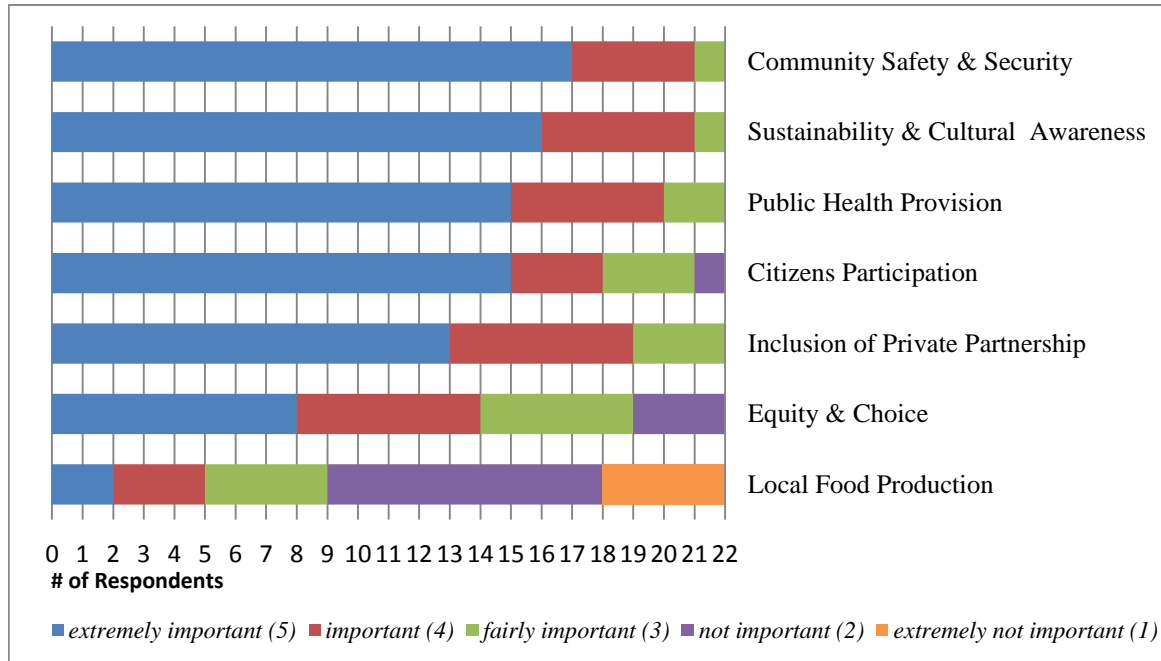
Figure 10-4 Bar chart of social sustainability showing respondents' answers
about importance

'*Sustainability and Cultural Awareness*' with an average of 4.68 entails enabling residents, workers & visitors of the neighborhood to appreciate, understand & contribute to conscious resource use & heritage protection. No serious governmental effort is carried out concerning this issue. The political interest must exist in order to raise awareness in addition the role of NGO's and the civil society. Other means for achieving this is using the media and being included in educational curriculums to enlighten people, concluding that cultural awareness leads to sustainable awareness.

'*Health*' modified to '***Public Health Provision***' which implies creating a pollution-free environment has an average of 4.59 put third on the Social Sustainability list. This criterion, similar to other criteria is affected and dependent on further ones such as transport, infrastructure, air quality, energy efficient consumption etc. because all these aspects emit pollution that must be controlled, through minimizing car dependence, promoting green means of transportation, turn city core into a pedestrian area to reduce possible polluting emissions. Again, it needs a political will supported with serious policies and the help of the civil society.

'*Citizen Participation*' and '*Inclusion of private Partnership*' took the same importance 4.45. The first deals with the participation of the community giving input and feedback and further decision making. It is included in the law 119 but not always binding. Citizens should be treated as partners as their involvement became essential towards sustainable urban environments. While the second is where the city government and all stakeholders collaborate, especially developers and investors work together promoting innovative ideas for example to re-use old buildings. The political will, laws to attract investors, providing privileges to investors, decreased cost in case of old building retrofitting, modifying tax law, encourage incentives, enlighten and attract investor are all suggested measure. It is very challenging facing the 'monster' called money (S. Hawas 28 December 2013) but encouraging (public-private partnership) PPP and enforce strict laws in case of breaches can gradually change the situation.

#	Social Sustainability	*Average Importance All*
1	Community Safety & Security	4.73
2	Sustainability & Cultural Awareness	4.68
3	Public Health Provision	4.59
4	Citizens Participation	4.45
5	Inclusion of Private Partnership	4.45
6	Equity & Choice	3.86
7	Local Food Production	2.55

Table 10-4 Social sustainability pillar showing the average
importance of each criterion considering all the 22 respondents

10.2.4 IMPORTANT CULTURAL SUSTAINABILITY CRITERIA

In this pillar different conservation and preservation principles and concepts were introduced to experts. Eleven cultural criteria out of fifteen are seen as extremely important (5) by more than half of the respondents. These are, *Historic Resource Preservation 21; Recording & Documenting Historic Buildings 20; Preserving Unique Urban Fabric, 'Identity' 18, Heritage Image' 17, 'Regulating (Controlling) Demolition of Historic Buildings' 16, 'Building Guidelines/Code' 16, 'Reuse of Historic listed Buildings' 16, 'Categorizing valuable buildings' 15, 'Stable State of neighborhood 'Intactness' 13, 'In-fill projects reflecting distinctive heritage'* 13, *'Aesthetic quality'* 11 respondents giving grade (5) (see Figure). Looking at Table 10-5; 13 criteria out of the 15 have an average importance above 4, which reflects their importance to context. The two criteria with low scores were *'Continuity of function'* 3.09 and *'Material genuineness'* 3.32. This shows that these concepts are not as essential for sustainable heritage neighborhoods preservation SHNP as they are for the World Heritage Sites' listing. The experts asked are more flexible dealing with function and materials as long as it does not harm the building or affect its survival nor undermine its character.

With 4.95, '*Historic Resource Preservation'* criterion had the highest average score of this pillar and the whole criteria list with 21 out of 22 respondents seeing it as extremely important which reflects the mandatory role of preserving the scarce heritage resources which are still facing threat. Experts explain that this is partially there after the inauguration of NOUH and the development of the two related laws 144 of 2006 and 119 of 2008 in addition to the inventory lists carried out by the responsible committees. However, there are still some shortcomings that could be overcome through following strict law enforcement, meanwhile include a compensation mechanism to satisfy building owners where the lack of fund is an obstacle towards achieving this. Moreover, experts emphasize on the importance of community awareness which can be the protecting backbone in a neighborhood with valuable assets.

This is followed by the criterion *'Recording and documenting historic* buildings' with 4.91, developing inventories of valuable buildings gathering important information and photos about each building. <u>As stated by experts, this criterion is applied; however the mechanism of listing should be revised as there is a probability of skipping valuable buildings from the list (adapt the same approach adapted in Cairo West all over (see chapter 11-Inventory committee). Another important aspect is the know-how and technical capacity of the inventory committees in addition to the provision of new technology equipment's that can ease the documentation process. All this should be supported by the local community.</u> *'Preserving the unique urban fabric, 'Identity'* 4.82 is relatively applied on the plan level however the heights are violated which also comprises of <u>Genuineness of organization of space and form. A strict law enforcement following the developed boundaries and guidelines of NOUH would preserve the remaining</u>
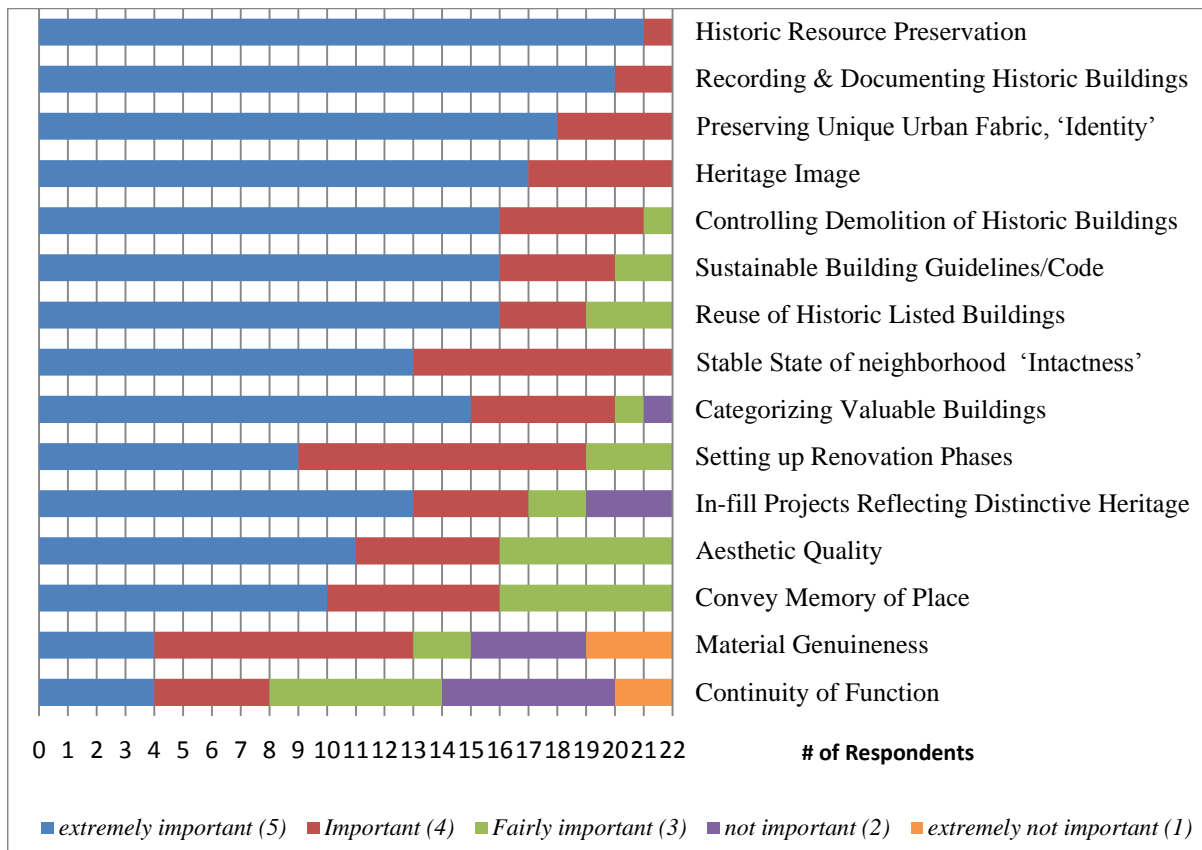
Figure 10-5 Bar chart of cultural sustainability showing respondents' answers
about importance

'Heritage Image: Legible unifying Architectural character with sense of place' with 4.77 means maintaining the quality of the old setting, in other words 'Continuity of setting'. This quality exists in different part of Heliopolis however; it is also facing a threat. Following the regulations is a prerequisite in addition to a conscious maintenance plan from experienced and talented technical calibers that needs a financial backing. Last but not least the support of the NGO's and media coverage can help protecting this Image. The importance of this criterion lies in its correlation to other criteria depending on it such as '*Cultural Awareness'* and *Marketing the Heritage Neighborhood'* where people, either the community or investors must be able to SEE the value being appraised. In this concern, '*Aesthetic quality'* 4.23 is another relevant criterion. The term 'regulating' in the criterion *'Regulating demolition of*

historic buildings' 4.68 was criticized by some experts. They preferred using '***Controlling Demolition of Historic Buildings'***; to avoid circumvention. This criterion is applied, where the existence of loopholes and the loose application of law should be overcome to make it efficient including financial incentives. The community support as a residence from the bottom is another key factor.

#	Cultural Sustainability	Importance Average All
1	Historic Resource Preservation	4.95
2	Recording &Documenting Historic Buildings	4.91
3	Preserving Unique Urban Fabric, 'Identity'	4.82
4	Heritage Image	4.77
5	Controlling Demolition of Historic Buildings	4.68
6	Sustainable Building Guidelines/Code	4.64
7	Reuse of Historic Listed Buildings	4.59
8	Stable State of Neighborhood 'Intactness'	4.59
9	Categorizing Valuable Buildings	4.55
10	Setting up Renovation Phases	4.27
11	In-fill Projects Reflect Distinctive Heritage	4.23
12	Aesthetic Quality	4.23
13	Convey Memory of Place	4.18
14	Material Genuineness	3.32
15	Continuity of Function	3.09

Table 10-5 Cultural sustainability pillar showing the average importance of each criterion considering all the 22 respondents

Generally, the cultural criteria need mainly clear *administrative* measures supported by *socio-cultural, economic* and *technical* ones. They need strong regulations with no loopholes and the strict enforcement with a strong political will, and respectful financial support backed with a national fund or heritage trust to finance heritage projects. On the other hand it needs preservation calibers, experts, contractors and investors with the technical know-how to include new technologies along with carrying out professional and energy-efficient retrofitting (after including it in the code) measures and regular maintenance. Having a successful pilot-project would enlighten and encourage recurrence of a project supported with the inclusion of the local community. In '*Setting up renovation phases'* the Public-private partnership (PPP) is an urged approach for success respecting the surrounding context in '*In-fill Projects'*. Beside the formal inventory carried out by NOUH; the HHI had a significant role in recording and documenting valuable buildings as they have organized two photography competitions (2012 & 2015) that serve as a cherished documentation for the valuable buildings of Heliopolis. The initiative, being a real part of the local community is the best to '*Convey the memory of the place'*.

10.2.5 IMPORTANT ECONOMIC SUSTAINABILITY CRITERIA

This pillar consists of seven criteria dealing with economic issues for the heritage neighborhood. Three Economic criteria out of seven are considered extremely important by half or more of the respondents giving grade (5); these are, '*Promotion of Incentives to encourage Owners'* 15,*' Economic Revitalization'* 13, *'Marketing the Heritage Neighborhood'* 11 respondents.
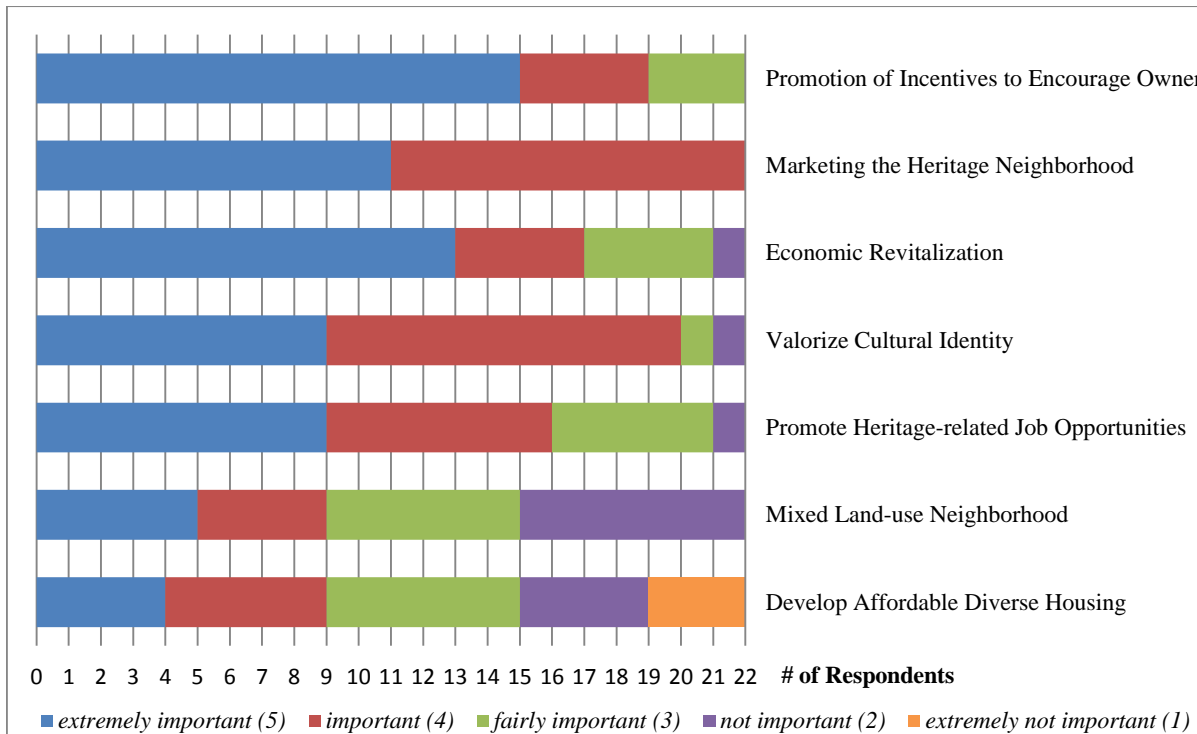
Figure 10-6 Bar Chart of economic sustainability showing respondents' answers
about Importance

Looking at the (Table 10-6), the criterion '*Promotion of incentives to encourage owners*' comes first with 4.55, which accentuates its importance for the survival of the buildings. The second most important criterion *'Marketing the Heritage neighborhood'* 4.50 a key factor for heritage neighborhood sustainability encouraging branding, designing Post-Cards, publishing books, making movies to market the neighborhood. *'Economic Revitalization'* 4.32 encourages small private businesses such as galleries, museums, exhibitions and other activities. 'The Liberalization of rents along with the encouragement of investments can have a positive impact on the '*Economic Revitalization'* within the neighborhood. The Korba festival plays an efficient role to '*Valorize Cultural Identity'* 4.27.

On the other hand, two criteria were less important having an average less than 4. Concerning '*Develop affordable diverse Housing opportunities'* 3.14, four expert feared a shrinking neighborhood in case of prohibiting lower social levels from residing heritage buildings while the majority of experts see that the heritage neighborhood (as explained previously in '*Equity & Choice*') is an expensive place to live in. It needs a lot of investment making the promotion of affordable housing an un-wise response, on the contrary only affording and heritage-appreciating people are capable of spending big amounts of money for preserving and maintaining the valuable buildings even if a financial governmental support exists.

'*Mixed Land-Use*' is another criterion that did not gain more than 3.32 average. This result is assumingly because Heliopolis in specific and Egyptian heritage neighborhoods in general are majorly mixed. Heliopolis for example has a very high walk-score[82] (e.g. *Zefta Street* has 88 walk-score which means it is *very walkable*; *Al-Ahram street*, with 93 walk score and *Ibrahim al-Lakani*[83] *street* with 94 walk score enter the category of walker's paradise) which reflects the availability of diverse land-uses within a walking distance. That is why experts did not consider it as important but the relevant criterion under the Overarching Concepts pillar, '*Land-use Plan*' took 4.50 which proves the importance of a conscious distribution checking for any redundant use to be removed or another missing one to be added.

#	**Economic Sustainability**	*Importance Average All*
1	Promotion of Incentives to Encourage Owners	4.55
2	Marketing the Heritage Neighborhood	4.50
3	Economic Revitalization	4.32
4	Valorize Cultural Identity	4.27
5	Promote Heritage-related Job Opportunities	4.09
6	Mixed Land-use Neighborhood	3.32
7	Develop Affordable Diverse Housing	3.14

Table 10-6 Economic sustainability pillar showing the average importance of each criterion considering all the 22 respondents

10.2.6 IMPORTANT OVERARCHING CONCEPTS CRITERIA

Coming to the sixth and last pillar of the criteria-catalogue, it consists of five general concepts that seemed to be essential and meanwhile problematic within the Egyptian context. There are no long-term plans for the heritage neighborhoods, nor are there up-to-date Land-use plans that could be evaluated and upon which some decisions can be easily taken. In addition, there is a necessity of defining the threshold of density within Egyptian cities and neighborhoods to assure a certain quality of life satisfying basic services. The usage of new technologies is also an important aspect. Four overarching criteria out of five are seen as important having an average above 4.27. '*Plan for long-term renewal & growth*' 4.64; '*Promote the concept of the triple 'R''* 4.50; '*Land-use Plan*' 4.50 and 'S*ustaining density's threshold* '4.27.

'*Plan for long-term renewal & growth*' was modified into *'Plan for long-term renewal & development'* because experts see more development options rather than growth in already dense and bounded urban areas. The guidelines developed by NOUH for the different valuable areas are considered an initial noteworthy start for a serious Long-term Plan, however the governmental concern is not focusing on existing neighborhoods, and they are more concerned with new cities and slums as stated J. Youssef (Cairo Governorate, personal

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[82] Please visit https://www.walkscore.com/score/al-ahram-masr-al-jadidah-cairo-governorate-egypt
[83] '*a Walker's Paradise is where daily errands do not require a car' (walkscore.com)*

communication April 02, 2013) to accommodate the ever growing population, and to solve informal areas' problems respectively.

'*Land-use Plan'* is the responsibility of the local district unit including the community in the planning process, studying the needs, compact concepts, vicinity of living and working to be able to monitor development. In order to sustain density thresholds it is important that the government orients people to other feasible alternatives providing housing and working outside along with stopping encroachments and limit the height of buildings. The threshold is a relation between density and services. However, '*Promote Innovative Solution 'Technologies'* has gained an average importance less than 4 with 3.95 making it the last of
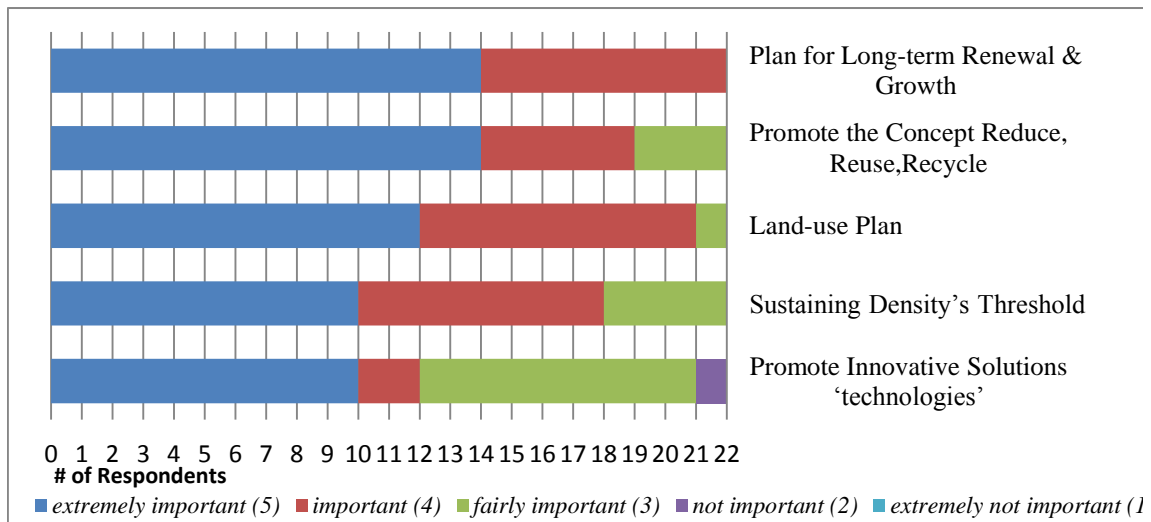
Figure 10-7 Bar chart of Overarching Concepts showing Respondents' answers about importance

this section. Referring to the technology aspect it is important to promote partnerships to expand knowledge and attain new machines and materials which need a financial backbone. The five aspects talk about basic future visions that are to a certain degree non-disputable.

At this point it is obvious that achieving urban sustainability is a closed composite system of criteria that are all depending and affecting each-other where requirements such as a long-term vision and a conscious *Land-use Plan* are essential. Moreover, as it is a closed system, a specific measure like promoting cycling and providing good quality pavements affects not only one criterion but more; such as '*Energy-efficient Transport'*, '*Walkable Streets'*, '*Access to Facilities'*, '*Air-Quality'*, '*Infrastructure'*.

#	Overarching Concepts	Average Importance All
1	Plan for Long-term Renewal & Growth	4.64
2	Promote the Concept Reduce, Reuse, Recycle	4.50
3	Land-use Plan	4.50
4	Sustaining Density's Threshold	4.27
5	Promote Innovative Solutions 'technologies'	3.95

Table 10-7 Overarching sustainability showing the average importance of each criterion considering all the 22 respondents

10.3 SUSTAINABILITY PILLARS RANKING AND SCORE

Summing-up, Table 10-8 shows the relative average importance ranking of the pillars according to the summation of total criteria averages of each sustainability pillar divided by their number; e.g. Overarching Concepts All (4.64+4.50+4.50+4.27+3.95)/5=4.03. In this table the ranking is illustrated looking at the whole sample of the 22 respondents (*All*) in order to come up with a certain order of the different sustainability sections that can give hints for further work. Observing the Table 10-8, it is clear that there are no huge differences in importance between the different sections. This is a good sign towards adapting all the sustainability pillars in relatively equal weights when dealing with heritage preservation.

	Sustainability Pillar	**Importance All** *22 respondents*
1	Cultural Sustainability	4.39
	Overarching Concepts	4.37
3	Urban Sustainability	4.29
4	Social Sustainability	4.19
5	Environmental Sustainability	4.17
6	Economic Sustainability	4.03

Table 10-8 Ranking of Sustainability pillars looking at the
whole sample (22 respondents)

However, it can give a general idea how the relative importance looks like for the different experts concerning the case of Heliopolis. This result is case-dependent and is not generalizable; it is also dependent on temporal aspects, such as the political situation that might affect the interests of the different actors within the heritage neighborhood and thus affects the ranking. In that case, the shown sequence gives an insight on how experts recognize the relative importance of pillars referring to Heliopolis; seeing the cultural and overarching concepts rather on top followed by urban, social and environmental and concluded by the economic pillar. Dealing with neighborhoods with heritage value makes the cultural qualities a high priority which explains why it is first on the list followed by the overarching concepts as the pre-requisites for any sustainable success. On the contrary, having the economic criteria in the last place has an ambiguous meaning. At first glance one can explain that experts underestimate economic aspects, but they could also be afraid of the economic exploitation and manipulation that is currently governing the real estate market in Egypt. The economic aspects are certainly key-drivers for the success of the sustainable heritage neighborhood preservation (SHNP) which should be dealt with very careful, as suggested by some experts. In general this result has a significant meaning as it reflects that the current Egyptian ground is not 100% ready for adopting and adapting sustainability approaches considering and respecting all the important principles important for a sustainable development, however working on developing the sustainability criteria catalogue at hand is momentous and could gain more importance in the coming future were more stability is seen unlike the post-revolutionary period (after 2011) full of instability and quick changes.

One of the signs of recent stability is the project carried out in Khedivial Cairo mentioned in section 4.2.2 which is winning credibility and confidence throughout the work development. It is possible to see that the urban criteria in that project form a priority followed by cultural ones. The environmental and economic issues although not directly addressed are in some way positively affected by decisions such as increasing number of pedestrian streets and prohibiting vehicle parking in the Khedivial Cairo streets along with providing more parking possibilities such as *Tahrir* underground parking. All these measures can contribute in enhancing the air quality, the infrastructure and transport, walkability in addition to attracting more investors to intervene (see Appendix 7).

10.4 SUSTAINABLE STATE CATALOGUE

In the following part the whole criteria catalogue is presented with the ranking of importance in each pillar where the important criteria have an average above 4 (see Table 10-9).

Table 10-9 Sustainable state (SS) catalogue of criteria showing average importance as given by experts

#	**Environmental Sustainability**	*Average Importance All*	*Top fifteen Criteria Ranking*
1	Energy-efficient Transport	4.73	6
2	Air Quality	4.45	
3	Climate responsive Planning	4.23	
4	Water Quality	4.18	
5	Land Efficiency	4.27	
6	Urban Heat Island Reduction	4.18	
7	Energy-efficient Retrofitting	4.32	
8	Energy-efficient In-fill	4.09	
9	Recyclable and local Materials	4.00	
10	Biodiversity: Flora & Fauna	3.77	
11	Local Composting	3.59	

#	**Urban Sustainability**	*Average Importance All*	
1	Walkable Streets	4.82	3
2	Green Infrastructure	4.73	7
3	Accessible Public & Green Spaces	4.64	11
4	Access to Facilities	4.27	
5	Relieve Density	4.27	
6	Smart Heritage Neighborhood Competitiveness	4.09	
7	Green Roof	3.18	

#	**Social Sustainability**	*Average Importance All*	
1	Community Safety & Security	4.73	8
2	Sustainability & Cultural Awareness	4.68	9
3	Public Health Provision	4.59	14
4	Citizens Participation	4.45	
5	Inclusion of Private Partnership	4.45	

6	Equity & Choice	3.86	
7	Local Food Production	2.55	

#	**Cultural Sustainability**	*Average Importance All*	
1	Historic Resource Preservation	4.95	1
2	Recording &Documenting Historic Buildings	4.91	2
3	Preserving Unique Urban Fabric, 'Identity'	4.82	4
4	Heritage Image	4.77	5
5	Controlling Demolition of Historic Buildings	4.68	10
6	Reuse of Historic Listed Buildings	4.59	15
7	Sustainable Building Guidelines/Code	4.64	12
8	Categorizing Valuable Buildings	4.55	
9	Stable State of neighborhood 'Intactness'	4.59	
10	In-fill Projects Reflecting Distinctive Heritage	4.23	
11	Aesthetic Quality	4.23	
12	Convey Memory of Place	4.18	
13	Setting up Renovation Phases	4.27	
14	Material Genuineness	3.32	
15	Continuity of Function	3.09	

#	**Economic Sustainability**	*Average Importance All*	
1	Promotion of Incentives to Encourage Owners	4.55	
2	Economic Revitalization	4.32	
3	Marketing the Heritage Neighborhood	4.50	
4	Promote Heritage-related Job Opportunities	4.09	
5	Valorize Cultural Identity	4.27	
6	Mixed Land-use Neighborhood	3.32	
7	Develop Affordable Diverse Housing	3.14	

#	**Overarching Concepts**	*Average Importance All*	
1	Plan for Long-term Renewal & Development	4.64	13
2	Promote the Concept Reduce, Reuse, Recycle	4.50	
3	Land-use Plan	4.50	
4	Sustaining Density's Threshold	4.27	
5	Promote Innovative Solutions 'technologies'	3.95	

Top Fifteen Criteria	
Less Important Criteria with average below 4	
With Average Below 3	
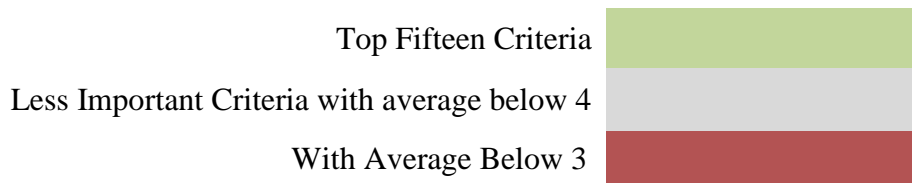
Ten criteria have an average importance below 4, while 42 out of 52 criteria are above 4 which make 81% compliance to the original catalogue. Figure 10-8 shows this compliance, where the answers of the experts whether all 22 respondents or the NOUH only or the HHI only reflect more or less no deviance in answers. This high compliance gives credibility for the catalogue to apply on Heliopolis and similar existing heritage neighborhoods. Evidently, the proposed criteria-based sustainability catalogue is a relevant approach to deal with heritage neighborhood preservation it could be useful in drawing a sustainable future for Heliopolis and similar neighborhoods as the normative planning vision along with the scientific predictions forming promising scenarios (see section 8.3.3) even if the current situation in Egypt is not capable yet of accommodating this. But this time can come soon and such approaches should be there for usage and development.
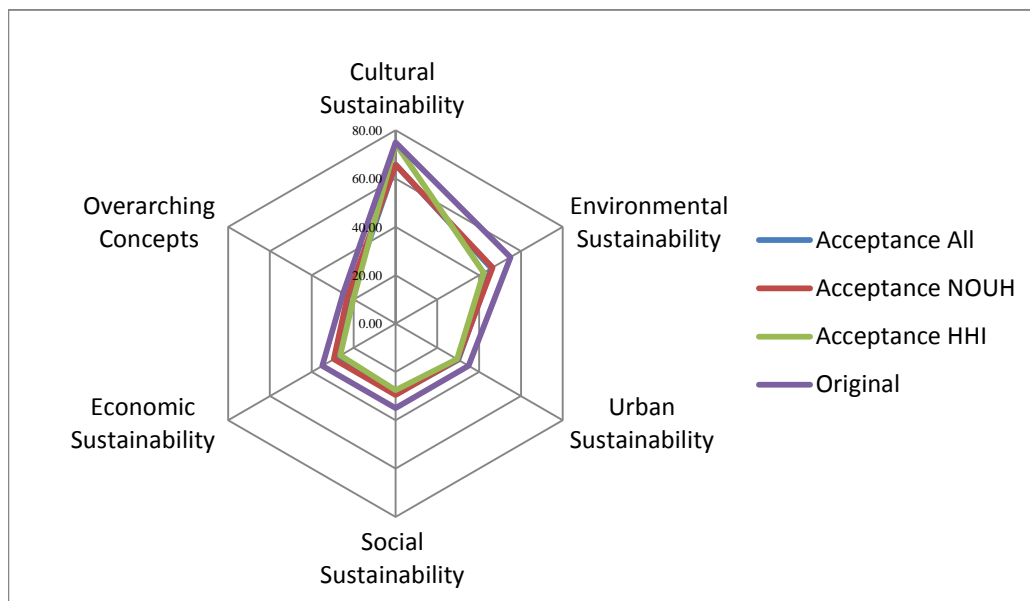
Figure 10-8 The acceptance of the different criteria looking at the different samples

10.5 THE RELATIVE IMPORTANCE OF SUSTAINABILITY CRITERIA FOR NOUH AND HHI

Different preferences can entail different responses. Looking at the top fifteen criteria chosen by both, NOUH & HHI it is possible to identify the relative differences and compliances where the way they prioritize criteria is giving an idea about the relative interest of each response; giving an implication how each entity perceives sustainability within Heliopolis. The priority lists can typically control decisions and help to prioritize actions. In that case HHI resembles the community people's opinion within the neighborhood while NOUH resembles the technical experts' view; working together would result in successful outcomes.

Comparing the top fifteen sustainability related criteria chosen by HHI and NOUH, there are 8 criteria in common; these are *'Historic Resource Preservation', 'Recording &Documenting Historic Buildings', 'Preserving Unique Urban Fabric, 'Identity'', 'Walkable Streets', 'Green Infrastructure', 'Sustainability & Cultural Awareness', 'Reuse of Historic Listed Buildings', 'Heritage Image'*. The common criteria between NOUH and HHI are 5 Cultural,

2 Urban and one Social. For HHI the cultural qualities have the scoop followed by urban and social qualities such as *walkability* and the *provision of public and green areas* without neglecting the importance of an acute need to planning for *long-term renewal and development*.

A striking observation is that in the top fifteen criteria of HHI no environmental or economic criteria show up, which reflects that their main concerns are focused mainly on the cultural issues; although one of their strong battles within the neighborhood is against cutting trees which again shows their awareness and respect to the environment.

#	Sustainability Criteria	Average Importance NOUH	#	Sustainability Criteria	Average Importance HHI
1	Historic Resource Preservation	5	1	Historic Resource Preservation	4.83
2	Promotion of Incentives to Encourage Owners	5	2	Recording &Documenting Historic Buildings	4.83
3	Community Safety & Security	4.9	3	Preserving Unique Urban Fabric, 'Identity'	4.83
4	Recording &Documenting Historic Buildings	4.9	4	Green Infrastructure	4.83
5	Preserving Unique Urban Fabric, 'Identity'	4.9	5	Walkable Streets	4.67
6	Energy-efficient Transport	4.8	6	Heritage Image	4.67
7	Walkable Streets	4.8	7	Controlling Demolition of Historic Buildings	4.67
8	Green Infrastructure	4.8	8	Setting up Renovation Phases	4.67
9	Sustainability & Cultural Awareness	4.8	9	Convey Memory of Place	4.67
10	Reuse of Historic Listed Buildings	4.8	10	Sustainability & Cultural Awareness	4.50
11	Sustainable Building Guidelines/Code	4.8	11	Reuse of Historic Listed Buildings	4.50
12	Heritage Image	4.7	12	Plan for Long-term Renewal & Development	4.50
13	Categorizing Valuable Buildings	4.7	13	Accessible Public & Green Spaces	4.50
14	Stable State of neighborhood 'Intactness'	4.7	14	Relieve Density	4.50
15	Economic Revitalization	4.7	15	Aesthetic Quality	4.50

Table 10-10 The top fifteen criteria of NOUH juxtaposed to these of HHI

On the other hand, in the top fifteen criteria of NOUH, the economic criterion '*Promotion of Incentives to Encourage Owners*' comes on top of the list along with '*Historic Resource Preservation*' with a 100% consensus by the asked experts. This shows the high relevancy and dependency between the two criteria in addition it also shows the complete awareness of the NOUH experts about the essential problem and need to financial compensations in order to preserve the heritage assets. These two criteria are followed by three others; '*Community Safety & Security*', '*Recording &Documenting Historic Buildings*' and '*Preserving Unique Urban Fabric, 'Identity'*. The first emphasizes on the importance of stability and the feeling of security and safety within the neighborhood to assure the desired quality of life for the inhabitants; while the second and third are cultural qualities important to complete the

sustainable preservation process. Looking at this outcome it is obvious that there is a difference in interest between the agenda controllers (NOUH) and the preference shapers (HHI) which is something expected. The asked experts agreed on importance of most of the sustainability criteria; however their preferences could vary as seen with NOUH and HHI. This discussion shows that the catalogue at hand should provide the flexibility of choosing the priority criteria to start with according to preferences and real need within each neighborhood. In addition, collaboration between the different actors can come up with balanced future plans for the neighborhood that can be certainly more comprehensive and thus sustainable.

After this thorough analysis and discussion, the catalogue of Table 10-9 will be used in the next chapter for further analysis and determination of the Sustainable State of Heliopolis (see 11.3.1 & 11.3.2) after explaining the problems facing Heliopolis using the DPSIR-elements for a thorough understanding of the issue.

Chapter (11):
Heliopolis Between Sustainability & Loss

Unfortunately, many villas in Heliopolis have been demolished to give way to the construction of new buildings; the interfaces of ground floors redecorated by shop owners without the slightest heed to the unique architectural design of the building. But Heliopolis remains the "Oasis of Egypt" with its nostalgic atmosphere and exceptional style

(El-Akkad, 12/09/2012).

11 HELIOPOLIS BETWEEN SUSTAINABILITY & LOSS

'Heliopolis is today under threat from property developers'
(Mursi, 7-13October 2010)

This chapter focuses on three issues; the sustainable qualities of Heliopolis of the past then Heliopolis today applying the DPSIR-elements introduced in the conceptual framework (Chapter 7). Concluding the chapter it will use the sustainable state (SS) catalogue - attained in chapter 10 - to assess the state (S) of Heliopolis against the sustainability criteria one time merged with SWOT carrying out an in-depth assessment and another time used as a quick checklist to pave the way to respond with suitable recommendations.

11.1 SUSTAINABLE QUALITIES OF THE PAST

The success of Heliopolis of the past has shown that it needs a long-term vision and collective improvements instead of searching for financial quick returns in order to regain its splendor again. It had an environment providing a place, a business and people; the triplet of success (Hussein & Attalah, 2005). In the following part the research will show the different features within Heliopolis of the past that could be described as sustainable in nowadays terms.

11.1.1 URBAN QUALITIES
- Shopping area was Korba (Hussein & Attalah, 2005) with arcade buildings *bawaki* is offering a pleasant shaded shopping pedestrian, keeping away sunrays from disturbing pedestrians became an iconic landmark (see Figure 11-1).
- Garden facing Baron Empain's palace is a morning hangout (Hussein & Attalah, 2005).
- Housing types consist of 2-3 storey apartment buildings with balconies above commercial shops, department stores, houses of one storey, villas and palaces
- The tram formed the main pillar of the suburb (Hussein & Attalah, 2005:29)
- The City was consciously planned conforming to the whole picture aesthetically and functionally (Volait & Minnaert, 2003:339).

Figure 11-1 Boulevard Abbas, Heliopolis, Korba 1910: http://orientfotograf.de/galerie_heliopolis.php

- The Heliopolis Company proved its professional capability to cohering to urban planning and urban landscape principles that in turn respect social planning (Volait & Minnaert, 2003:339).

- It is intelligent being prepared with wide streets before thousands of cars, Solé a Heliopolitan inhabitant in[84] (Hussein & Attalah, 2005:25)

11.1.2 ENVIRONMENTAL QUALITIES
- The location was unique for its climate being on a hilly plateau receiving refreshing breezes from the north. (Dobrowolska Agnieszka & Dobrowolski, 2006/2008)
- Marketed as 'the city of clean air', Heliopolis was a good space for bicycle riders (Hussein & Attalah, 2005:28)
- Using domestic construction materials; inexpensive rubble limestone extracted from quarries near the *Abbaseya* area and calcium silicate bricks produced in a brick factory established by the Company (Volait & Minnaert, 2003:339)
- Planting trees, and provision of green areas (Volait & Minnaert, 2003)

11.1.3 SOCIAL QUALITIES
- *It was a city where people lived together, side by side, in a peaceful and joyful way. It was a model of cohabitation."* Solé (Hussein & Attalah, 2005).
- *Ghaffirs*[85] were taken from the Bedouins that used to reside in the desert area, as a kind of social adaptability (Hussein & Attalah, 2005).
- Turning the grand Palace Hotel into a hospital in the period of world war two
- Provision of workers'-housing (Al-Tayeb, 2004 326 in Hussein & Attalah, 2005:30)
- Studies were carried out between 1915-1921under the theme 'ideal basic habitat' to understand what would be the satisfactory environment for the peasants; which was even prone to revision and modification (Ilbert, 1985)
- Middle class was attracted to the city by the provision of the tram (Hussein & Attalah, 2005:29)

11.1.4 CULTURAL QUALITIES
- Unique architecture specially designed & invented for this city (Hussein & Attalah, 2005)
- Using Neo-Islamic and Moorish elements that strengthen a rooting of the design, making it location-oriented and not a mere 'copy-paste' (Nasr &Volait, 2003).
- A mixed cosmopolitan city, where different social classes came to settle down with people of different national origins, religions and languages, said Solé (Hussein & Attalah, 2005)
- Provision of a plethora of cinemas (Hussein & Attalah, 2005)
- The race-course and the funfair are interesting qualities embedded by the city planners (Hussein & Attalah, 2005:26)

11.1.5 ECONOMIC QUALITIES
- The services were the key elements for the success of Heliopolis more than the aesthetic and architectural ones (Ilbert, 1985).
- 1920 a vast variety of businesses was in the city, finding work '*in the brickworks, synthetic stone factory, lemonade factory etc.*' for workmen, tradesmen, merchants (Ilbert, 1985).

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[84] Solé, interviewed inhabitant who lived tin Heliopolis the first 17 years since 1945
[85] Ghaffirs are Doormen

It is possible to say that Heliopolis of the past had a lot of the qualities that can define it as a sustainable neighborhood. Some of these features have been lost and others are still there. In that case it could be beneficial preserving what we have along with seeking ways to expand improvements towards a desired and localized sustainable state (SS) for the distinct heritage neighborhood.

11.2 HELIOPOLIS OF TODAY USING THE DPSIR-SS ELEMENTS

The valuable districts with unique urban tissues, architectural typologies, and environmental concerns have been facing continuous encroachments due to rapid urbanization streams for the last 6 decades; moreover, the hassle towards making rapid capital is forcing building owners to circumvent and demolish them against big amount of money (Amedi et al., 2009). In the following part the DPSIR-SS elements are applied on the case of Heliopolis, revealing the causal relations between the different issues, clarifying problems and deficits in addition to explaining decisions taken for a deep understanding of the chosen case study. This entails the identification of the driving forces (D) influencing Heliopolis neighborhood development, the created pressures (P) practiced on the different levels, the changed state (S) and the escorting impacts (I) reaching old responses and current responses ($R_{1,2,3}$) affecting the neighborhood either positively or negatively. Moreover, the state will be assessed against sustainability principles as defined in the sustainable state catalogue (see section 10-4). This catalogue will be used as proposed by this research in two different ways as explained below in section 11.3. The following work was attained through primary and secondary data sets; the Leitfaden in-depth interviews carried out with Egyptian experts and Heliopolis initiative people were transcribed and coded, in addition direct observation and casual talks on the Heliopolis streets were other method of primary data. Moreover, additional information from secondary data was used such as archival documents, articles and books on the subject matter.

11.2.1 DRIVING FORCES (D) WITHIN HELIOPOLIS

In Egypt trying to satisfy the ever expanding population, housing problems, high land-values against low old-buildings' value, economic value, Inflation, and speculation (Amedi et al., 2009), driving forces (D) seem to be strong. The study distinguishes between immediate causes and underlying causes of the driving force. Looking at the accentuated problem, one will assess the situation throwing the blame solely on the current political situation, the bad economic conditions, the loose security and the lax law enforcement after the 25th January Revolution. This argument is partially right but superficial jumping to a result that was caused by a chain of factors (Y. Zeiny, personal communication, March 31, 2013). Digging deep into the underlying causes, (see Figure 11-3) it is possible to reveal the roots of the problem finding a complex network of intertwined issues that have led to the current immediate causes.

Figure 11-2 Soumal Street Building with 400m2 apartments worth 8 Egyptian Pounds/monthly Old Rental Law   (photo: author, 2013)

Underlying Causes on the Country level[86]
The underlying causes on the country level were decisions taken in the past that have affected the situation within Heliopolis causing certain pressures such as the old rental law, the general law of construction, the inappropriate use of buildings reaching the loopholes existing in the current law no. 144 of 2006.

The old rental law is considered as a basic driver for the current situation. This started decades ago with Nasser's ruling in the 1950's; a period marked with socialist ideologies which was steering the political and economic issues (Volait & Minnaert, 2003:342). Instead of facing the ever increasing population growth, the vast immigration rates from rural areas to the big cities and the increasing housing demand by offering enough housing possibilities; the government introduced restrictive rent control freezing the rents at the level of the 50's (Massoud, 2013; Y. Zeiny, personal communication, March31, 2013). No longer owning a building was worth renting or maintaining which lead to rapid deterioration (Meyer 1996:97 in Amedi et al., 2009:9; Y. Zeiny, personal communication, March 31, 2013). '*The rent controls continued to dampen severely any in-town real-estate investment*' (Sims, 2010:54). These rents are valid until today (see Figure 11-2), creating a deep conflict between owner and renter.

Old Responses as Underlying Causes

Country level		Local level	
	Exponential growth of population		Heliopolis Company nationalized
	Radical Urban Area expansion		Heliopolis Company has minimal responsibilities
	Inner Immigration increase		Ministry of Housing takes over most of the company's role
	'Plaster Planning' superficial solutions		Less respect to the cahiers des charges
	Old Rental Law		1982 law open possibility of 60% land construction
	General Construction Law does not respect old neighborhoods		Increased densities of people, buildings & cars
	Old city renewal is not a priority in the urban policy program		Emerging housing problems & Strong wave of land use change
	Construction of satellite cities with no infrastructure		Greedy Investors are attributes to urban deterioration
	Inappropriate use of villas turned into schools		

Figure 11-3 The underlying causes which are at the same time old responses on the country & local level showing the roots of the current phenomenon under investigation (illustrated by author)

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[86] Country level decisions taken affecting the whole neighborhoods and thus affecting Heliopolis state

construction law where new planning lines *khetout tanzim* are determined for future urban expansions within existing neighborhoods with no respect to their value (Y. Zeiny & A. Abdin; personal communication, March31, 2013).

Another layer of wrong decisions is the inappropriate use. Decisions taken to turn villas and palaces in Heliopolis, and other neighborhoods; into schools with an inappropriate exhaustive use lead to the deterioration of these buildings (Y. Zeiny, personal communication, March 31, 2013).

The *"plaster planning"* approach adopted by the Greater Cairo authorities offered superficial solutions without profound treatment lacking farsightedness said urban planner, Milad Hanna in (Hussein & Attalah, 2005).The law 3 of year 1982 opened the possibility of land construction up to 60% which affected the existing unique city (Hussein & Attalah, 2005) which was formerly on 46 % (Mursi, 7-13October 2010).

The current loopholes of the law 144 of 2006 because of which, a lot of valuable buildings take court decisions to be removed from the heritage lists developed by NOUH. There is a loophole in the law which causes the loss of a lot of distinctive buildings. In the law when naming the different values taken into consideration the word <u>and</u> is used instead of <u>or</u> which makes it a condition to have all the value-types in one building in order to define it as distinct. This makes it almost impossible to have a building that gathers all the features. This provides owners a door for challenging any decisions where they could win the case removing the building from the valuable heritage list and getting demolition permission, while others demolish their buildings without even taking a permission. First they apply for a complaint then they demolish without any hesitation especially in this period after the revolution due to the lack of control. A third party who wants to skip its buildings from the lists, claim that the building is deteriorated doing some vandalistic actions (A. Aly NOUH, personal communication, March 26, 2013). Actually, a civil engineer is part of the inventory committee who decides upon the safety of the building (A. Aly NOUH, personal communication, March 26, 2013).

Underlying Causes on the Local Neighborhood Level[87]

On the other hand, there were underlying causes that were directly taken on the neighborhood scale such as the nationalization of the Heliopolis Company.

In the 50's, the Heliopolis Company was nationalized and the Belgian left (Hussein & Attalah, 2005). Today, the company is a public sector and a subsidiary of the National Society of Construction and Development (*al-shareka al-qaumeya leltashyeed wa al-ta'meer*) under the auspices of the

Figure 11-4 Heliopolis Company premises in Ibrahim al-Lakani Street
Source: HHI Site (Photo Dr. Nagia Zaki, 2012)

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[87] Local neighborhood level are decisions taken affecting only for Heliopolis

Ministry of 'Housing[88] (Volait & Minnaert, 2003) (Figure 11-4). The change in the company's status accelerated the sale of its built assets losing it gradually reaching about twenty buildings in 2003. In addition, the company has lost the right to run the tramway in 1977 (Volait & Minnaert, 2003). The Ministry of Housing became the powerful authority and the Cairo Governorate took away a lot of the Company's functions even the construction permit to land since 1992 (Hussein & Attalah, 2005:37); focusing much on development of new projects extensions (Volait & Minnaert, 2003).

11.2.2 PRESSURES (P) WITHIN HELIOPOLIS

'In the Middle East development pressure for growth has often been at the expense of the urban heritage' (Malik, 1993:65 in Orbasli, 2007:164)

In the Egyptian neighborhood context the pressure (P) is exercised due to the existence of greedy investors and the lack of awareness about the importance of valuable heritage along with the absence of any governmental financial incentives for preserving valuable buildings. The increasing number of high-rise buildings which replace old villas whether listed or not, the unstudied land-use changes and the increasing number of vehicle; all these factors are pressuring the existing infrastructure.

Figure 11-5 Announcing restoration intending demolition, 77 Sheikh Rihan St. Abdin Down Town; Source (NOUH, 2011)

Figure 11-6 Registered Building, intentionally demolished core, 51 al-Qabwa St. Misr al-Qadima Source (NOUH, 2011)

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[88] Cairo, Archives of the Heliopolis Housing and Development Company, special construction Series, file 9463, new Specification No. 1 for the sale of land in Heliopolis, Art. 7, 1965 and Heliopolis Company for Housing and Development, *Past, Present… and Future and Comprehensive Urban Development*, Cairo, 1996 (in Volait & Minnaert, 2003)

Affording owners of old-buildings keep their property vacant as a supply for future need or for speculation (Meyer, 1996:102); others are encouraged to get rid of it against mythical prices as the land-value is extremely high where the government is not able to compensate (Y. Zeiny & A. Abdin, personal communication, March 31, 2013). To demolish a listed building, owners circumvent the law in different ways. Some go to court to obtain judicial ruling to erase the building from heritage list to tear it down, said Gharib, (former) head of NOUH (Salah, 06/01/2012); others do vandalistic actions. For example a protected building *in Misr al-Qadima,* Cairo, the owner damaged the core of the building intentionally to weaken the structure and make it fall, trying to prove it was structurally unsound (see Figure 11-5). Under similar pretexts a building owner in *Abdin,* Downtown Cairo pretends to restore his building, resulting into the collapse of part of the building claiming innocence (see Figure 11-6). Such actions make *Egypt's architectural identity under threat* (El-Aref, 04/24/2014) especially when nobody is being punished. The removal of one or two storeys of a valuable building is another vandalistic approach to weaken its value stimulating its removal from heritage list. The committee of complaints, if they discover structural problems they forward the case to the '*committee for buildings doomed to fall*' which takes the final decision from a pure structural point of view. In order to dissolve itself from any major responsibility, the committee permits demolition in most of the deteriorated cases (A. Aly NOUH, personal communication, March 26, 2013).

11.2.3 STATE (S) OF HELIOPOLIS: A GRADUAL CHANGE

"We are losing our identity and history" (Serageldin, 2007)

The Urban Environment. As the population of the neighborhood started to grow, and an airport had been built in 10930[89] to the east, the neighborhood started to expand in three directions (Mursi, 7-13October 2010). An increase in density of buildings, number of cars, number of people, and exodus of commercial entities into quiet residential zones were the basic features of that period. A strong wave of land-use change has started and ground-floors of buildings were turned into commercial shops such as cafes and restaurants forcing Heliopolis

Figure 11-7 Arial View of Heliopolis in the 60's showing the expansion of Heliopolis to the east and the Merry Land Park replacing the Hippodrome Source: (Gadallah, June 2009)

to lose its '*once quite "homely" characte*r' said Sonallah Ibrahim and Jean Pierre Ribière in their essay '*From Edge to Edge*' (Ibrahim & Ribière, 1998:14 in Hussein & Attalah, 2005:34). Inner migration has increased and in Heliopolis; rural migrants have resided in the workers' settlement (Volait & Minnaert, 2003) (Figure 11-7).

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[89] Almaza Airport launched 1930 according to the Egyptian Ministry of Aviation available online at: http://www.civilaviation.gov.eg/History/history-ar.html

The attacks on the heritage buildings are continuous that eliminate every evidence of the precious past (Salah, 10/23/2012). Gharib, the former head of the NOUH Organization asserts that there are a lot of valuable buildings facing threats despite constant alert to responsible governmental-agencies and the proposals to make use of this wealth that is currently deactivated. After the 25th of January revolution in 2011, owners and investors have exploited the opportunity of lack of control misusing the law with its loophole.

Generally, there is less breach in Heliopolis. Heliopolis has a very high land-value and the law prohibits demolition of listed buildings without a court decision or a decision from the committee of complaints. Any infringement entails a punishment leaving the empty plot unbuilt for 15 years. People will fear to buy an expensive apartment in a violating building which can happen in poorer areas. Accordingly, the contractor or the owner won't find clients for the offered flats. This is the main hindrance that makes such actions mere individual like the one of *Maspeero*. As clarified by Eng. Mohamed AbdelNa'im of the local governmental district of Heliopolis; the building encroachment in *Maspeeo* Street faced a harsh punishment, blocking the nutrition water and electricity to the land plot which hinders the possibility of selling the plot or building on it (M. AbdelNa'im, personal communication, April, 2013).Unfortunately, now (2015) the plot is under construction (see Figure 11-8).

Although it is said that Heliopolis is sometimes taken as a successful example of building in the desert for further extensions for Greater Cairo today (Sims, 2010:197); the new emerging satellite cities did not learn from Heliopolis'; they were isolated. *'This regress has not only grown a sore into new cities, but has also assailed the existing entities'* (Hussein & Attalah, 2005:37).

Figure 11-8 Left: Registered building, 3 Maspeero St., Heliopolis (NOUH, 2010) Middle: empty Plot after building torn down (NOUH, 2012) Right: Construction of a new building instead (Michel Hanna, October, 2014)

11.2.4 IMPACTS (I) ON HELIOPOLIS

The demolition of heritage items is destroying the heritage, and the depredation of the right for future generations in owning the wealth witnessing the history of their ancestors (S. Hawas, personal communication, April 10, 2013).

According to HHI (personal communication, March, 213), neighborhood inhabitants are not satisfied with the destiny of their neighborhoods, loosing irreplaceable building gems meanwhile experiencing a decline in quality of life intensified by high traffic, increasing pollution, etc. This leads sometimes to the exodus of original affording inhabitants looking for a place on the outer skirts seeking more green, less noise and traffic leading to the increase of vacant apartments accelerating deterioration processes. High-rises substitute old

buildings using more footprint losing green areas and increasing pressures on infrastructure (A. Abdin, personal communication, March 31, 2013). *Housing unit vacancy rates are very high in urban Egypt, reportedto excess 20 to 30 per cent,* reaching half a million units in 2008 in Cairo alone (UN-Habitat, 2011:33). People tend to sell and demolish because they seek to live a better life. The partnership between the different actors is an important instrument for the survival of valuable buildings along with the application of laws (A. Aly NOUH, personal communication, March 26, 2013).

11.2.5 RESPONSE (R₁) AGENDA CONTROLLERS: NATIONAL ORGANIZATION OF URBAN HARMONY (NOUH)

The honest and loyal will for preserving the main sources of culture exists among Egyptian experts, academics, and interested laypersons (Serageldin, 2007).

NOUH is the technical body that gives its expert say about any action concerning accredited valuable areas (J. Youssef, Cairo Governorate, personal communication April 02, 2013). *What is not totally realized should not be totally left* was the comment of Y. Zeiny (personal communication, March 31, 2013) asking about NOUH. The establishment of NOUH itself is an opportunity to orient the attention to the beauty of the city and its architectural, planning and coordination problems. It is a nucleus that could later be further, and this should be done decentralize in every city and every governorate. The NOUH is a good seed, but it does not have enough power or a rigid form that can impose needed decisions (Y. Zeiny, personal communication, March 31, 2013). NOUH as illustrated in chapter (4) is the formal 'governmental' entity that was established as a response (R) to intervene in many occurring deteriorations, above all to protect the valuable buildings of Modern Egypt from demolition and obliteration following the two developed laws 144 of 2006 and 119 of 2008.

Regarding the case study area of Heliopolis, NOUH has developed a value map of distinctive buildings categorized A, B & C (see Figure 11-12) depending on their value as determined by the assigned committee. The inventory listing of valuable buildings in Heliopolis has started in 2007 after issuing the law 144 of 2006 (A. Aly NOUH, personal communication, 2013) and was completed and enforced in 2010. In addition to the list of distinctive buildings a value map for Heliopolis was developed dividing the valuable area into Area A, B & C as shown in (Figure 11-11), which was accepted officially in December 2013. The list of buildings is then disseminated on the different responsible authorities such as the Heliopolis local district unit.

In Heliopolis there are 732 listed buildings according to NOUH inventory lists (NOUH, 2010)[90]. At the time of the listing the owner of the building is notified through a letter and she/he has the right to complain against this decision within a month from notification (art. 5 law 144 of 2006). The grievance committee checks the complaint for a final decision upon the building and its value (art. 6 law 144 of 2006).

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[90] List of valuable Buildings of Heliopolis available online at:
http://www.urbanharmony.org/placedetails.asp?id=5

Boundaries and Requirements Handbook

'Boundaries and requirements' is the name of the handbook developed by NOUH for each area announced as distinct. This handbook specifies detailed guidelines and requirements to be followed when dealing with a certain area upon its announcement as distinct.

Based on what is stipulated in the law 119 of the year 2008, the NOUH did define different distinctive areas worth preservation to follow special guidelines and standards having specific boundaries. These areas are Khedivial Cairo area, Old Islamic Cairo and *Maadi*, in 2011 and *Garden City*, *Zamalek*, and *Heliopolis* since December, 2013 (Hawas, 2013; NOUH website). They are approved from the supreme council of planning and urban development according to the law no. 119 of 2008. The boundaries of the areas are value-driven not following the administrative borders.

The structure of the guiding handbook called 'Boundaries & Requirements' developed for each area is more or less similar, however there are some features in an area that do not exist in another and therefore they differ in some points. Heliopolis, which was announced as a distinctive area in December 2013 has a guideline divided into 14 sections: (1) Identifying boundaries and protection domains, by specifying exact streets associated with a map (2) General Requirements, stating clearly that any kind of action within the designated area needs a permission, clarifying what is possible and what is not possible to carry out (3) Specific Requirements, related to each area and its characteristics, in the case of Heliopolis these are clubs & public gardens, (4) Urban Fabric, explaining that no plot subdivisions are possible, clarifying that the built area should not exceed 50% in order to protect the distinctive fabric (5) Demolition and Rebuild, emphasizing on the importance of a permission in addition to the importance of documenting any listed building doomed to fall (6) Architectural Style where no curtain walls are allowed suggesting some materials and color schemes for external finishing (7) Heights of New Buildings (In-fill) specifying the permitted height in each zone A, B & C (8) Buildings listed according to law 144 of 2006, explaining that there are three types A, B & C (Figure 11-11), showing the possible intervention in each case (9) Existing not-listed buildings should respect the heights and style of the surroundings (10) Shop Elevations should respect the original façade of the building having a specific place to put the name (11) Landscaping where planting is possible with the recognition of irrigation methods that do not harm the buildings (12) Pavement and Roads, its height should not exceed 15cm, unifying the finishing taking a permission before action and preserving the original hardscape (13) Street Arcades should be preserved and rebuild again in case of demolition (14) Procedural Requirements permissions are taken from NOUH.

In Heliopolis three protection area are determined, areas (A), (B) & (C). According to Law no.119 of 2008 article (33) of section (2) the areas of distinctive values "*manateq zat alqimah almotamayezah*" are designated by the responsible party within the NOUH-Organization following the stipulated requirements specified for each special area. No intervention is allowed in a designated area without having permission (NOUH, 2010).

When having a shop in a distinctive building, one should respect the original façade, leaving the external walls, using same materials and colors. In case of damage, the shop owner is asked to fix it to the original state. Last but not least, the signboards of the shops should be put within the specified area in the façade opening. (Figure 11-10) shows a façade in Heliopolis with shop signboards ruining the building while (Figure 11-9) shows an example in Khedival Cairo, *Talaat Harb* square, showing the façade after carrying out a renovation project by NOUH in 2012.

Figure 11-10 Store Elevations in a distinctive building in Heliopolis photo: HHI, March 2015
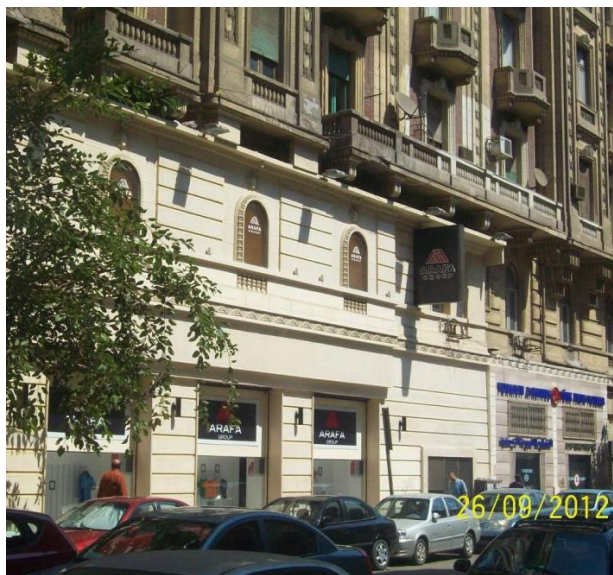
Figure 11-9 Talaat Harb Square, Downtown Square Renovation carried out by NOUH photo: author, 2012

In the specific guidelines developed for Heliopolis the boundaries of the designated area are specified by identifying the northern, southern, eastern and western streets that embrace the area. Then again the same is done to determine the different zones A, B & C according to importance and value as specified and defined by NOUH. The idea behind preparing the guidelines is to create clear regulation to be respected and followed that in the end will help in preserving the character and identity of the valuable area designated.

- Any intervention that affects the visual Image is prohibited, such as bridges, parking buildings, advertisements.
- It is stated clear that there are no changes, removal or heightening allowed in the areas with buildings with outstanding value before attaining permission from the responsible bodies. Moreover, there are no uses allowed on the pavements (*ishghalat*) and no construction allowed in the public spaces, streets, squares.
- No polluting uses are allowed within and at the buildings such as workshops, storages, commercial shops, unless in zones designed especially for these uses.
- Visual aspect: No satellite dishes, no drainage, gas and sewage pipes or AC boxes should be seen on the facades of main streets (what is the def. of the main street?)
- Respecting the rules and standards mentioned in the guide of principles and criteria for the harmonization of cultural heritage areas '*daleel Ossus wa ma'ayeer altanseeq alhadary lelmanateq altoratheya'*
- Existing clubs & gardens are preserved with no increase of uses or further construction.
- No plot division is permitted in area A & B, only one building on each plot.
- No building on green areas or in areas between buildings whether public or private.
- Construction does not exceed 50% of the plot.

Figure 11-11 Heliopolis map showing listed valuable buildings, Categories A, B & C (developed by author)

Figure 11-12 Heliopolis value map showing valuable areas with Categories A, B & C Source (NOUH, 2013)

- No permission for demolition is issued before revising whether building is listed or not.
- Local district unit documents & records with photos a listed building doomed to fall before demolition.
- In case of reconstruction in Zone A, the original façade of the previous building should be respected.
- The treeing: it is not allowed to remove a tree without referring to NOUH taking the permission.
- Curbs and streets: Any renovation work on curbs are not allowed without a permit respecting the original furniture
- No additional business or administrative buildings in Value Area A

Listing Inventory

The listing inventory is developed by NOUH in collaboration with Cairo Governorate for listing the valuable buildings in Egypt. Each building has a registration code, the complete address, the governorate it belongs to. Some documentation pictures are taken specifying the exact date, specifying its place on the map, the type of building, (villa, a multi-story building, etc.), in addition to information about the buildings style, construction, electricity, water & sewage (NOUH Inventory form)

And above all clarifying the different criteria that make it valuable as defined in the law. The category of the building is also determined, whether A, B or C. Not all old buildings are listed which is a managerial problem (A. Aly NOUH, personal communication, 2013). The nostalgia for the glories of a most recent past has led to several attempts to preserve the patrimony of older buildings in downtown area.

NOUH collaborates with civil society and NGOs interested in preserving the country's architectural heritage, such as those in Heliopolis, Garden City, Zamalek and Maadi and they also intend to work with international organizations concerned with heritage, such as ICCROM (El-Aref, 04/24/2014).

Doctor Mohamed Awad, the head of the technical committee for the architectural heritage preservation emphasizes on the importance of updating the inventory List of valuable buildings to stop the demolition orders and follow-up grievances in a formal way and activate the Heritage law and the payment of compensation and the re-consideration of the low rents for these important buildings which tempt owners to demolish, and emphasized that we are in trouble due to corruption and recklessness (El-Gayar 2014)

Gharib states that the governmental bodies '… *are the first to break the laws*', which makes the work harder and full of obstacles and challenges. '*Since 2011, we live in what is called the era of the Great Depression of Egyptian urban*' (Tawfiq 2014).

Building demolition prohibition; after repeated circumvention actions, the NOUH and the relevant stakeholders are developing responses (R) such as the suggested amendments to the law 144 for the year 2006 to overcome the current loophole concerning value identification, in addition it should allow the owner sufficient flexibility for using his property without infringing on the right of the state and future generations (Salah, 06/01/2012). *The government is responsible to protect the historical buildings and the owners have the right to make their property a lucrative investment (*Mohamed Abu Seada, head of the NOUH, to Al-Ahram Weekly; El-Aref, 04/24/2014); that is why the issue of financial compensation or incentive is crucial (Save Alex, TV program 2013) which is also absent in the law due to the lack of governmental resources. NOUH suggest *tax exemptions, increases in rental fees, or*

the provision of free maintenance or offering the owner of a historic building land in return for expropriating the property" (El-Aref, 04/24/2014).

11.2.6 RESPONSE (R₂) PREFERENCE SHAPERS: HELIOPOLIS HERITAGE INITIATIVE (HHI)

'We believe that social resistance can make a difference'
Ahmed Mansour, 2013 HHI key-member

First of all the creation of the Initiative is Response. They have carried out different activities to spread awareness, and protect their heritage. The have divided their work into quick-wins, short-term & long-term projects.

Quick-wins
One of the main activities of HHI was organizing a photography competition in Heliopolis in 2012 and February, 2015. This smart activity had different successful outcomes; such as urging interested people to take part in the competition; taking a huge number of pictures for recording current buildings and urban spaces by. Disseminating the winning pictures all around the neighborhood was a kind of marketing the outcome showing the great value of Heliopolis wealth in addition to marketing for the initiative that has just started to gain more community support.

Short-Term
On the short-term the HHI has put different goals to work on such as developing Guidelines and Boundaries for Heliopolis before announcing Heliopolis as a valuable area by NOUH; arranging meetings with NOUH to give their input trying to involve the neighborhood community (HHI meeting March 16, 2013); documenting the common memory of the Heliopolitans and develop a comparative analysis of the different historical layers of Heliopolis.

Long-Term
On the single building scale, HHI wishes to have a real pilot project for a building 'core & shell' in addition to its surrounding urban elements; advertisements, lighting pavement to encourage people to do the same and appraise the hidden beauty and value of their existing assets. One of the main obstacles of HHI is that they are not an NGO (A. Mansour, personal communication, January 5th, 2014).

Social Resistance
As the HHI is keen on preserving different valuable aspects within their neighborhood, it comes sometimes to protests from their side against certain undesired actions either by individuals, private investors or even governmental decisions. In their stands they wish to win support from additional community members and grasp attention of the governmental and public opinion to stop undesired acts (Figure 11-13).

One of their famous vigils was for the 'Swiss Chalet' in *el-horeya* Street 35 built ca. 1915 (Mohamed Ra'fat, 2013). It was skipped unintendedly from the lists of the inventory committee, and thus the owner had the right to demolish. The initiative went to the local district unit, made a petition, and organized two objection demonstrations in 2013 to fight against this action; however the building was torn down losing an iconic building.

HHI call for acute need to change the law and the process of implementing the law including listing. The HHI proclaim their continuous suffering from the disappearance of valuable building after building due to greedy capitalist investments robing the collective memory of place. Even a letter from the head of NOUH to the Governor of Cairo and to the Minister of Housing did not stop demolition (see Figure 11-14).

The second vigil was for the tram-line. As a part of the unstudied approaches in making decisions in isolation from the key stakeholders; a decision was taken by governmental bodies to demolish the Heliopolis Tram-line instead of reviving it, making use of the already existing infrastructure (HHI Member, September, 2014). This action has ignited the Anger of the HHI, local community and Heritage lovers. *The tramway or what Cairenes call the metro is an invention that is the pride and joy of the Heliopolis "residents"* (Hussein & Attalah, 2005:23).

Figure 11-13 Initiative members in the demonstration (vigil) holding signage such as 'because of our kids', 'for the quality of life in Heliopolis' 'our shared memories are vanishing' (HHI, 2013)

The HHI called for a rejecting protest (vigil) on the 17/09/2014 under the name 'a tour with the Tram' to make people conscious and aware about the problem and announcing their strong objection. They clarify that the existence of the newly constructed Metro-line (3) underground does not come in conflict with the co-existence of the 100 year old Tram-line that serves people within the smaller neighborhood scale (see Figure 11-15).

Figure 11-14 Swiss Chalet: Left: showing the unique architectural style of the building (Michel Hanna, 2012) Middle: Vandalism expropriating the building form its ornaments intending demolition, (Michel Hanna, April 2013) Right: High-rise under construction replacin

Figure 11-15 A tour with the Tram 17/09/2014 (Ahmed Hamed, HHI, 2014)

11.2.7 RESPONSE (R₃) DECISION MAKERS: LOCAL EXECUTIVE AUTHORITIES

The decision making power in Heliopolis is hierarchal, where the Cairo Governorate is the high governmental body to decide upon subject matters within Cairo–unless a decree comes from a higher position- then comes the local governmental unit *hay* where any intervention permissions must be issued (see Figure 11-16).

Governmental Level
Concerning the old rental law there was a commission to modify it in the Ministry of Housing suggesting a gradual change[91]. This modification aims to achieve balance between owner and renter in old buildings; it will re-win the trust between owners and their government, the return of the real estate investment, and the use of closed flats and buildings (Massoud, 2013). Support will be offered to unable renters if the new renting value is more than quarter their income (Moftah & Hany, 2013); this money will be from a fund created by the 5% real estate tax that will be implemented (Massoud, 2013) however nothing has been enforced yet.

Cairo Governorate
There are different efforts carried out since the 80s to preserve the value of Heliopolis neighborhood. In 1991 the governorate of Cairo has banned the construction of buildings to replace villas and in 1993 it has limited the height of buildings in Heliopolis to 7 storeys (Volait & Minnaert, 2003). In 1997, the historic core of Heliopolis was subtracted having exceptional strategic lining (*tanzeem estethna'y*) in order to protect its physical appearance (Volait &

Old Responses

Local level	1981 a private Association for the Development of Heliopolis was established
	1982 Heliopolis follow the General Building Regulation
	1991 banning villa demolitions
	1993 limiting building heights
	1997 Heliopolis historic core follow exceptional regulations
	Between 1982 & 1997 Supreme Council of Antiquities develop a list of protected buildings of the 19th early 20th century, 53 from Heliopolis

Figure 11-16 Old responses (R) concerning the preservation of valuable Heliopolis (illustrated by author)

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[91] They propose a relative increase from 1.5 to 26 times the current amount to be fixed for five years then increase according to the inflation value issued by the Central Bank and the Central Agency for Public Mobilization and Statistics (Moftah & Hany, 2013).

Minnaert, 2003, Al-Qazaz, 07/09/2010). Meanwhile, the Supreme Council of Antiquities carried out the classification of different manifestations, based on the provisions of the Law no. 117 on Antiquities adopted in 1983. This law is considered as eligible for filing any old building over 100 years (art. 1) while providing the ability to protect buildings later, when "the national interest" warrants (art. 2)[92]. In fact, the list of buildings from the 19th and early 20th centuries, classified under either of these provisions, continued to grow; 53 buildings in Heliopolis were enacted between 1982 and 1997 among others[93] (Volait & Minnaert, 2003).

Heliopolis divisions were under the administration of Heliopolis Company until 1982 after that it became under the responsibility of the governorate, however still respecting the binding guidelines and regulations of the company following the law 3 of year 1983 for Urban Planning *takhteet 'omrany* (H. Adel, Cairo Governorate, personal communication, April 02, 2013). The accredited plans *mokhatat mo'tamada* of the governorate usually include regulation lines *khetout eltanzeem*, land-uses, building requirements and guidelines (H. Adel[94], Cairo Governorate, personal communication, April 02, 2013). The actions of addition or division of plots and the change of use are under the department of planning *takhteteya*. If someone wants to change the use; the request according to the law 119 of year 2008 the article number 74 is carried out in the governorate and is being studied in the planning department (takhteteya) then it is raised to the Supreme Council for Planning, and Urban Development for certification (H. Adel, Cairo Governorate, personal communication, April 02, 2013). Asking about projects or plans for Heliopolis; J. Youssef (Cairo Governorate, personal communication April 02, 2013) stated that there are currently no projects carried out there. Higher priority is for slums and new developments. She stated further that the Cairo Governorate works on the general level, looking to the *hay* with a holistic eye, for exampling seeing the land-uses in general terms and not street by street level, plot, or shop by shop, this is the *hay's* responsibility (J. Youssef (Cairo Governorate, personal communication April 02, 2013). When there is an intention of development in an existing neighborhood, there is coordination with the *Hay* and current condition studies are carried out by certified consulting offices where the governorate acts as a participating partner in the study process (J. Youssef (Cairo Governorate, personal communication April 02, 2013).

A heritage conservation committee develops the inventory. This committee consists of representatives of NOUH, in addition to engineers from the governorate. The Heritage Conservation Committee consists of 9 members; one representative of the Ministry of Culture, one of the Ministry of Housing, two of the governorate, and 5 University professors (architecture, construction, antiquities, history & art)[95]. The chairman of the heritage inventory committee is from NOUH. The committees of inventory were formed since the issuance of the law 144 of year 2006. Each governorate has inventory committees. Big governorates like Cairo, was divided into 4 zones; Northern, Southern, Eastern, Western. There are different types of committees; 1) Committees already formed and working 2) committees formed but don't work 3) Committees not yet formed (like Luxor) –all over the Egyptian governorates.

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[92] Egyptian Antiquities Organization, Law No. 117 Of 1983 Concerning The Issuance Of Antiquities' Protection Law (With A Preface By Dr. Ahmed Kadry), Cairo, 1985

[93] General Organization Of Antiques, Bayan Bil-Athar Al-Musaggala (Bulletin Of Protected Monuments), Cairo, (C. 1997), 11p., Manuscript. In Volait And Minnaert (2003)

[94] The Director of Land Development, the Department of Urban Planning Management in Cairo Governorate and at the same time a member of the architectural Heritage conservation committee –Eastern Zone

[95] Law 144 of 2006 article 4

There are two mechanisms of work for the committees. There are committees which go to the centers of neighborhoods and villages without digging into peripheral areas, which leads to skipping important buildings from the list. This is what happened to Zefta Street, Heliopolis; demolished buildings there are not listed. A keen approach to avoid this drawback is carried out by the committee *west Cairo*, where any demolition decision is not prosecuted unless the committee visits the site and investigates the building even if not listed, to avoid any unwanted los. In other zones demolition permission is taken after looking in inventory lists only; and if a valuable building was unintendedly skipped it is lost forever (A. Aly NOUH, personal communication, March 26, 2013). The law is now being amended by the Ministry of housing. The documents and lists are then respected by the different governmental bodies. In case of encroachment; the local government unit *hay* makes a violation record and decision for removal but for the implementation of the decision there has to be a police power that joins and this is not always available these days. In case of land-use change in Heliopolis in the ground floor of a building a committee is formed to assess the situation before giving a permit.

The Cairo Heritage Preservation Unit[96], established January 2013 is a governmental entity under the Cairo Governorate. Its main mission is taking care of the surroundings of architectural and archaeological heritage; in addition it is also interested in the old city's heritage (mainly Old Islamic Heritage). Their mission includes increasing people's knowledge of the importance of their history and patrimony through awareness programs, workshops, and regular campaigns in addition to generating resources for preservation. There is a consultant committee consisting of representatives form NOUH, Ministries of Antiquities, - of Planning, - of Tourism & the Heritage Unit. As the situation is unstable and there is a need for stability to find suitable investors and funds the Heritage Unit focuses on the awareness aspect (R. Aram, Heritage Unit, personal communication, January 08, 2014).

Local Governmental Unit '*hay*'
The local governmental district unit of Heliopolis *hay* is the responsible body where any construction, demolition or extension permissions are taken. When receiving any request from the owner of an asset; the local governmental district checks whether the building is listed and thus protected by the law 144 or not. If it is not listed usually the demolition permission is easy to attain, and if it is listed the owner is not allowed to tear down the building, moreover he must see the category of the building and accordingly see what kind of intervention is permitted. The hay is in charge of applying the building requirements (*eshteratat bena2eya*), lining guidelines (*khetout tanzeem)*, and all the projects within his boundaries.

Moreover, it is also responsible for any encroachments and breaches (J. Youssef, Cairo Governorate, personal communication April 02, 2013), cutting service lines accordingly as in the case of Maspeero 9, Heliopolis said M.AbdelNaim (currently it is under construction again). In Heliopolis local district unit *hay* there are no certified plans for the neighborhood. The *hay* is not capable of doing anything now, in the post-revolutionary period. It is an exceptional condition (S. Hawas, personal communication, 10 April, 2013). In Figure 11-17 an overview of the different DPSIR-elements is illustrated.

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[96] Heritage Unit https://www.facebook.com/cairoheritage/info

Driving Force	Ever increasing number of population	Absence of incentives and subsidies in law	Bad economic situation Lack of control
Pressure	Demolition of villas with no respect to laws or value of buildings	Expensive maintenance cost with no governmental support	Economic-driven Investments offering tempting prices to owners
State	Emergence of high-rise buildings within the valuable existing fabric	Deteriorated neglected neighborhood &buildings	valuable buildings demolition – high-rise land-use change residential - office buildings
Impact	Domino-effect for demolition Increased load on Infrastructure	Loss of buildings & decaying quality of life	Alienation in ones own neighborhood Inhabitants leave
Response	• law modification to overcome loopholes • Law enforcement • Conscious land-use plan	• Include incentives & subsidies in Law	HHI creation 2011 forming a social resistance

Figure 11-17 Elaboration of the DPSIR Elements applied to Heliopolis (by author)

11.3 SUSTAINABLE STATE ASSESSMENT FOR HELIOPOLIS

In the following part the state (S) of Heliopolis will be assessed against sustainability principles as defined in the sustainable state (SS) catalogue. It will be used in two different ways, a quick and an in-depth way. In the first one (section 11.3.1) it will be a quick assessment to show the criteria that *exist* , *partially exist* or *do not exist* yet as a fast and easy method for decision makers and other interested actors such as Heiritage Initiatives to identify weak criteria and qualities that need more work and intervention. The second method; can be considered as the follower of the previous one, the in-depth assessment which carries-out a more detailed evaluation that enables to plan consciously supporting the elements of strength and make use of opportunities meanwhile working on weaknesses trying to avoid threats. In the coming sections the research will apply the quick assessment using the total 52 criteria while using the in-depth assessment will be limited to the top fifteen ranked criteria resulted from the analysis in the previous chapter (see Table 10-9 4th column). These top fifteen criteria reflect either an acute need or a problem as expressed by the asked experts, which can help put the first milestones toward the serious application of the localized sustainable state (SS) catalogue; suggesting renovations, redevelopment, infrastructure improvement etc. and instruments to strengthen the neighborhood's sustainable performance and overcome weaknesses. Last but not least, this enables developing proposals and recommendations as a backbone for the neighborhood development plan which is an essential aim of the research.

11.3.1 QUICK SUSTAINABLE STATE ASSESSMENT FOR HELIOPOLIS

Table 11-1 Quick assessment of the state (S) against sustainablity principles of the sustainable state catalogueand the needed measures for application

#	Sustainability criteria	*Average Importance*	*STATE*	*Applicability in %*			
				technical	administrative	physical	socio-cultural
1	Historic Resource Preservation	4.95	Partially exists	13	67	0	20
2	Recording & Documenting Historic Buildings	4.91	Partially exists	46.5	46.5	0	7
3	Walkable Streets	4.82	Partially exists	0	34	53	13
4	Preserving Unique Urban Fabric, 'Identity'	4.82	Partially exists	13	67	13	7
5	Heritage Image	4.77	Partially exists	6.5	60	6.5	27
6	Energy-efficient Transport	4.73	Does not exist	13	67	20	0
7	Green Infrastructure	4.73	Does not exist	20	60	20	0
8	Community Safety & Security	4.73	Partially exists	0	53	47	0
9	Sustainability & Cultural Awareness	4.68	among a small number	7	20	0	73
10	Controlling Demolition of Historic Buildings	4.68	loopholes and circumvention	27	67	0	6
11	Accessible Public & Green Spaces	4.64	scarce / does not exist	7	33	47	13
12	Sustainable Building Guidelines/Code	4.64	Does not exist	13.5	73	13.5	0
13	Plan for Long-term Renewal & Development	4.64	Does not exist	7	93	0	0
14	Public Health Provision	4.59	Does not exist	7	80	0	13
15	Reuse of Historic Listed Buildings	4.59	Parially exists (mainly cafes)	13	60	7	20
16	Stable State of Neighborhood 'Intactness'	4.59	Partially exists	20	73	0	7

Quick assessment of the state (S) and the needed measures for application (Continued)

#	Sustainability criteria (cont'd)	*Average Importance*	*STATE*	Applicability in %			
				technical	administrative	physical	socio-cultural
17	Categorizing Valuable Buildings	4.55	Exists (NOUH)	33	67	0	0
18	Promotion of Incentives to Encourage Owners	4.55	Does not exist	0	93	0	7
19	Marketing the Heritage Neighborhood	4.50	Partially exists	0	67	0	33
20	Promote the Concept Reduce, Reuse, Recycle	4.50	Does not exist	0	40	0	60
21	Land-use Plan	4.50	Does not exist	0	73	27	0
22	Air Quality	4.45	Does not exist	20	67	13	0
23	Citizens Participation	4.45	Partially exists	0	47	0	53
24	Inclusion of Private Partnership	4.45	Does not exist	0	93	0	7
25	Energy-efficient Retrofitting	4.32	Does not exist	13	73	7	7
26	Economic Revitalization	4.32	Partially exists	7	60	0	33
27	Land Efficiency	4.27	Partially exists	13.5	73	13.5	0
28	Access to Facilities	4.27	Exists	0	40	60	0
29	Relieve Density	4.27	Does not exist	7	73	20	0
30	Setting up Renovation Phases	4.27	Does not exist	40	53	7	0
31	Valorize Cultural Identity	4.27	Does not exist	6.5	0	6.5	87
32	Sustaining Density's Threshold	4.27	Does not exist	13	67	13	7
33	Climate responsive Planning	4.23	Does not exist	27	46	27	0
34	In-fill Projects Reflecting Distinctive Heritage	4.23	Partially exists	46.5	46.5	7	0

Quick assessment of the state (S) and the needed measures for application (Continued)

#	Sustainability criteria (cont'd)	*Average Importance*	*STATE*	Applicability in %			
				technical	administrative	physical	socio-cultural
35	Aesthetic Quality, attractive pedestrian-scale local environments	4.23	Partially exists	13	20	20	47
36	Water Quality	4.18	Does not exist	20	53	20	7
37	Urban Heat Island Reduction	4.18	Does not exist	20	20	60	0
38	Convey Memory of Place	4.18	Partially exists	33	7	0	60
39	Energy-efficient In-fill	4.09	Does not exist	0	93	0	7
40	Smart Heritage Neighborhood Competitiveness	4.09	Partially exists	0	34	13	53
41	Promote Heritage-related Job Opportunities	4.09	Partially exists	6.5	87	0	6.5
42	Recyclable and local Materials	4.00	Partially exists	54	33	0	13
43	Promote Innovative Solutions 'technologies'	3.95	Does not exist	60	27	6.5	6.5
44	Equity & Choice	3.86	Does not exist	7	60	33	0
45	Biodiversity: Flora & Fauna	3.77	Does not exist	20	33	27	20
46	Local Composting	3.59	Does not exist	27	27	0	46
47	Material Genuineness	3.32	Does not exist	93	7	0	0
48	Mixed Land-use Neighborhood	3.32	Exists	7	60	33	0
49	Green Roof	3.18	Does not exist	27	0	20	53
50	Develop Affordable Diverse Housing	3.14	Partially exists	7	73	7	13
51	Continuity of Function	3.09	Partially exists	27	67	0	6
52	Local Food Production	2.55	Does not exist	0	13	27	60

From the above quick assessment of Heliopolis state against sustainability criteria it is possible to see that the *existing* criteria are the ones related to compactness (urban criteria) such as '*Access to Facilities*' and '*Mixed Land-use*'. Criteria that *partially exist* are mainly of the cultural pillar such as *Historic Resource Preservation*, or *Recording & Documenting Historic Buildings*', '*Preserving the Identity*', and '*Convey the memory of place*'. This is there because of the efforts done to preserve the recent heritage mainly by NOUH and HHI. Also partially existing are urban criteria, such as '*walkable Streets*' along with economic ones such as '*Economic Revitalization*'. Criteria that does not exist are concerned with '*Promoting Incentives*', 'E*nergy-efficient Transport*' and '*Green Infrastructure*' in addition to the consideration of environmental issues such as '*Urban Heat Island Reduction*', '*Biodiversity*', '*Local Food production*'. In this quick-assessment scheme the research has used the data collected from experts concerning the applicability of each criterion and the suggested measures proposed to enhance the performance. The measures consist of technical, administrative, physical and socio-cultural measures as explained in (section 9.7.3). Looking at the table above it is possible to recognize that more than 65% of the criteria need administrative intervention including law modification, law enforcement, a better heritage management, lack of fund in addition to developing environmental codes. Around 20 % of the criteria need socio-cultural measures which need the support of local initiatives along with the governmnetal bodies. Technical measures are suggested when calling for the importance of good quality expertise to decide upon relevant subject matters in a way that does not harm the heritage neighborhood. Last but not least, the physical measures are suggested whenever it is possible to enhance a criterion or reach a better quality through some urban design alterations. Following, are examples of four different criteria showing the measures as suggested by experts.

Historic Resource Preservation of Distinctive Buildings

This aspect is essential in distinctive areas, it is partially existing after the establishing of NOUH and the two escorting Laws (144of 2006 7 119 of 2008), however extra measures
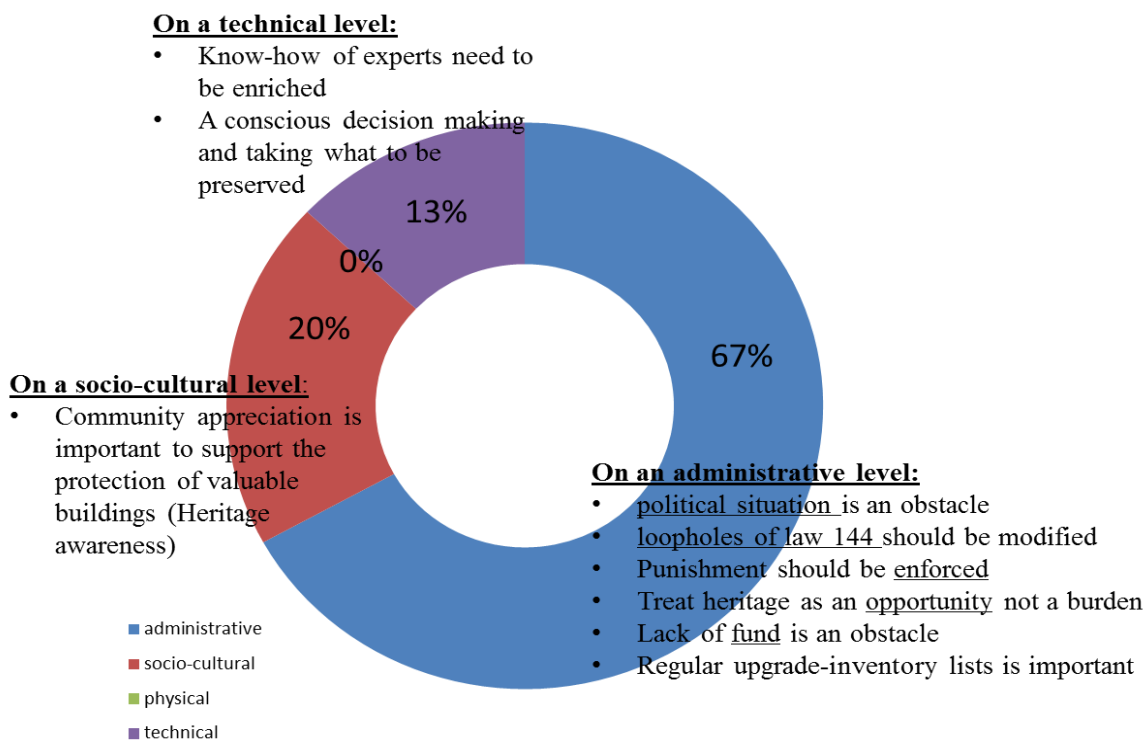
Figure 11-18 'Historic Resource preservation of distinctive buildings' criterion and the measures proposed by experts to apply it

need to be applied and enforced for a better Preservation as follows (Figure 11-18).

Walkable Streets

Some people walk in the streets even if not walkable because they are forced to. The aim is to encourage people to prefer walking. In Heliopolis it is important to check the quality of roads and pavement and enhance their function. In order to encourage walkability some measures must be applied (see Figure 11-19).

On a physical level:
- Improving transport lines, paving
- providing parking areas & shading trees

On an administrative level:
- The role of local district unit is to apply good quality paving
- conscious legislations and code implementation
- Needs pragmatic regulations to define needed tools
- good pavement planning to solve occurring problems:
- Planning for pedestrian priority streets

On a socio-cultural level:
- Working on the concept of belonging to the place to evoke initiatives to encourage walkability of 'their' streets
- Work with NGO's who are closer to the neighborhood community

34%

53%

13%

- administrative
- socio-cultural
- physical
- technical

Figure 11-19 Walkable streets criterion and the measures proposed by experts to apply it

Accessible Public & Green Spaces

In Heliopolis the potential exists as there is a big neglected Park that can be revived in addition to some smaller gardens that are fenced prohibiting sitting in them for security measures, that is why the following is required (Figure 11-20)

On a technical level:
- Needs Aware responsible to know importance of this factor

On a physical level:
- Planning suitable areas
- Despite rigidity, reviving already existing green areas such as Merryland Park, residential gardens and building back and front yards
- Study land-use plan for possible creation of green spaces

On an administrative level:
- Needs a political will
- Strict respect to regulations prohibiting the construction on open & green areas
- Apply the punishment of 15 years on building demolition turning it into a green space with an ornamented fence to respect the urban fabric boundaries which will meanwhile solve over density
- Open the closed parks

On a socio-cultural level:
- The encouragement and ideas of civil society

7%

33%

13%

47%

administrative
socio-cultural
physical
technical

Figure 11-20 'Accessible public and green spaces' criterion and the measures proposed by experts to apply it

Plan for long-term Renewal & Development

The governorate & local district unit do not have a long term Plan for Heliopolis nor for any other existing neighborhood because they consider them stable areas, which is a fallacy. The following is essential to overcome current problems within Heliopolis and similar neighborhoods (Figure 11-21).

On a technical level:
- Aware and committed responsible governorates
- Technical expertise

0%

7%

On an administrative level:
- Needs a political will
- Needs guiding policies
- Needs financially invest in a conscious study for a strategic development
- A preservation plan for the neighborhood

93%

administrative
socio-cultural
physical
technical
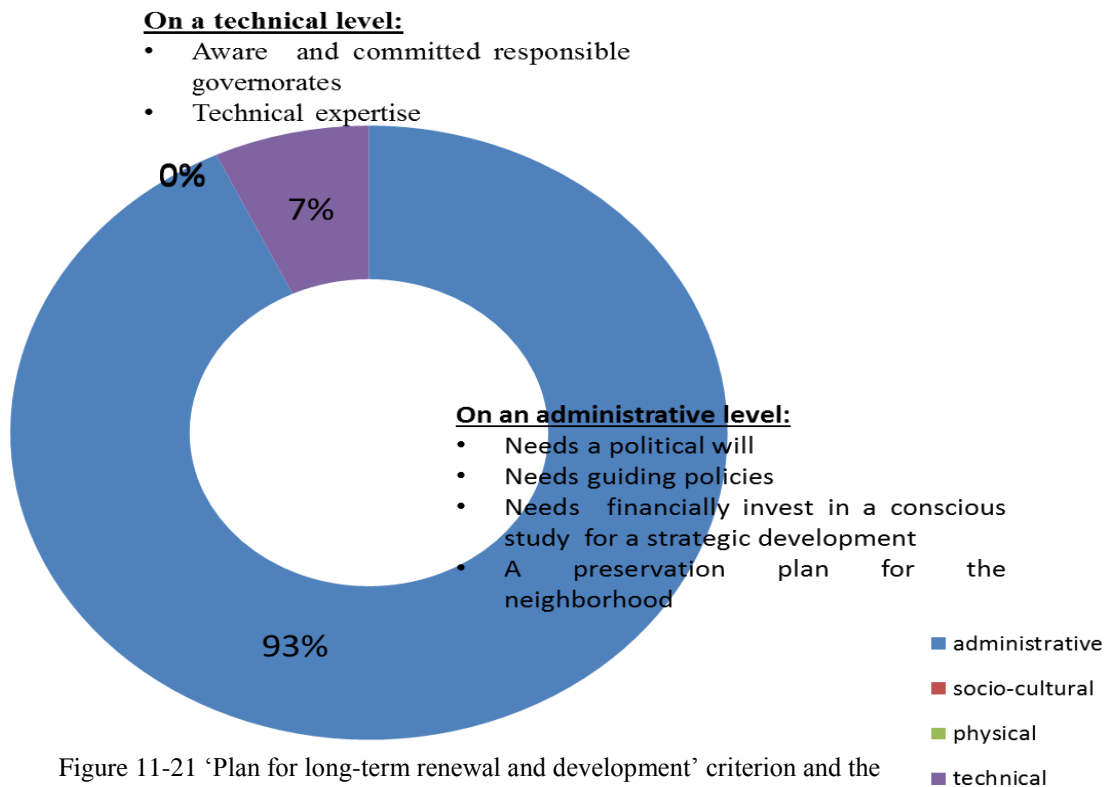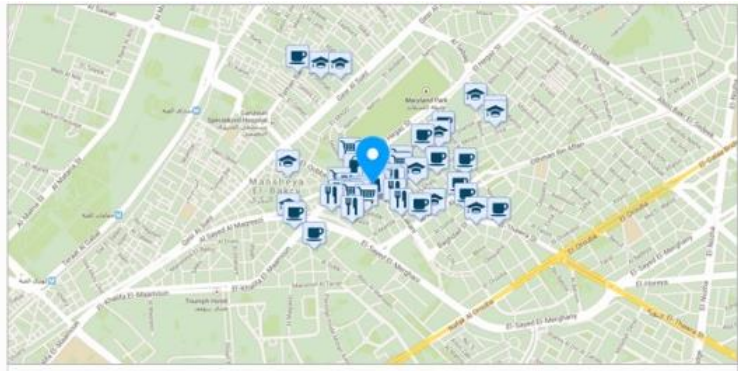
Figure 11-21 'Plan for long-term renewal and development' criterion and the measures proposed by experts to apply it

11.3.2 IN-DEPTH SUSTAINABLE STATE ASSESSMENT FOR HELIOPOLIS
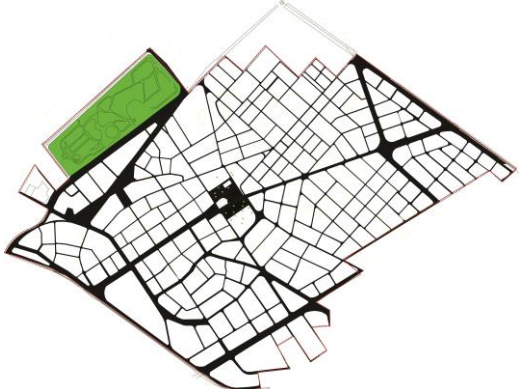
Table 11-2 In-depth assessment of the state (S) using the sustainable state catalogue merged with the SWOT
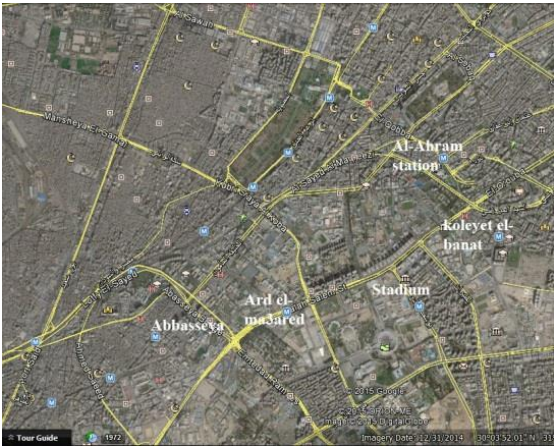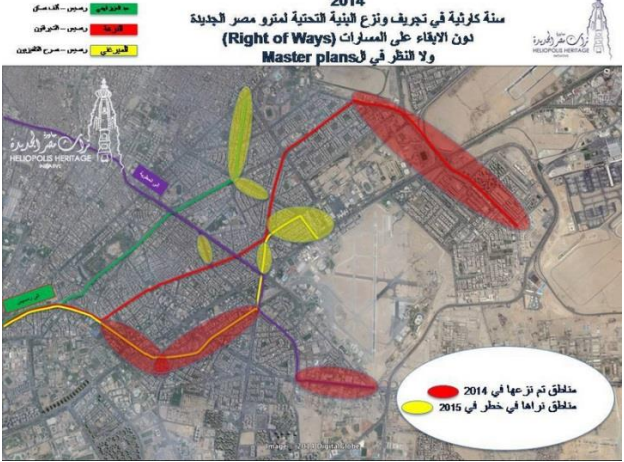
Heliopolis			
# **Sustainability Pillar**		**Sustainability criterion**	
1 Cultural		**Historic Resource Preservation**	
Internal Appraisal		**External Appraisal**	
Strength	**Weakness**	**Opportunity**	**Threat**
• The laws 144 od 2006 and 119 of 2008 • High number of valuable buildings, • Strong neighborhood identity	• In bad conditions • No upgrade & maintenance • The measures carried out distort elevations profoundly from original construction (Volait & Piaton, 2003).	• Make cultural, economic and social use of existing valuable assets	• Instability, • Building demolition • losing irrevocably gems , turning gradually into an ugly place, crowded & loud, repellent to inhabitants

Deserted Building in Heliopolis photo: Michel Hanna, 2014

Baron Empain Palace lighting photo: HHI, 2014

Encroachment of a listed building, Heliopolis Korba photo: HHI, 2014

2 Cultural	**Recording & Documenting Historic Buildings**		
Strength	**Weakness**	**Opportunity**	**Threat**
• Existence of an Inventory committee for listing distinct buildings • There are 732 listed buildings in the inventories of NOUH (2010)	• No update of the list since its formation in 2010, some of the buildings do not exist anymore	• The inventory has all the basic information about the listed buildings • Creating signage in front of important buildings for awareness	• There are valuable buildings that were skipped from lists, thus not protected, prone to loss such as Swiss Chalet, demolished 2014

Footprint of the various listed buildings A, B & C with Heliopolis old city core developed by author

3 Urban	**Walkable Streets**		
Strength	**Weakness**	**Opportunity**	**Threat**
• People walk • Commercial zone with arcades • Heliopolis streets have generally high walk scores e.g. *Zefta Street* has 88 walk-score which means it is **very**	• Not possible for wheel chair and stroller • Absence of adequate street scape furniture • Conditions of paving are not adequate	Convert streets like korba into pedestrian which already have shaded arcades encouraging walking in a comfortable atmosphere	Overlap of walkers and drivers makes it 'chaotic' Slowing down traffic & no secured walking

walkable; *Al-Ahram street*, with 93 walk score and *Ibrahim al-Lakani*[97] *street* with 94 walk score enter the category of **walker's paradise**	● Crowding discourages walking ● Pedestrian in front of new buildings is narrower		

Arcades encouraging walkability, photo: author, 2013

Cars parking on pavements leaving little space for walkers photo: author, 2013

Wide pavement in front of old buildings with alined shading trees

Narrow pavement in front of new buildings with no shade provision photo: author, 2013

What's Nearby

Restaurants: Sweet Saray	.07km >
Coffee: Très Bon	.4km >
Bars: House of Cocoa	1km >
Groceries: Ehsan	.1km >
Parks: M.A.park,ادفع.ملاهي	.5km >
Schools: مركز علاج الحول وامراض الجهاز الحركي لله..	.3km >
Shopping: Dawod	.05km >
Entertainment: Normandy Outdoor Cinema	.5km >
Errands: Faisal Islamic Bank - Heliopolis	.07km >
Search Nearby:	>

Assessment of walkability and service provision according to walkscore.com

Ibrahim Lakani street got a score of 94 called 'walker's paradise'

Ibrahim Al Lakani
Heliopolis

♡ Favorite   📖 Map   🔍 Nearby Apartments

Walk Score **94**   **Walker's Paradise**
Daily errands do not require a car.

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[97] '*a Walker's Paradise is where daily errands do not require a car' (walkscore.com)*

4 Cultural	**Preserving Unique Urban Fabric, 'Identity'**		
Strength	**Weakness**	**Opportunity**	**Threat**
HHI and NOUH fight to protect Heliopolis unique neo-Moorish style The old fabric is not majorly altered	No strict respect of the regulations Building heights of new constructions are altering the skyline	The urban fabric is relatively the same & there are buildings that emphasize the identity that should be carefully preserved	Unplanned developments and the in-fill with high-rises will ruin the strong identity

Left: strong and unique urban patter of Heliopolis developed by author

Right: high-rise buildings in the middle of the low rise urban setting of Heliopolis damaging the Heritage Image

5 Cultural	**Heritage Image**		
Strength	**Weakness**	**Opportunity**	**Threat**
Exists in different streets but in bad shape	No respect to guidelines for adds of shops on buildings distorts the Image	To rescue the existing	Demolitions and encroachments

Left: Unique architectural style of Heliopolis. Photo: author, 2013

Right: damaged heritage Image, Heliopolis photo: HHI March, 2014

6Environmental	**Energy-Efficient Transport**		
Strength	**Weakness**	**Opportunity**	**Threat**
• The new underground Metro line 3 in Cairo aims to connect the eastern side of the Nile (Heliopolis neighborhood & airport) to its west. • + The old tram-line works with electricity	• Quick unstudied actions entail more traffic & parking problems • The huge amount of streets is not prepared for cycling • The tram is in a dilapidated condition	• Revival of the old tram • Citizen participation oh HHI achieving to have a say on modifying the location of the Metro stations	• New microbus station appeared in front of Basilique church after stopping the old tram removing its lines (HHI, 2015) • Tram-line infrastructure removal

Left: New Metro line map

Right: google earth map of Heliopolis city core showing in red the removed infrastructure of the old tram-line and yellow is under threat developed by HHI, 2015

7 Urban	**Green Infrastructure** Easily maintained road & utility networks (energy, phone, water etc.)		
Strength	**Weakness**	**Opportunity**	**Threat**
A well planned original street network	Streets are pressured by exploiting land-uses & high-rises where the neighborhood was not planned for Exhausted infrastructure	Preserving the left old buildings and urban fabric	Keep pressuring the infrastructure, (traffic, piping etc.) will lead to a collapse

8 Social	**Community Safety & Security**		
Strength	**Weakness**	**Opportunity**	**Threat**
Good original planning Enough lighting Commercial areas are very vibrant	Weak respect of traffic rules minimizes safety levels	-	Deserted dark Merryland park can attract unwanted people
9 Social	**Sustainability & Cultural Awareness**		
Strength	**Weakness**	**Opportunity**	**Threat**
Having the social resistance of HHI shows a cultural awareness. willingness to protect their heritage: photography competitions Heliopolis tours (organized by HHI) Korba cultural festival	Many people do not appreciate the value of old buildings	Local community of Heliopolis is well educated and has a high sense of belonging to the neighborhood	Economic pressures push heritage owners to demolish

Left: Heliopolis heritage tour organized by HHI in 2015 to present the precious value of the neighborhood photo: HHI, 2015

Right: The photography exhibition in Korba, Heliopolis presenting the winning photos of the organized photograhy competition photo: HHI, 2012

10 Cultural	**Controlling Demolition of Historic Buildings**		
Strength	**Weakness**	**Opportunity**	**Threat**
The existence of a list for valuable buildings in the local district unit	Loopholes in the law eases circumventions	Demolitions happen only when really needed	Needs more control , a serious mechanism before giving out the demolition permit
11 Urban	**Accessible Public Spaces & Green Areas**		

Strength	Weakness	Opportunity	Threat
• The existence of potential green areas and parks such as Merryland • In April 2015 HHI proposed a complete vison for Merryland park	Neglected and in bad conditions	• Green areas are closed • Basilique Garden renovated July 2012 • is close, HHI entered after getting a permission • Security reasons predict Hanna of HHI	The cutting of the old trees Accepting investor oriented projects in Merryland park losing more green areas

Above: Fenced garden in front of the Basilique photo: HHI, 2013

Left: Heliopolis old city-core map showing the Merryland park in green developed by author

Proposal by HHI to revive the deserted Merryland Park for the benefit of the local community and not the investors only, suggesting a jogging track photo: HHI, 2015

12 Cultural	**Sustainable Building Guidelines/Code**

Strength	Weakness	Opportunity	Threat
Available codes are not highly respected	No code for energy-efficient retrofitting yet	The interest of some actors such as the HHI	-

13 Overarching Concepts	**Plan for Long-Term Renewal & Development**

Strength	Weakness	Opportunity	Threat
The accreditation of Heliopolis as a Valuable area (NOUH, December 2013) is a start	The governmental bodies are not concerned with developing plans for existing neighborhoods No studies of real needs within existing neighborhoods	-	Undesired development streams

14 Social	**Public Health Provision**		
Strength	**Weakness**	**Opportunity**	**Threat**
-	High pollution rates	Turn commercial zone into pedestrian Use environmental friendly public transport	No serious concentration on this subject from the governmental side

15 Cultural	**Reuse of Historic Listed Buildings**		
Strength	**Weakness**	**Opportunity**	**Threat**
The ground floor is turned into cafes If studied it would be great, but it brings more traffic to the area	Lack of funds And absence of pilot projects	The existence of an aware Initiative HHI with innovative ideas that need political and financial support	Intervention of greedy investors

Nursery in Rasheed Street photo: author, 2013

Restaurant in commercial streets respecting character photo: author 2015

The ground floor is turned into cafes If studied it would be great, but it brings more traffic to the area photo: author, 2013

Villa used as an Head office for Amer-Group Zefta Street with Beirut Street photo: author, 2013

11.3.3 THE SUSTAINABLE STATE CATALOGUE FOR EGYPTIAN HERITAGE NEIGHBORHOODS

In the previous two sections 11.3.1 and 11.3.2 the research has shown two ways of using the sustainability criteria catalogue developed throughout this work. Depending on the types of decision required, the financial capacity provided for surveying and the time given within the designated neighborhood it is possible to apply either one or both methods. Carrying out the quick assessment approach as in section 11.3.1 it is possible for the decision maker to grasp quickly where the weak points lie, seeing which criteria do not exist at all and are in need of acute or immediate intervention. While the in-depth Assessment approach as in section 11.3.2 gives more detailed information and needs more time and capacity to carry out in addition it gives more emphasis on revealing the potentials and strengths within the designated case. Both assessment types can be seen as complementary and sequential in order doing the quick first and consequently carry out the in-depth one.

The usage of this sustainable state catalogue can be used by other neighborhoods that share similar characteristics. In that case the generalization of the findings is only on the theoretical level offering the opportunity to use the same criteria catalogue for other neighborhoods but not necessarily following the same priority order because each neighborhood has its own social, urban, economic, cultural and environmental nature that entails different preferences.

SUMMING-UP THE EMPIRICAL ANALYSIS

As illustrated above, this part included most of the Data collected throughout the PhD research study from semi-structured expert-interviews, Leitfaden-interview, field work, observations, taking photos, attending HHI meetings in addition to secondary data and documents. This wide range of data was compiled thoroughly to come up with a clear and systematic framework and analysis structure.

In chapter (10) the semi-structured expert interviews based on questionnaires were analyzed coming up with the criteria important for the SHNP, showing some criteria as less important of even irrelevant to context. The high percentage of compliance between the experts' answers and the original list (80.3%) reflects their acceptance to the proposed criteria which confirms credibility to the usage of the criteria catalogue. Through the average importance calculation it was possible to consider the answers of all respondents and meanwhile coming up with a clear value that reflects a certain importance. A ranking upon average was done to see what is more important than others looking at the top 15 criteria. A further investigation was done looking at the answers of NOUH & HHI to see their relative interest within the case study, and what each actor (response body) see as important to be achieved towards sustainability within the neighborhood.

Chapter (11) has started with presenting the unique characteristics of Heliopolis of the past that could be defined as sustainable according to current known definitions. The research then uses the DPSIR-framework for a detailed elaboration of the general conditions influencing Heliopolis neighborhood. The illustration of the current problems of the Egyptian 19th and early 20th century neighborhood using the DPSIR-framework has shown the ability to clarify its elements in a holistic framework that eases further steps of the study. The DPSIR-framework enhanced the understanding of systems, how they function and how they are related to each other either in a row or in parallel. Last but not least, the sustainable state catalogue was used as an assessment method to assess the state (S) of Heliopolis against its criteria; using one time a quick assessment and another time an in-depth one using the SWOT elements.

Part V: The Way Forward
Findings, Recommendations & Conclusion

'Cities must change, or they will wither and die' (Larkham, 1996). *'If there was no conscious control to these changes to be kept in harmony with the emerging needs they will collapse'* (Y. Zeiny, personal communication, March 31, 2013). That is why it is useful at that stage to prioritize actions and set up targets then take response (Kristensen, 2004).

PART V: THE WAY FORWARD: FINDINGS, RECOMMENDATIONS AND CONCLUSION

12 THE WAY FORWARD

Based on the findings of the analysis of chapter 10 and 11, this chapter summarizes the main findings of the research and links them to the research propositions, research questions and tackled theoretical concepts of chapters 5, 6, 7 and 8 which were steered by the contextual setting defined in chapter 2, 3 and 4. This chapter starts with discussing the propositions put in section 1.6 that have framed the boundaries and drawn the path for the research study and its inquiries. Then the research starts to give answers for the research questions put in section 1.5 dividing them into two types according to the nature of their answers. Some of the questions refer to <u>findings-oriented</u> answers asking about sustainability qualities (explorative), or asking about the reseason for heritage owners to sell their assets (explanatory), or asking about the benefits of a sustainable approach to heritage neighborhoods (explanatory), etc where the answers are more defined as findings of the dissertation. On the other hand, there are <u>recommendations-oriented</u> answers of questions asking more about operational steps to be achieved, for example translating the sustainability-related criteria to avoid current encraochments or asking about the measures to be carried out by the different responses (R) where the answers are labled as part of the recommendations of the study. That is why; the questions do not follow the same chronological order of section 1.5. Finally, this chapter proposes additional relevant recommendations and suggests potential fields for further study and investigation.

12.1 RESEARCH PROPOSITIONS DISCUSSION

The research study uses research popositions (see chapter 1 section 1.6) for a distinct focus that guided the work flow and data collection methods along with the research questions. At this point these propositions are discussed confirming hypothesized theoretical concepts.

12.1.1 SUSTAINABILITY CORRIDORES WITHIN THE HERITAGE NEIGHBORHOOD

Applying Sustainable Preservation Principles help to take Heritage Neighborhoods out of the ever Deteriorating vortex.

Sustainable preservation calls for preserving the building-stock instead of causing more waste and losing the already existing embodied energy in every built construction (chapter 5). This absolute consideration for buildings respects environmental aspects that could enhance general neighborhood conditions. Having a closer focus on the distinct cultural value embedded in old buildings the preservation concern becomes even stronger supported by cultural reasoning which are important for the society, its sense of belonging, and identity leading to an improved quality of life which the community aspires.

Emphasizing on green means of transportation, walkability, and good quality infrastructure; *Sustainability* becomes a necessity and not a luxury measure which enhances the quality of life within the neighborhood. These are all facts that experts agree on despite the difficult application of all the sustainability criteria in current days. It was clear from international examples of neighborhoods with bad urban conditions that intervention measures place transport, infrastructure and walkable streets on top of the list (see Chapter 8 section 8.1.6, short-term measures) which is also a priority measure important to the designated neighborhoods within the Egyptian context. This was also the case in the project currently carried out in Khedivial Cairo (see Appendix 7). The consideration of energy-efficient means for retrofitting and In-fill, save energy, save money on the long run and together with the other sustainability qualities enhance the air quality which simultaneously will have a positive impact on the public health, however it is a criterion that is not applied yet in Egypt and its application needs the development of related codes first. As mentioned before, the sustainability criteria proposed by this study are not isolated islands to be undertaken each on a separate basis, on the contrary they are all more or less depending on each other, where an enhancement in one criterion can elevate the quality of others and vice versa. Although the Egyptian situation seem to be not ready yet for such a comprehensive approach respecting a whole bundle of sustainability principles, but preparing it is important for a near future.

The Greenest Building is one already Existing.

It has been stated previously (see section 6.3 Environmental Sustainability) that building construction consumes big amounts of resources causing approximately 40% of the total carbon emissions. Making use of an existing building is saving a lot of energy already consumed. Tearing a building down wastes this energy and requires even more energy and more raw materials to construct which makes protecting existing buildings from demolition a green action and reusing them highly recommended. There are no serious studies in Egypt that confirm that. However, the high number of building demolitions in the different Egyptian heritage neighborhoods is ringing a bell for a more polluted environment, wasted energy and an obliterated urban character that the NOUH along with Heritage Initiatives such as HHI are fighting against.

Environmental Considerations are important to be included in the Planning Processes within Heritage Neighborhoods

Environmental concerns that started to increase and gain more attention with the phenomenon of climate change and the increase of urban heat island (UHI) in addition to the increasing greenhouse gas (GHG) emissions that all affect the human, flora and fauna habitat on earth is not a fashion it is a serious stream that must be respected. This seems to be hard in developing countries were basic needs and challenges distract their governments from achieving environmental goals. The analysis of the questionnaire has shown that environmental qualities are important within the heritage neighborhood, yet they are not seen as a priority. This needs the spreading of awareness showing the negative impact that is caused by ignoring the environmental aspects.

Egyptian Heritage Neighborhoods suffer from the absence of a serious development plan which automatically lead to current States

From the different visits carried out to the Cairo Governorate and the Heliopolis Local District Unit it became evident that there is no serious well-studied development plans for existing neighborhoods in general. The Governorate stated that it is mainly concerned with slum areas and accomplishing new developments to feed the needy market for new housing,

seeing the existing neighborhoods (heritage neighborhoods included) as stable areas that do not need any acute intervention. This argument said in the governorate explains the current state (S) of existing neighborhoods such as of Heliopolis. It lacks a serious long-term vision for the neighborhood where every small decision is seen as part of a whole unit that helps taking right decisions concerning the benefit of the whole neighborhood and its community.

12.1.2 RESPONSES (R) WITHIN THE HERITAGE NEIGHBORHOOD

Social Resistance within Heritage Neighborhoods is a Key Driver for Heritage Preservation, Appreciation and Recognition

The role of communities towards their cities and neighborhoods are growing. Sometimes their inclusion is encouraged by international charters, other times by local authorities who legitimize their role by putting new policies; however there are also other cases where the community collaborates to intervene in certain processes against malfunctioned-responses.

The existence of a social resistance in form of an initiative or NGO of the local civil society is an important factor in the course of preserving the distinctive value of buildings and urban settings of heritage neighborhoods. This becomes even more important where the decision making body is not putting heritage preservation on its political agenda and where the related laws are weak and easy to circumvent. The Heliopolis Heritage Initiative (HHI) is striving to protect the remaining gems of Heliopolis, sometimes they fail like in the case of the Swiss Chalet (see Section 11.1.4) and in other times they partially succeed such as in the case of the Tram-line (see Section 11.1.4). In addition to their resistance actions, the HHI organizes different events that aim to document the history of Heliopolis and to enlighten the people about the cultural importance of Heliopolis such as organizing the Photography competition and the cultural tours around Heliopolis. Such social resistance initiatives need more power, and should be granted funds to carry out development projects within the heritage neighborhood having a supporting tool that guides their actions and decisions, such as the sustainable state Catalogue.

The Establishment of NOUH can be seen as a Positive Step towards a Serious Holistic Preservation of Heritage Neighborhoods.

The establishment of NOUH itself was an unstructured response (R) against the state (S) of neglect of Egyptian recent heritage and deteriorated urban qualities. Before the existence of NOUH there was no serious entity concerned with this type of heritage. Recent heritage recognition went through different soft and strict phases such as prohibiting villa demolition or determining a maximum height in designated streets etc. (see chapter 5 & 11) reaching finally the issuance of the two relevant laws No.144 of 2006 and No.119 of 2008 developed by NOUH. Currently, the NOUH does not have enough power to effectively preserve its listed buildings and areas, but still it is the nuclei for a future entity which needs to be effectively empowered and decentralized all over Egypt to be able to easily protect its listed buildings and areas.

Owners of Heritage Buildings are seduced by the Allure of Offers provided by exploiting Investors leading to the loss of the Building Assets

Yes, this problem is serious and is not solvable without any financial support by the government. A heritage protection law (Law No.144 of 2006) without tackling compensation

in any mean such as exemption or subsidy is a weak law that pushes building owners to circumvent such as the case within Egyptian heritage neighborhoods. This is a real economic problem as the governmental apparatus lacks the financial means to carry out these measures. At the same time new innovative ideas must be introduced by NOUH (as the representative of the technical expertise) to investors on how to re-use and make use of old buildings and have economic returns which in return should be financially rewarded with tax exemptions. The heritage initiatives are key contributers with NOUH. Germany had a positive experience as it has the mechanism of incentives in its heritage law; in addition the law encourages the dialogue with the inhabitants and the understanding of their needs in order to win their support in preserving the buildings and the whole urban area. Another intersting example was the one in Gelsenkirchen (section 8.1.5) called the *Stadterneuerungsgesellschaft* which was a privately funded entity that aims to encourage private investors and individual owners to take part in renewal projects and stimulate an imitation impulse. Last but not least, the rent liberation is another important milestone towards better futures for buildings and owners.

12.2 ANSWERS TO RESEARCH QUESTIONS

12.2.1 FINDINGS-ORIENTED RESEARCH QUESTIONS

1. **What are the sustainability-related criteria important for preserving the heritage neighborhoods of 19th and early 20th century Egypt?**

In order to answer this question the research went through different methodological stages as explained in section 9.7.3 and 9.7.4 reaching a refined and confirmed catalogue after the analysis in chapter 10. According to the findings it was concluded that 42 criteria out of the 52 proposed ones are seen as important for the designated Egyptian heritage context having an average importance score of 4.0 or above (see section 10.4 Table 10-9). The 10 criteria with less importance have proven either irrelevance to context such as *local food production*, or were seen as less important in comparison to other criteria such as *Material Genuiness* and *Continuity of function*; or it was seen as an already applied criteria such as *Mixed Land-use Neighborhood* as most of the Egyptian recent heritage neighborhoods are already mixed.

Through the calculation of the *average importance* it was easy to grasp which criteria have higher grades than others, even if the values are close to each other. Having criteria were values are close to each other is in fact an expected and desired result as it is a list that was gathered thoroughly and methodically and proposed by researcher upon in-depth investigation of sustainability criteria in theory and literature that would suit in the designated context. Looking at the 15 criteria with the highest average importance score it is possible to recognize the criteria which reflect either high importance within the distinct neighborhood nature such as *Historic Resource Preservation; Recording and Documenting Historic Buildings* or it entails an acute need for solving an occurring problem such as *Walkable Streets*, *Energy-efficient Transport, Accessible Public & Green Spaces,* and *Public Health Provision*.

The catalogue does not consist of a rigid list; it offers possibilities for adjustment as a flexible yet conscious response to the change in the surrounding conditions, either political, legislative, social etc.; as long as it does not affect the agreed on sustainability goals.

At this point, the findings of the overall analysis of the semi-structured interviews with experts reveal the following reflections concerning the usage of the sustainable state catalogue

- The more than 80% agreement of the experts on the proposed sustainability-catalogue approves high acceptance and relevance to context.
- The attained findings reflect the real needs within the Egyptian heritage neighborhood of Heliopolis
- Addressing transportation in the Egyptian heritage neighborhoods of Heliopolis has proven importance in the context being one of the top ranked criteria
- There is an intention to improve environmental conditions, but before that there is a call for intervening to fulfill overarching concepts as pre-requisite qualities along with the improvement of cultural/ social, urban and economic issues that seem to be currently in a critical condition.
- Part of the challenge of implementing sustainable preservation in heritage neighborhoods is to work in parallel lines, and invest in putting thorough visions and escorting land-use plans along with to respecting environmental measures.
- There are currently different challenges that could distract the utilization of the sustainability Catalogue above all the demolition of heritage buildings and the loose enforcement of the law.
- There are some aspects that should be dealt with, in order to provide a suitable atmosphere for implementing the catalogue. So as a future vision, if 'tomorrow' the law no. 144 of 2006 was finally amended to solve current loopholes and add financial incentives, and if the laws are enforced and punishments are executed, this will provide a better atmosphere for the sustainability catalogue to be implemented as part of implementing the desired vision for the Egyptian heritage neighborhoods.
- One should look at the urban setting as a livable system which is prone to inevitable change which should be planned consciously
- Money is a key factor in order to apply the discussed criteria once there is a clear plan for designated neighborhood preservation.
- The density threshold discussed in the sustainability catalogue is related to the services' provision. As long as the services are enough this means that it is an acceptable density (population density and building density). This is something that needs further meticulous studies to identify whether services are enough or not. Some facilities seem to be over satisfying in Heliopolis such as the small kiosks and small supermarkets others seem to be underdeveloped such as the provision of green parks and open public spaces

The developed catalogue formed the basic construct for evaluation of Heliopolis. It is also capable of carrying out comparisons between neighborhoods encouraging a sense of competitiveness; however this does not lie within the scope of this study.

2. Why do heritage owners resort to selling their assets let it demolish and a new huge investment is replacing the old building?

There are different factors that push the heritage owners to sell their buildings or demolish them. The old rental law, the bad economic situation and the extreme high value of land in addition to the absence of incentives or tax exemptions in related laws are essential factors. All these factors make owning a listed building a curse instead of being a privilege.

Heritage building owners don't have a pilot model (Khedival Cairo very recent model, May 2015) to see how it could be done and how it is beneficial to keep a building. They also need

a clear technical guidance that can be offered by NOUH. NOUH is asked to issue citizen-friendly guiding handbooks or booklets inspired by the Gestaltungsfibel & the *cahier des charges* of the past which was the guarantor of consistency and homogeneity of all the buildings of Heliopolis where exact examples are mentioned and a thorough guidance exist, and above all exemptions for each action taken in the building is clearly stated. This kind of regulating ordinance makes rights clear closing any path of misunderstanding. It is also an important instrument in case of buildings and apartments privately owned, to make sure that harmony exist in a certain urban neighborhood or area to control the individual renovation and development measures.

The Gestaltungsfibel is also similar to the 'Boundaries & Requirements' handbook developed by NOUH, however the Gestaltungsfibel is more specific to avoid ambiguity of meanings and includes clear exemptions and incentives for each specific measure carried out, which encourages owners to follow. Update is important and decentralization where the heritage entity is not central in the capital city only.

3. Why is sustainable heritage neighborhood preservation (SHNP) based on a criteria catalogue beneficial for Heliopolis and similar neighborhoods?

As concluded from the theoretical part in chapters 5 & 6, sustainable preservation is an appropriate approach for the up-keep of valuable assets in a way that extend their lives for present and future generations which calls for the preservation of the distinct building assets not only for their historic, aesthetic or architectural value but also for their environmental value seen as an energy vessel with the existing embodied energy which should not be wasted by demolition.

Sustainability is concerned with what is new and what is old; seeing historic preservation as an essential part of neighborhood sustainability. Historic buildings are unique, and they inherently are sustainable as they conform to local conditions; such as having high ceilings and canopies, arcades etc. It is important in that case to identify the architectural features that form its value. Then it is useful to specify the original elements that suit the climate and strengthen it. After doing this it is time to put a strategy to deal sensitively with the building. Dealing with old buildings with a sustainability lenses focuses not only on energy saving but also considers social, economic and cultural values that are essential for the community.

Many scholars, organizations and sustainability approaches are interested in finding out what criteria or qualities are necessary within new or existing neighborhoods trying to suggest a limited number of points as a guiding checklist. The developed criteria–based catalogue is designed for existing heritage neighborhoods addressing different actors such as NOUH, HHI (and similar initiatives and NGO's), developers and investors in the construction and preservation field at a neighborhood level in addition to the governmental bodies who can adapt the catalogue criteria to encourage a sustainable future development and preservation. The structured criteria-list suggested as the localized sustainable state catalogue works as an orientation guide for old neighborhoods which rather develop incrementally than in taking over big scale development projects. It is beneficial when carrying out an assessment of the state of a designated neighborhood. The increasing participation of different actors enriches the output and promises a more realistic and legitimate development plan.

Finally, it is useful to say that the sustainable state catalogue seeks to form a structured contribution to normative planning which together with scientific prediction form promising scenarios for the future (Figure 12-1); for further explanation see section 7.3.3.
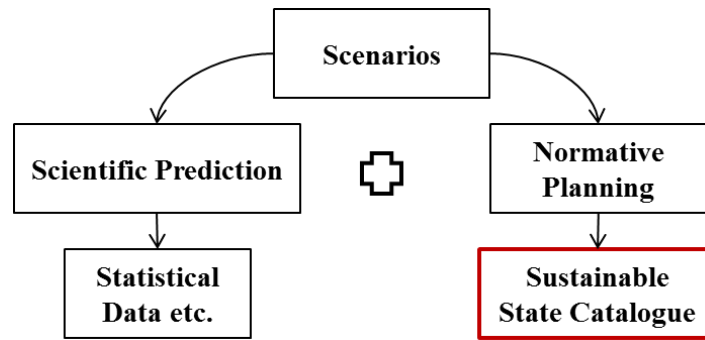
Figure 12-1 Schematic illustration of the Scenario consisting of
Scientific Prediction & Normative Planning (developed by author
after Hukkinen, 2008)

A criteria-based approach enables a quick evaluation of a neighborhood state agianst sustainability principles it also provides the possibility of comparing two or more neighborhoods using the same criteria. This prepared criteria catalogue is confirmed previously by experts. Moreover, this list is not a rigid one; it is open to update and addition when certain conditions change.

- A criteria-based catalogue provides community-based initiatives with a tool that can guide their goals and actions to deal consciously in their neighborhood
- For the NOUH it is a catalogue that could be complementary to the existing Boundaries and requirements to be followed within designated areas.
- For the government it is a tool to know that in taking a decision in a certain direction, other issues must be taken into consideration in order to stop single building or even single-shop based decisions that lead to undesired neighborhood conditions.
- For investors, developers and planners it is also a guiding tool that makes sure that every quality is put into consideration.

To conclude this part it is important to mention that each criterion could be broken down into a bundle of sub-criteria. It is even possible to put measurable indicators for a more quantitative assessment. This is something that could be suggested for a further study.

4. **How do both actors, NOUH & HHI prioritize sustainability criteria and thus recognize sustainability within Heliopolis?**

The analysis of chapter 10 section 10.5 illustrates the answers of NOUH and HHI on the proposed questionnaire. It can be identified that each response (R) has its own preferences prioritizing which is most important and what is less important. Having a closer look on the top 15 criteria (see section 10.5 Table 10-10) for each Response, 8 criteria were in common which emphasizes on the other hand that there are qualities that are non-negotiable for both the two responses which are mainly cultural followed by urban and social ones: *Historic Resource Preservation; Recording and Documenting Historic Buildings; Preserving Unique Urban Fabric 'Identity'; Walkable Streets; Green Infrastructure; Sustainability and Cultural Awareness; Reuse of Historic listed buildings; and Heritage Image.*

The NOUH is aware of the significance of economic factors to promise sustainable success within heritage neighborhoods having 2 out of the top 15 criteria *Promotion of Incentives to Encourage Owners & Economic Revitalization* while a closer look at the preference criteria by HHI it is prevailingly cultural. Finally, it is useful to say that each response (R) forms its own preferences that reflect a need within the neighborhood, where the collaboration of all actors (responses) enriches the output of any development project.

5. **How did different responses affect Heliopolis since its emergence in the early 20th century?**

It is possible to conclude that the loose security and lack of control after the 25th January, 2011 revolution are not the only reasons for the current encroachment on valuable buildings which was occurring long before the revolution. This post-revolutionary situation was only an opportunity taken as a pretext by owners to overcome the unjust laws that shackle them. After the illustration of the current problems of Heliopolis neighborhood using the DPSIR-framework it has shown what the driving forces (D) and pressures (P) illustrated change the state into the current state (S). The visionary localized sustainable state (SS) is an ultimate goal that aims to control the decision taking within any heritage neighborhood.

Heliopolis went through different phases where different responses (R) were taken. Since its emergence in the early 20th century it was successfully developing and growing being connected to the Cairo center by the tram-line. In the 50's the nationalization of the Heliopolis Company was the first step towards loosing Heliopolis identity. Later the law to freeze the rents instead of a profound solution to housing demands was a second strong drop. This was followed by the gradual modifications to the cahier des charges increasing the built-up percentage areas and permitting extending the buildings against money. After a long time of neglect and the application of the general unifying building law which did not include any heritage considerations there was a growing interest in recent heritage back in the 90's. This interest resulted in the issuance of military order prohibiting the demolition of villas and putting some guiding regulations. After the establishment of NOUH and the issuance of the two related law; no.144 of 2006 and no.119 of 2008 the serious will to protect the recent heritage formal and legislative along with developing inventory lists of distinct buildings. Finally, and as these laws include some problems it is important to overcome this in addition to solving old problems that are key drivers of deterioration such as the old rental law.

12.2.2 RECOMMENDATIONS-ORIENTED RESEARCH QUESTIONS

6. **How can the sustainability-related criteria be translated and applied in order to avoid current encroachments and proceed towards a sustainable state?**

The Egyptian heritage neighborhoods are rigid contexts when compared to new developments. In this concern any intervention tests possible opportunities for applying important qualities and criteria within possible margins. Although for example the location of a neighborhood has a great impact on its sustainable development success this criterion is inflexible in the existing contexts. In that case the application of well-planned connections to surrounding neighborhoods will strengthen the locational position of a heritage neighborhood despite its stringency.

Carrying out the quick assessment of the state (S) of Heliopolis, following aspects can be identified (see section 11.3.1). Looking at the sustainable state catalogue there are sustainability criteria that are partially applied within Heliopolis neighborhood such as *Historic Resource Preservation, Recording & Documenting Historic Buildings, Walkable Streets, Preserving Unique Urban Fabric, 'Identity'*, while some criteria do not exist (not applied yet). It is useful to work on enhancing the performance of already existing criteria, moreover it is crucial to work on criteria that are important for the context and they are not applied yet or are in bad conditions such as *Energy-efficient Transport, Green Infrastructure, Accessible Public & Green Spaces, Sustainable Building Guidelines/Code, Plan for Long-*

term Renewal & development, and *Public Health Provision*. This shows that the main challenges of Heliopolis lie mainly in the cultural part followed by urban ones which need a conscious and oriented intervention. This does not mean that other criteria will be neglected, on the contrary and as stated previously in Chapter 10 there are criteria which show interconnection and dependence which also imply the consideration of the various criteria all at a time as one might affect the bundle of other criteria.

Looking at the top-15 criteria it is possible to see that economy is totally missing, which could reflect that heritage preservation in Egypt is not yet capable of accommodating sustainability respecting all its pillars. On the other hand this observation can stimulate experts to see why such a pillar was less important although it is the one that mostly pushes the negative development towards desired directions.

The operational measures to overcome the current obstacles are mainly administrative followed by physical, technical and socio-cultural measures, which should all work in harmony as they are dealing with a vibrant and lively environment (see Figure 12-2). Through asking the experts about the possible application of the different proposed criteria it was possible to attain information about how each criterion can be applied or in other words what are the obstacles that hinder its applicability; following are examples of four criteria taken out of the 15 top criteria and how they could be possibly enhanced in the case of Heliopolis.
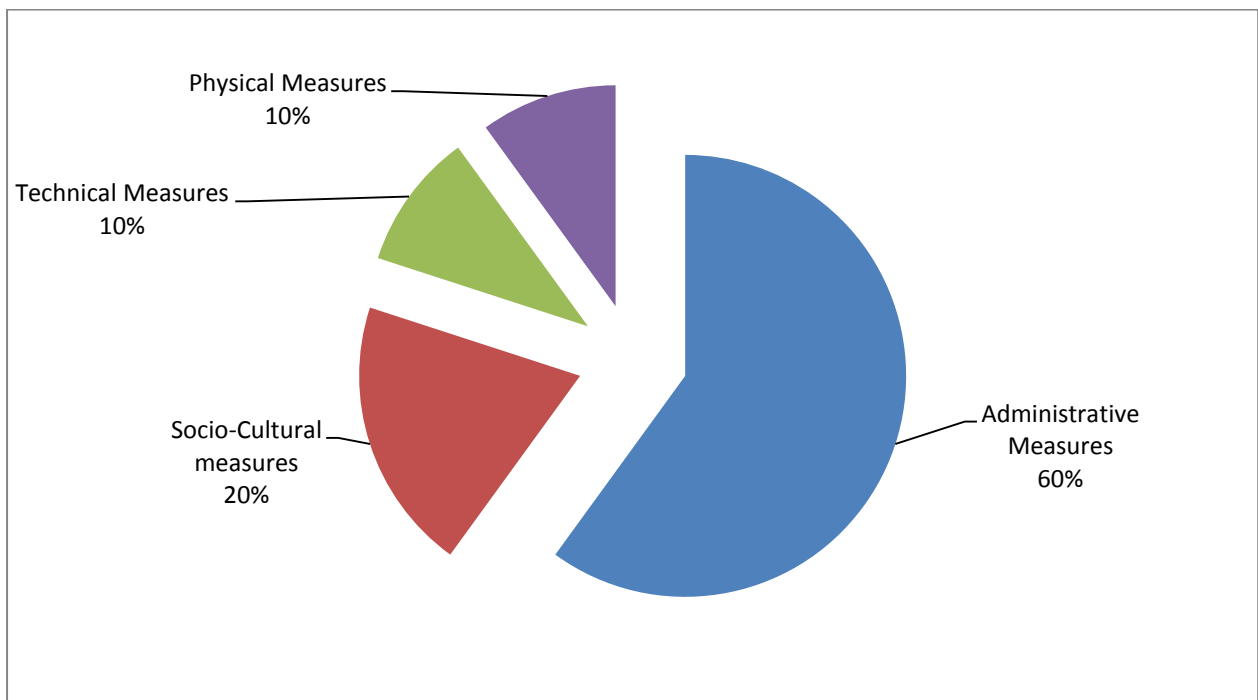
Figure 12-2 Recommendations according to measure carried out

Recommendations by Applicable Measures

The deteriorated urban state needs a technical plan and funding bodies, associations willing to contribute; the facilitators should be realistic making the project planning and marketing trying to include all the interested actors. With a general overview on the sustainability criteria discussed there are specific measures that need to be carried out in order to ease and

enhance criteria application having administrative, physical, technical and socio-cultural measures to propose:

Administrative measures (60%)

- Conscious legislations calling for –amending the law – solving loopholes –include incentives then strictly enforce the law and include obligation of NOUH's permission for every action within valuable areas
- A national and a local fund should be established for the survival of most of the valuable buildings; funding should also include financing pilot projects.

Socio-cultural measures (20%)

- Socio-cultural support is crucial to reach satisfactory results being able to spread the positive experience of a neighborhood
- Encourage the community to document its own history, encourage HHI and provide it with funds to proceed with its promising projects
- Instilling the culture of beauty and heritage preservation in students, where students of Heliopolis know more about Heliopolis and students of Zamalek know more about their neighborhood etc. to increase the sense of belonging to a place.
- Encourage more Historic awareness tours such as carried out by HHI to explain to the public what is valuable and important

Physical measures (10%)

- Enhancing street and sidewalk conditions
- Put street furniture and shading trees in streets of highest walkability
- Proposing turning certain commercial streets into pedestrian.
- Making use of the scarce available green areas in Heliopolis, the Meeryland must be revived and other smaller gardens such as the Basilique garden should be opened for the public removing its fences.
- Adding parks and playgrounds in building backyards
- Turning the Baron Empain Palace in Heliopolis into a Museum conveying the memories of the place

Technical measures (10%)

- Prepare committed and aware responsible bodies
- Talented expertise who are capable of offering technical assistance
- Using advanced equipment's in documenting/ recording / retrofitting / urban enhancements, etc.
- Well-trained & aware inventory committee members
- Prepare expertise in preservation (consultants, investors, contractors etc.)
- Know-how and technical awareness for prioritizing green building techniques in In-fill and Retrofitting projects within the heritage neighborhoods

7. What is the anticipated response within the prevailing context of Heliopolis to avoid the current encroachments?

The state (S) of Heliopolis was defined and investigated where other influencing issues such as the driving forces (D) and pressures (P) within the neighborhood were revealed for a better understanding of the case. Responses (R) were also illustrated; there were responses that have adversely affected the state. In the following part recommendations are specified distinguishing between the different roles within the neighborhood. Recommendations are proposed to the three responses (R1, 2 & 3) discussed in this study.

Response (R1) NOUH the Agenda Controllers

- In future planning schemes demolitions are certainly not completely prohibited, however the decision must be taken very careful conforming to the overall plan designed for the future development,
- Beside the national fund that was suggested by the majority of the experts another local fund on the neighborhood scale would attract more donors from people originally of that area, in addition to neighborhood lovers etc. where the accountability and trust might be higher being optimistic to see a quick return on a small scale. Financial punishments to building breaches should go to this fund.
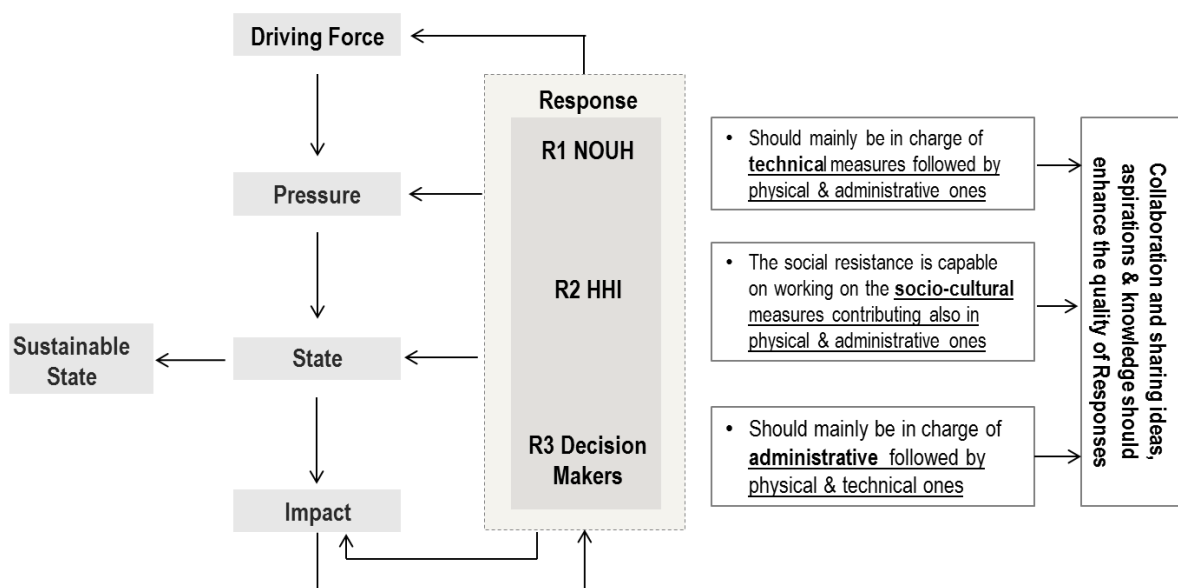
Figure 12-3 DPSIR-SS scheme showing the diffrent Responses and their major responsibilities of each

- Motivate technically aware consultants & contractors to carry out retrofitting work on existing assets, with environmental and preservation measures
- Awareness: using a simple language when talking to owners and investors showing the importance of the valuable buildings and neighborhoods as direct identity for Heliopolis with the support of HHI
- Develop a department for marketing and business to overcome the concept of 'preserving architecture for architecture' and discover new ideas to use the available physical resources

- NOUH should stipulate that the demolition decision of any building must be taken after a committees visit to the site and not by checking only inventory lists which are incomplete
- Inventory lists should be updated on a regular basis of 5 years as stated by law
- Provide owners with possibilities on how to deal with their buildings and include this in law
- Including the classification A, B & C and incentives in the law to clarify for the owner the kind of intervention possible upon each classification and encourage him financially
- Establish a restoration fund especially for listed buildings with acute conditions that need restoration and retrofitting
- Offer technical assistance and know-how for keen and conscious owners/investors and contractors using simplified language and giving examples
    o Develop delineated 'boundaries and requirements' booklet to include the exact exemptions for each carried out measure in addition to mentioning examples to ease the experience to consultant, investors and heritage owners such as in the case of the Gestaltungsfibel which is even disseminated on neighborhood inhabitants to spread the knowledge and ease the provision of information
    o Develop a simple brochure as a citizen's guide, where the owner of a valuable property has an easy access to how to deal with his buildings in a legal and just way giving real examples for different measures
- Establish decentralized NOUH offices Egypt wide for a better management and control of these assets

Response (R2) HHI the Preference shapers

- Spreading Awareness through home tours and photography competitions
- Working on Branding the neighborhood / cultural marketing such as designing postcards, prepare flyers or publish complete books
- Schools of a neighborhood e.g. Heliopolis should specifically know more about their neighborhood which increases the sense of belonging which will be imbedded and simultaneously raise the awareness
- HHI and similar initiatives should have a formal structure that includes different people from different fields
- Brainstorming with the other actors and to have a power juxtaposed to the NOUH and governmental bodies
- Initiative is composed of different people: ages, classes, health and social expertise which can be beneficial in preservation processes to reach better qualities, diversity and inclusion all these actions increase the appreciation of neighborhood value
- HHI and similar initiatives should be provided with funds

Response (R3) Cairo Governorate, Local District Unit the Decision Makers

- A governmental will to preserve the heritage
- Freeze any construction and demolition actions in areas with valuable buildings
- The quick modification of the loophole of the law 144 and enforcement of law against grievances
- No Decisions are taken on a single building scale, they should conform to an overall plan (changing land-uses leading to un-sustainable conclusions)

- Exhaustive enforceable taxes must be dictated on investors who purposely blur the identity of the neighborhood for individual benefits
- No quick unstudied responses
- Coffee-shops and retail-shops as attraction factors in addition to other uses that generate money, revitalizing the place and sometimes act as a safety and security measure at night instead of having dark pathways.
- Stop subsidizing energy (provide subsidy for the needy end-users) will motivate more environmentally friendly resources.
- Subsidize environmental friendly resources and seek the needed funds in addition to incentives to encourage inhabitants to use them
- Laws related to environmental aspects should be clear finding possible mechanisms for application along with technical assistance provision
- Appreciating the energy resources and the existing buildings as an energy vessel
- Encourage partnership between owner and investor, or government and investor or the three together to keep the building
- The documentation of any carried out study in form of a book or similar is very essential against loosing valuable efforts; like the study carried out in the 90s with 10 Cairene neighborhoods under the auspices of the Urban Planning Authority *hay'et takhteet 'omrany* which was not published
- Urban Planning Authority should be more concerned with developing strategic, national, regional and city level planning, where the local district unit *hay* takes over for further detailing and regulations development
- Liberation of rentals of the valuable buildings is a way out of the problem. Worst case scenario the issue of rents will be solved in the next generation if no response was done now, which puts the buildings under threat
- The heritage neighborhood within a strategic plan is like an Island that has to be planted in the overall plan of the city. All the goals of the future plan should respect the existence of this historic entity in the middle.
- Compensation of building owners should be included in the law. Offering privileges such as operating the place by companies to generate profit which is used to upgrade the place
- The establishment of a financing fund for valuable buildings, so if there is an owner who wants to leave the building there is a mechanism that enables keeping it through compensating him with the suitable amount of money
- The key instrument to control densities is to put limits to the building heights and respect it. This naturally controls the number of people
- Start determining the population densities, seeing which services are missing (to be added) what others are not needed (to be removed) revisiting the Land-use plan, this is very important along with the issuance of the clear and deterrent guidelines

8. **What are the measures to be carried out towards sustainability in Heliopolis neighborhood?**

Now, Heliopolis similar to other Egyptian neighborhoods of the 19th and early 20th century faces different kinds of driving forces (D) that push the development growth towards undesired states (S). Due to current political situation discussed previously and in order to have a balanced control on the issue before it is to late there are some immediate measures that should be done before responding with the plan such as freezing all actions within the neighborhood whether it is demolition, construction, alteration, extension until thorough and

comprehensive studies are carried out using the sustainable state catalogue as a guiding instrument to be able to respond with a plan.

Respond with a plan for Heliopolis encouraging the start with a pilot project. After the assessment of the Heliopolis state (S) applying the created localized sustainable state catalogue it was possible to identify the weaknesses and strengths of each sustainability-related quality (criterion) and it was clear that,

- The conscious political will in heritage related decision-taking is essential.
- The consideration of environmental aspects as important in the closed system of an urban neighborhood will fulfil simultaneously other qualities
- Heliopolis has a strong identity of place that could be marketed adding a branding with the help of HHI
- Innovative cultural-economic based projects and jobs will work on performing advantaged economic returns such as turning the Baron Empain Palace into a museum as proposed by HHI, Reviving the Merryland Park with the establishment of small economic boosters (restaurants etc.)
- Heliopolis needs a conscious land-use plan upon which decisions are studied before taken
- Heliopolis is a socially intellectual neighborhood with a strong civil society
- The Heliopolis Heritage Initiative (HHI) has constructive ideas and projects. It needs to gain more power, and it needs governmental financial support for a pilot project in collaboration with NOUH and the Heliopolis local district unit including energy-efficient concepts in retrofitting, in-fill, etc. A pilot project will have a great significance for a multiplier effect in the urban heritage preservation and development fields.
- People within the neighborhood are willing to contribute in a local fund (not central- in order to control the money and grasp the quick change)
- The provision of green spaces is limited. To ease mobility through cycling and walking in addition to modifying the economic exploitation approach for a more balanced neighborhood development which is socially possible especially in neighborhoods such as Heliopolis.
- *Diverse affordable Housing opportunity* is not an easy quality to achieve in a heritage urban setting which demands a lot of expenses to renovate and maintain which will rather attract only a certain level of people.
- Governmental grants similar to the Foerderungs-mittel offered in Germany for the up-keep of listed buildings and a neighborhood funding society similar to the *Stadterneuerungsgesellschaft* (SEG) established for the city-renewal of Gelsenkirchen (see section 8.3.5) are key drivers of success. The neighborhood funding society makes its money from the local district unit, private businesses in the neighborhood, in addition to punishment fees for any demolished building and from volunteers.
- Choosing a program for the pilot project: As the result assessing the State of Heliopolis has showed the major problem on the surface is the cultural and urban ones. On the social level problems don't seem to be acute. That is why a project should have a prevailing concentration on cultural and urban qualities, where the HHI can decide upon choosing the area to start with in collaboration of NOUH and the supervision of the Cairo governorate.
- This should also include a clear Bus & Metro station map raising the quality of infrastructure, combining means of transportation for better connectivity. The government should adopt these preservation projects boosting incentives and loans. The government

should supervise the mechanism of funding while the NOUH follows up the technical issues such as the restoration of buildings.

Additional recommendations for Heliopolis would crystalize the plan for further implementation possibilities

- Permissions for demolition are not issued before checking the building on site to avoid the loss of irreplaceable buildings such as has happened to the Swiss chalet (section 11.2.6).
- Revive the usage of the tram-line providing a clean mean of transportation and keeping a heritage quality
- Governmental bodies should discuss serious decisions concerning Heliopolis neighborhood with the HHI (happened in April, 2015)
- The governmental bodies should offer a financial grant to HHI
- Turn the Baron Empain Palace into a Museum as proposed by HHI
- Create a neighborhood fund either separate or connected to the HHI
- Commercial dense areas with high traffic such as Kleopatra Street should be turned into pedestrian to avoid high congestion and parking.
- Marketing the neighborhood for its famous buildings and at atmosphere printing postcards for example
- Intervening with a plan (grant program)

The economic factor steers the decision making in Egypt. Before providing the money achieving a well-studied concept plan and a certain level of awareness are essential. When describing a neighborhood as sustainable it means carrying out preservation and retrofitting measures in a way that fulfills sustainability measures which also implies continuity. Projects within the neighborhood should be capable of managing themselves generating income, where inhabitants are trained on the new adapted concepts and activities are revitalized having a beneficial return that is directly put in the neighborhood. In Heliopolis; cafes, galleries, local activities, like the Korba festival and Cairo runners act as a unique economic and cultural skeleton of the neighborhood. Innovative reuses that have economic returns (business and marketing) without harm can guarantee the desired sustainable heritage neighborhood preservation encouraging cultural and sustainability awareness.

Working on solving these above-mentioned qualities within Heliopolis can pave the way to its desired sustainable heritage neighborhood preservation (SHNP). Heliopolis needs a granting program with the central focus on *urban heritage preservation; 'staedtebauliche Denkmalschutz'* enhancing the urban quality of the neighborhood in addition to the concentration on building retrofitting and the right choice of new uses. In addition a neighborhood funding society such as the *Stadterneuerungsgesellschaft* (SEG) is very useful in the Heliopolis context and was suggested by experts.

12.3 INDESPENSIBLE RECOMMENDATIONS TOWARD SUSTAINABLE HERITAGE NEIGHBORHOOD PRESERVATION

The research study at hand does not only focus on the problems currently facing the valuable buildings and areas, it seeks an advanced position where all the administrative problems are being modified suggesting a plan to respond respecting all the important pillars for a Sustainable Preservation Approach. This chapter presents the summary of the findings, conclusion and recommendation based on the data analyzed in the previous chapters.

Neighborhoods with distinctive value have some characteristics in common but also differ in location, size, social level and age of people, in number of valuable buildings; all these are aspects that made a one-recipe approach an unsuccessful approach. That is why there are different ways to use the Catalogue to evaluate the State of a neighborhood against sustainability-qualities ranging from a quick evaluation to an indepth detailed one. In some situations iit is possible to focus on specific criteria related to the desired assessment topic an entity is conducting. While in other additions or subtractions are possible depending on the neighborhood and depending on the actor using it. Accordingly, this means that the agenda controllers (NOUH) might deal from a perspective, the decision makers from another while the preference shapers (HHI) from a third one. In that case working together is a plus where views; ideas, interests and aspirations are shared. Moreover, the sustainability criteria work also as an evaluation catalogue in order to know what is missing helping the designated actors to respond further.

There are some important measures that should be seriously put into consideration in order to gradually change the development modes within the heritage neighborhood to accommodate sustainability. This is proposed by the research suggesting following measures (see Figure 12-4):

- To Stop demolition of irreplaceable buildings recognizing them as an opportunity
- Recognition of environmental aspects in any development project
- Adapting an ameliorist approach (see section 6.1 and 6.3.5) to sustainable heritage neighborhood preservation protecting the valuable buildings yet leaving a margin for future development where critical heritage assets are preserved and compensatable ones are replaced
- Any fines or financial punishments should be put in a local neighborhood fund that finances valuable buildings within the neighborhood
- Include environmental strategies in the governmental agenda
- Support economic development, protecting the heritage and natural environment while ensuring social equity providing knowledge and providing the basic supply in a neighborhood.
- Support economies that are not damaging the heritage assets, nor do they impact the neighborhood in a way that affects its local community and its sustainable functioning for the future.
- There is no development without conscious comprehensive planning
- Environmental measures are applicable need mechanisms and trained contractors awareness of investors

Figure 12-4 shows the proposed measures and the suggested time for implementation where the actions are divided into immediate, short- and long-term measures.
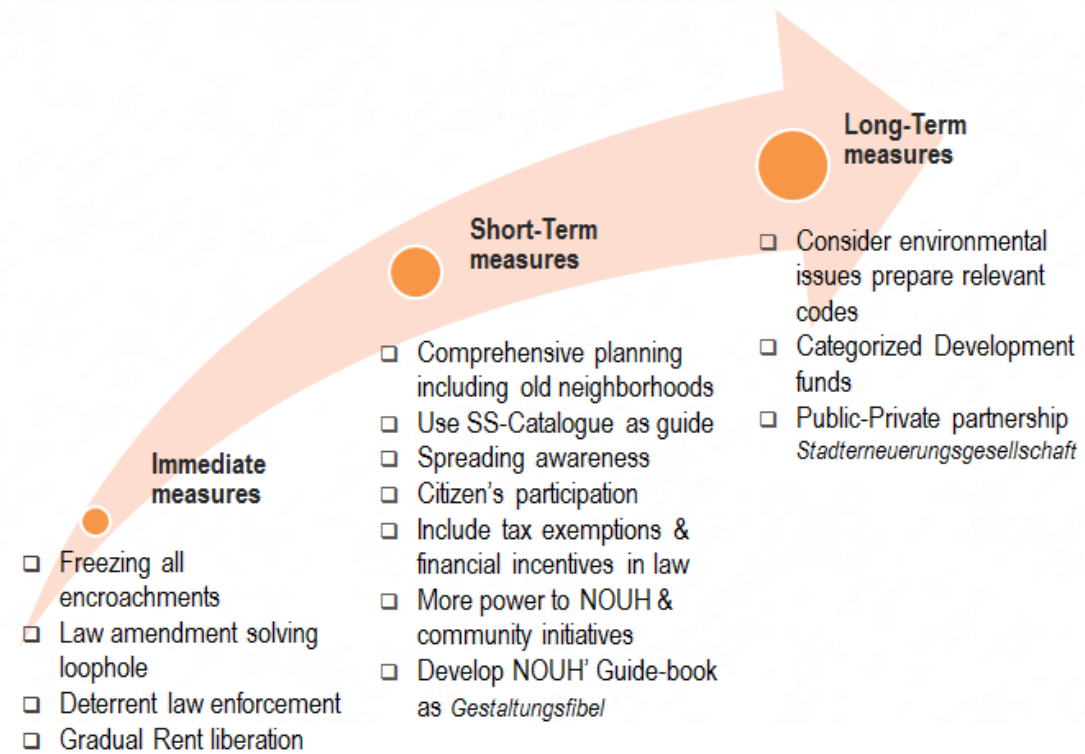
Figure 12-4 Immediate, Short and Long-Term Measures proposed by author

12.4 LONG-TERM STRATEGIES: LEARNING FROM OTHER COUNTRIES

There are different formal and informal instruments that are used in international practices that could be suitable and supporting within the Egyptian Context on the general level, such as

12.4.1 FORMAL INSTRUMENTS:

Categorized Development Programs ;*Staedtebaufoerderungsprogramme':* Heritage neighborhoods are analyzed, specifying Strengths, Weaknesses, Opportunities and threat in order to propose suitable development strategy focusing on social, economic, cultural and environmental aspects once the financial grants are available.

Preotective Ordinance '*Gestaltungsfibel*' (area specific). Guidelines & Boundaries '*Al-hedoud we al-ishteratat'* developed by NOUH in addition to the Principles '*ossos we irshadat'* are a good seed toward a GF, yet it lacks thorough detailing proposing exact color schemes, materials, type of openings, heights, type of vegetation, etc. each according to specific neighborhood. It is the basic document with which the proposed urban heritage consultant can work further to achieve a harmonious neighborhood which can be with collaboration of the civil society. The GF aims to address building owners that is why this guide should be as simple and easy to understand and follow. *NOUH gives a technical expertise* but is not in charge of all the neighborhoods, as it is above the capacities, yet this should be carried out by an urban heritage consultant (competition to have the best output).

12.4.2 INFORMAL INSTRUMENTS

<u>19th and early 20th Century Route.</u> Like the concept of 'Route fuer Industriekultur' planned in the Ruhr-Region in Germany, planning a 19th century touristic tour can encourage their preservation. Plan A) landmarks within a neighborhood (such as the home tours organized y HHI) Plan B) neighborhoods within Cairo (short-plan), Plan C) neighborhoods of different Egyptian cities with different scenarios and program options (longer plans). It can be for domestic or international tourism for an economic return, raising local, regional and international awareness. This can be only possible by providing a suitable mean of transportation connecting the hot spots of the Route where *the civil society can have a major role*.

<u>Building of the Month (Year).</u> Inspired by the German '*Denkmalbehoerde'* internet site; they choose a building every month[98] to talk about on their homepage telling basic and interesting information about it and its renovation. This is a way to convey the value of a building, place or neighborhood to the public, whether it is the direct local community or a wider range of people. This can be *also urged by the civil society*. The posters of the winning photographs that are disseminated along the vibrant streets of Heliopolis are a crucial activity organized by HHI, which they call 'Quick wins'.

12.5 CONCLUSION

The different processes for achieving sustainable neighborhood preservation could profitably complement each other. A criteria-based catalogue along with the existence of a community-based support can be used to avoid negative development processes. The two approaches can in this case accumulate and strengthen each other. The standardized tool for sssessment has context-specific focus in the realization, while the grassroots profit from their involvement in the community discourse.

Sustainable preservation invests in the old heritage neighborhoods, making the old cope with the current socio-economic and environmental needs and calling for new economic boosters. In that case a structured approach of sustainability principles can draw the desired path towards preservation and development within a heritage neighborhood. Sustainability, the fluid concept does not necessarily mean the same worldwide. While in other countries it includes zero emission buildings, in the Egyptian context it aims at reaching basic demands first, such as preserving the existing buildings instead of demolition, thinking of uses that do not harm, but also encouraging green transport and walkability. While on the other hand, applying energy-efficient measures in retrofitting and In-fill seem to take more time until it could be applied.

The problems of this research study have been identified, objectives attained and the findings of the collected data were analyzed and explicitly discussed. It has been concluded that the localized sustainability approach includes important criteria relevant to the Egyptian context finding feasible corridors for applying most of the qualities overcoming major problems and making use of existing potentials. Strategies put to achieve sustainability urge the efficient use of natural resources switching from fossils to renewable energy in every measure carried out whether it is retrofitting, in-fill, infrastructure upgrade or even renovating a small shop which need to be seriously considered within the Egyptian context. There are criteria highly depending on each other which should be respected in any development process as in a

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[98]http://www.dortmund.de/de/leben_in_dortmund/planen_bauen_wohnen/denkmalbehoerde/nachrichten_denkmalbehoerde/news_detail_denkmalbehoerde.jsp?nid=323738

closed system in order to achieve the desired sustainability goals working on a more holistic integration of disciplines avoiding current compartmentalization of planning specialties. Moreover, it is emphasized that the success of any sustainability goal is highly tied into political and governmental issues; where a political will can promise a certain guarantee towards sustainable preservation incorporating green agendas. Similar to the protective ordinance/Gestaltungsfibel a simple yet delineated guide is necessary for the Egyptian cases where valuable historic buildings are under threat; in addition it also helps anticipating future needs. The sustainable state catalogue aims to pave the way towards sustainable heritage neighborhood preservation (SHNP) (see Figure 12-5). With the stability of the political situation in Egypt, the hope in a better tomorrow becomes possible and sustainable goals that are not yet respected or appreciated become valuable for a better quality of life for its people.

In the end, it is possible to state that the developed sustainability approach carried out on the case of Heliopolis has sought to draw a sustainable future development for the neighborhood providing noteworthy lessons that other heritage neighborhoods might benefit from. Moreover, lessons learned from Heliopolis heritage neighborhood might be primarily applicable on the conceptual level on similar neighborhoods in Egypt and widely applicable in other parts of the Arab world especially formerly colonized ones since similar life cycles might be expected under comparable conditions of rapid urbanization. Last but not least, the criteria are developed for the Egyptian recent heritage neighborhoods nevertheless it is always necessary to scrutinize for each neighborhood again and possibly also supplement the criteria; where for differently featured neighborhoods other criteria could be added.

Figure 12-5 Schematic illustration of the different factors affecting the sustainable preservation with the guidance of the sustainable state catalogue

12.6 FURTHER STUDIES

The criteria-based approach is a wide field where further studies are always a plus. This proposed sustainable state catalogue was a contribution to the theory in the field of criteria-based assessments of heritage neighborhoods. It is a preliminary catalogue that could be developed further conducting more testing applying it on different case studies, in order to become more reliable for assessing heritage neighborhood developments and encourage competitiveness between neighborhoods. In addition, the criteria-catalogue developed can be delineated further where each criterion can be broken down into a bundle of sub-criteria for a better assessment process of a neighborhood state (S) towards sustainability.

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14 APPENDICES

14.1 APPENDIX 1: LIST OF INTERVIEWED EXPERTS

A. Expert semi-structured Interview based on a Questionnaire

	Interviewee	Organization	Occupation
		NOUH [99] **(10)**	
1	Dr. Soheir Zaki Hawas	**NOUH**	Head of the Central Administration for Research and Strategic Studies in NOUH, Architecture Professor, Cairo University, head of listing committee of Southern Cairo
2	Dr. Ahmed Reda Abdin	**NOUH**	Professor of Architecture and Environmental Control, Cairo University Member of Heritage (buildings with outstanding value) Conservation Committee the Eastern zone of Cairo in the Cairo Governorate (the representative of Ministry of Housing) Rapporteur of the permanent Committee for the Egyptian Code for the efficiency of energy usage in buildings (governmental, residential and commercial), NOUH consultant
3	Dr. Mohamed Reda Abdallah	**NOUH**	Head of the General Administration for Policies & responsible for Heliopolis valuable Area
4	Dr. Nahed Omran	**NOUH**	NOUH- Head of Community Participation Department
5	Dr. Ahmed Refaat	**NOUH**	Head of Research and development
6	Eng. Ahmed Abayazeed	**NOUH**	Eng. In the central department of planning & technical affairs
7	Dr. Adel Yassin	**Former NOUH**	Member of the highest committee for putting the foundations for urban Harmony in Egypt. Member of the Specialized National Council

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[99] **NOUH**: National Organization for Urban Harmony

8	Dr. Sahar Attia	**Former NOUH**	Former member in the Heritage Conservation Committee (Cairo and Giza). Consultant for the Urban Planning Authority
9	Abbas Zaafarany	**Former NOUH**	Former Head of policy Department unit in NOUH 2011. Member of the law formation committee 119 & 144 and their executive regulation (by law) لائحة تنفيذية Responsible for putting the boundaries for the zones of value
10	Hala Mekkawy	**Former NOUH**	Head of Urban Planning Department, Faculty of Urban Planning & Former director of the planning & technical affairs department in the NOUH till 2011
		HBRC[100] (5)	
11	Dr. Hend Farouh	**HBRC**	Head of Sustainable neighborhood certification development (Green pyramid)
12	Eng. Sara Khalifa	**HBRC**	Team of Sustainable neighborhood certification development (Green pyramid)
13	Eng. Dina Salem	**HBRC**	Team of Sustainable neighborhood certification development (Green pyramid
14	Nora	**HBRC**	Team of Sustainable neighborhood certification development (Green pyramid
15	Sara	**HBRC**	Team of Sustainable neighborhood certification development (Green pyramid
		Academics (2)	
16	Ahmed Yousry	**Planning**	Dean of Regional Planning Faculty
17	Mohamed Fahmy	**Environment**	Prof. Doctor of Environmental Architecture
		HHI (6)	
18	Choukri Asmar	**HHI[101]**	BSc. Economics Strategy Manager (Cadbury-Kraft)
19	Ahmed Mansour	**HHI**	Architect URHC – UNESCO
20	Omneya Abdel Barr	**HHI**	PhD Architect
21	Michel Hanna	**HHI**	Pharmacist
22	Karim Riad	**HHI**	Electrical Engineer/ Project Manager
23	Mohamed Salamony	**HHI**	PR & Media Director

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[100] **HBRC**: Housing and Building Research Center (Green Pyramid for Neighborhoods)

[101] **HHI**: Heliopolis Heritage Initiative

B. Leitfaden In-depth Interviews

	Interviewee	Organization	Occupation
1	Dr Yehia El-Zeiny	**One of key-Founders of NOUH**	The overhead architect in the Heritage conservation committee
2	Dr Ahmed Reda Abdin	**NOUH**	Professor of Architecture and Environmental Control, Cairo University; Member of Heritage (buildings with outstanding value) Conservation Committee the Eastern zone of Cairo in the Cairo Governorate (the representative of Ministry of Housing); Rapporteur of the permanent Committee for the Egyptian Code for the efficiency of energy usage in buildings (governmental, residential and commercial)
3	Dr Sahar Attia	**Former NOUH**	Former member in the Heritage Conservation Committee (Cairo and Giza) Consultant for the Urban Planning Authority
4	Dr. Mohamed Reda Abdallah	**NOUH**	Head of the General Administration for Policies & responsible for Heliopolis valuable Area
5	Dr Sohair Hawass	**NOUH**	Head of the Central Administration for Research and Strategic Studies in NOUH, Architecture Professor, Cairo University, head of listing committee of Southern Cairo
6	Dr Nahed Omran	**NOUH**	NOUH- Head of Community Participation Department
7	Dr. Ahmed S. Ouf	**Former NOUH**	Professor of Urban Planning / Former Consultant to NOUH Chairman (2010-2012)
8	Dr. Haby	**NOUH**	NOUH, Laws and policies
9	Eng. Ahmed Aly	**NOUH**	Committee of Grievances
10	Mrs. Riham Arram	**Cairo Governorate**	Head of Heritage Unit
11	Eng. Jehan Youssef	**Cairo Governorate**	Engineer at Cairo Governorate, Deputy of the Department of Urban Planning Management A member of the Architectural Heritage conservation committee Northern zon0065
12	Eng. Hala Adel	**Cairo Governorate**	Engineer at Cairo Governorate, Director of Land Development in the Department of Urban Planning Management A member of the Architectural Heritage conservation committee Eastern zone
13	Eng Mohamed Abdel-Naeem	**Local District Unit of Heliopolis** *hay*	Head of planning sector in the local district unit of Heliopolis *hay*

14.2 APPENDIX 2: SEMI-STRUCTURED EXPERT INTERVIEW BASED ON A QUESTIONNAIRE

A Questionnaire For Defining The Sustainability Criteria For Heritage Neighborhoods

استبيان لتعريف معايير الاستدامة للأحياء التراثية

This questionnaire is targeting experts in the field of Heritage Conservation & Preservation, Urban Planning, Green Architecture, Environmental Planning, etc. seeking to find out the Sustainability criteria that are important within a Heritage Neighborhood. The questionnaire focuses on Neighborhoods of the 19th century in Egypt such as Heliopolis, Garden City, Zamalek, etc. known as the 'Living Heritage'

هذا الاستبيان يستهدف التكلم مع خبراء في مجال الحفاظ على التراث، والتصميم البيئي، والتخطيط العمراني الخ. سعياً الي تعريف معايير الاستدامة المهمة للأحياء التراثية. هذا الاستبيان يركز علي أحياء القرن التاسع عشر في مصر، مثل هيليوبوليس، جاردن سيتي، زمالك الخ. المعروفة "بالتراث الحي"

This is purely an academic exercise, and this exercise is supposed to provide the knowledge lacking in what conforms the pathways for a Sustainable future development of 'Heritage Neighborhoods' within the Egyptian context.

هذا هو عمل أكاديمي محض ليس له أي أهداف أو استخدامات أخري، ويفترض أن يقوم هذا العمل بتوفير المعرفة إلى ما يتفق مع مسارات التنمية المستدامة المستقبلية "للأحياء التراثية" في السياق المصري

The coming table consists of a list of sustainability principles adopted world-wide on neighborhood scale. Please read the following criteria thoroughly and give them a grade from (**5**) to (**1**), resembling the **Importance**. Then see whether it is **applicable** or not within the Egyptian context of existing Heritage neighborhoods giving a reason if not-applicable.

The value '**5**' is the highest score standing for '**extremely Important**',

The value '**1**' is the lowest standing for '**extremely not Important**',

With the values in-between you can gradate your opinion.

Your collaboration is of great significance, as it will help forming the Checklist for the Sustainability criteria of Heritage Neighborhoods.
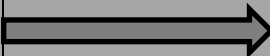
Applicability Key			
Technical	**Administrative**	**Physical**	**Socio-cultural**
Week capacity Know-how	Executive Bureaucratic Law enforcement Codes Incentives / fund	Rigidity	Awareness Participation Cultural constraints
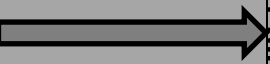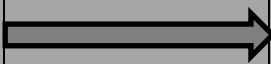
Name: _____   Occupation: _____

Signature & Date: _____

1	Environmental Sustainability	ext. Imp				Ext. Not Imp	Appl.	Not Applicable				
		5	4	3	2	1		Technical	Administrative	Physical	Socio-cultural	Other
1.1	**Climate responsive neighborhood planning** New construction considers the distinctive climate	5	4	3	2	1						
1.2	**Urban Heat Island Reduction** Minimize increased heat in the urban city centers	5	4	3	2	1						
1.3	**Biodiversity** Flora & Fauna Protection of wildlife within urban settings (Birds, etc.)	5	4	3	2	1						
1.4	**Energy-efficient transport** Well served variety public transport (maps) Safe infrastructure for walking and cycling less cars, save money & environment on the long run	5	4	3	2	1						
1.5	**Energy-efficient In-fill** Energy-efficient built form, layout material & constr. Development of community renewable energy	5	4	3	2	1						
1.6	**Energy-efficient retrofitting** Possibly using existing materials, energy-efficient built form, using renewable energy	5	4	3	2	1						
1.7	**Air Quality:** traffic reduction & air quality management	5	4	3	2	1						
1.8	**Water:** local sourcing &water demand management, Surface water sewage, Sewage treatment	5	4	3	2	1						
1.9	**Land:** compact land management to reduce urban land-take	5	4	3	2	1						
1.10	**Minerals:** recycling building materials \and using local material	5	4	3	2	1						
1.11	**Local composting:** recycle organic materials at home– reducing trash disposal, save money, and conserve natural resources	5	4	3	2	1						
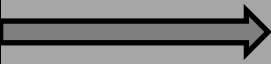
2

2	**Urban Sustainability**	extr. Imp	→			Ext. Not Imp	Appl.	Not Applicable				
		5	4	3	2	1		Technical	Administrative	Physical	Socio-cultural	Other
2.1	**Smart Heritage Neighborhood** High number of heritage buildings, well connected to other areas, reflects layers of history	5	4	3	2	1						
2.2	**Walkable Streets** Provision of attractive pedestrian-scale local streets with enough sidewalks & proportionate building height to street width	5	4	3	2	1						
2.3	**Relieve density with variety (permeability)** In highly dense areas, a relief through green areas, height of buildings, % of construction area on plot	5	4	3	2	1						
2.4	**Green roof** Promotion of green plantation on roofs and terraces Aesthetic, environmental & financial aspects	5	4	3	2	1						
2.5	**Access to facilities** (by foot or public transport) Accessible good quality health, educational, retail & leisure facilities, attention to children & disabled	5	4	3	2	1						
2.6	**Accessible Public spaces & green areas** Reviving dead spaces for use, providing space for basic activities (playgrounds, parks, etc.)	5	4	3	2	1						
2.7	**Infrastructure** Easily maintained road & utility networks (energy, tele-networks, phone, etc.)	5	4	3	2	1						

3

3	Social Sustainability	extr. Imp				Ext.Not Imp	Appl.	Not Applicable					Other
		5	4	3	2	1		Technical	Administrative	Physical	Socio-cultural		
3.1	**Health** Pollution-free environment	5	4	3	2	1							
3.2	**Sustainability & Cultural Awareness** Enable residents, workers & visitors of the NHD to appreciate, understand & contribute to conscious resource use & heritage protection	5	4	3	2	1							
3.3	**Community Safety & Security** Safe traffic-calmed streets with good visual surveillance & light A well-thought-out urban design & government intervention giving residents a strong sense of security - 'visual access' to spaces preserved	5	4	3	2	1							
3.4	**Equity & Choice** 57 Access to Housing local facilities enrich choice for less mobile people, help compensating public transport inadequacies reaching NHD social balance	5	4	3	2	1							
3.5	**Citizens participation** Participation in community life giving input and feedback and further decision making	5	4	3	2	1							
3.6	**Inclusion of private partnership** City government and all stakeholders work together promoting innovative Ideas attracting investors reusing old buildings	5	4	3	2	1							
3.7	**Local Food Production** To be able to produce the needed food locally (Allows growing of foodstuffs, including in-yards, balconies, patios, or rooftops)	5	4	3	2	1							

4

4	**Cultural Sustainability**	extr. Imp				extr Not Imp	Appl.	Not Applicable				
		5	4	3	2	1		Technical	Administrative	Physical	Socio-cultural	Other
4.1	**Historic Resource Preservation** Protecting valuable buildings from demolition	5	4	3	2	1						
4.2	**Recording and documenting historic buildings** Developing an Inventory of valuable buildings Making photos, gathering Information, etc.	5	4	3	2	1						
4.3	**Categorizing valuable buildings** **Ameliorist approach to sustainability** Preserving only what is unique and irreplaceable (critical), while replacing compensatable objects for future development.	5	4	3	2	1						
4.4	**Regulating demolition of historic buildings if needed** Only buildings doomed to fall	5	4	3	2	1						
4.5	**Reuse of historic listed Buildings** Encouraging innovative reuse possibilities	5	4	3	2	1						
4.6	**Preserving the unique urban fabric, its 'Identity'** **Genuineness of organization of space and form** Protecting the urban layout of streets and spaces which contribute to its value and character	5	4	3	2	1						
4.7	**Heritage Image: Legible unifying Architectural character with sense of place** 'Continuity of setting' Maintaining the quality of the old setting	5	4	3	2	1						
4.8	**Aesthetic quality: attractive pedestrian-scale local environments**	5	4	3	2	1						
4.9	**Sustainable Building Guidelines / Code (boundaries and guidelines)** Defining land-uses, targeted population density,	5	4	3	2	1						

	allowed building height, etc. for conscious development (in compliance with future plan for the NHD)												
4.10	**Setting up renovation phases** Intervention in phases, decided upon priority. Priority(valuable building under major threat, economic return with no environmental disturbance)	**5**	**4**	**3**	**2**	**1**							
4.11	**Convey memory of place** 'Wholeness' provision The ability to convey the neighborhood significance: signage- information @ buildings- informative hardscape	**5**	**4**	**3**	**2**	**1**							
4.12	**Stable State of NHD 'Intactness'** Controlling the impact of deterioration process	**5**	**4**	**3**	**2**	**1**							
4.13	**Material genuineness** protect the material testimony of successive phases of use over time	**5**	**4**	**3**	**2**	**1**							
4.14	**In-fill projects reflecting distinctive heritage** New Constr. considers historic & social aspects	**5**	**4**	**3**	**2**	**1**							
4.15	**Continuity of function** Encourage compatible functions or at minimum those functions which do not obliterate the evidence of significant earlier functions	**5**	**4**	**3**	**2**	**1**							

5

5	Economic Sustainability	extr. Imp				extr Not Imp	Appl.	Not Applicable				
		5	4	3	2	1		Techical	Administrative	Physical	Socio-cultural	Other
5.1	**Promote Heritage-related Job Opportunities** Diverse & accessible job opportunities	5	4	3	2	1						
5.2	**Economic revitalization** Encouragement of private, small business: galleries, small museums, B&B, etc.	5	4	3	2	1						
5.3	**Develop affordable Diverse Housing opportunities** Provision of a variety of housing within NHD Appropriate accommodation for everybody (social housing/ rental/ first time buyers/ mid-range and executive buyers, etc.) locational choice increase[91]	5	4	3	2	1						
5.4	**Mixed land-use neighborhood** Provision of different land-uses and commercial and institutional services	5	4	3	2	1						
5.5	**Marketing the Heritage neighborhood** Fund-raising possibilities, branding and trademarking ideas for sustaining the heritage Assets	5	4	3	2	1						
5.6	**Promotion of Incentives to encourage owners** financial support helping to retain the buildings	5	4	3	2	1						
5.7	**Valorize cultural Identity: beauty, attractiveness (quality of life)** Promoting social activities in the neighborhood that explains the meaning & uniqueness of the place (carnival, child-activity, sport activity, etc.)	5	4	3	2	1						

6

6	Overarching Concepts	extr. Imp				extr Not Imp	Appl.	Not Applicable				
		5	4	3	2	1		Technical	Administrative	Physical	Socio-cultural	Other
6.1	**Plan for long-term renewal & growth** The efficient use of available resources & knowledge to plan development scenarios for the future	5	4	3	2	1						
6.2	**Land-use Plan** Continuous development & regulation of existing land-use plans, Calculating parking, densities, etc.	5	4	3	2	1						
6.3	**Sustaining Density's threshold** Scenarios for relieving densities in high dense NHDs	5	4	3	2	1						
6.4	**Promote innovative & non-conventional solutions 'technologies'** Resource-efficient technologies (Water supply, waste treatment and energy supply)	5	4	3	2	1						
6.5	**Promote the concept of the triple 'R':** **Reuse** of existing **Recycle** wasted **Reduce** consumption of scarce resources	5	4	3	2	1						

2

Further Suggestions & Comments: _____

_____

_____

Thank you for your time and collaboration!

14.3 APPENDIX 3: A SAMPLE OF A LEITFADEN INTERVIEW

A Study On The Qualities & Criteria Of A Sustainable Heritage Neighborhood

دراسة الصفات والعايير التي تعرف الحي التراثي المستدام

This interview is targeting experts in the field of heritage conservation, environmental design, and spatial planning; seeking to find out the Opportunities and Threats of heritage neighborhoods defining possible future paths for its development.

هذه المقابلة تستهدف التكلم مع خبراء في مجال الحفاظ على التراث، والتصميم البيئي، والتخطيط العمراني سعياً إلى معرفة الامكانيات والمحددات للأحياء التراثية وتحديد مسار التنمية المستقبلي لها.

Objective: *How can the **neighborhood develop** in a way it does **not lose its inhabitants**, economies and meanwhile conserve and **protect its heritage** while **considering environmental issues** that in the end are very important for human health and environmental continuity?*

الأهداف: كيف يمكن تطوير الحي التراثي بطريقة لا تفقد سكانها، وفي الوقت نفسه الحفاظ على الاقتصادات وحماية المباني ذات القيمة مع الأخذ في الاعتبار النواحي البيئية التي في النهاية هي مهمة جدا لصحة الإنسان والاستمرارية البيئية للحي؟

	المخططات والتصورات المستقبلية

Future development Plans
  1. What is the role of the urban planning organization at the level of the city and neighborhood?
  2. Does the scope include new & existing cities and NDs? Valuable NDs?
  3. Is there a future vision for existing cities and neighborhoods?
  4. How can the ND succeed to grow and develop in a desirable direction without a plan?
	1. ما هو دور هيئة التخطيط العمراني على مستوى المدنية و الحي؟
	2. هل يندرج القائم و الجديد في نطاق عمل الهيئة؟
	3. هل هناك رؤية موستازبليا موضوعه للمدن و الأحياء القائمة؟
	4. كيف للحي أن ينمو و يتطور في إتجاه مرغوب فيه بدون مخطط؟

The scope of my study focuses especially on neighborhoods including valuable buildings
  1. What are the major Problems in neighborhood? Why?
  2. What are the ways of solution?
  3. Priority measure?   Short-term / long-term actions?
	نطاق دراستي يركز خاصة على الأحياء التراثية، في اعتقادك
	1. ما هي أوضح مشكلاته وما هي سبل الحل؟
	2. ان حدث قرار بوضع خطة طريق للأحياء القائمة فعلام يجب أن يقوم اولاً؟
	3. ما هي الأولويات في التعامل / Short-term long-term actions

Who are the key actors in the neighborhood scale?	من هم الجهات الفاعلة علي مقياس الحي، وما هي الأدوار الحالية والمفروضة؟
The demolition acts? Reasons?	أعمال الهدم؟ الدوافع؟
Is the revitalization of an heritage area with the concepts of sustainable neighborhood a way to the solution?	افكار ال نيو أربانيزم تؤخذ في الاعتبار في التعامل مع المدن والأحياء الجديدة هل تطبيق فكر الأحياء المستدامة مدخل للحل في الأحياء التراثية؟

Thank you!

14.4 APPENDIX 4: OUT-BREAKING HAPPENINGS: EGYPTIAN REVOLUTION

On the 25th of January, 2011 people from every small square were heading Tahrir Square. People demonstrating on the streets are encouraged to go forth by seeing the huge amount; in addition people from the balconies got courageous feeling that it is a demonstration not like any other previous one. Reaching Tahrir Square; people felt how powerful unity could be. Social networks orchestrated the event; the Revolution. Failing to stand the power of the people; former president Mubarak resigns 18 days later in February, 11th 2011.

A great revolution built on the great slogan '*Aish, horeya, karamah insaneya'. Aish* has actually a double meaning in this case as it means both, bread and the right to live, *horeya* is freedom whereas *karamah insaneya* refers to the Human dignity. Since that day people should no more be marginalized or excluded. The role of the people is growing in Egypt. People tend to form small social networks working against certain encroachments or working to support certain actions.

It is said that for any leap that is to be taken someone gains power by stepping little back. This is how we can describe the current phase for almost four years now, since the start of the revolution.

This out breaking situation is indispensably influencing the whole situation in Egypt and beyond. The critical political phase is a non-negligible part of the driving force which is dubbed with continuous CHANGE; the will to change everything. Since 2011, there have been more than four presidents, governors change every year or less, on the Governmental Level; on the social level, people of all levels wish for a better quality of living and an increase of income. On the economic level, there are trials to boost more money into the Egyptian economy however very complex. This so-called (real-life) realistic model of the absence of serious deterrents in the field of heritage assets preservation proves the major role that the government has to protect them. In this system, the environmental level seems to be under estimated.

Escorting decision: Document of the Constitution of Urbanism *Al-Mithaq el-alamy lel-7aq fi elmadina*[102]

Taken from the document of the Constitution of Urbanism provided to the Committee of fifty 'the right in Heritage': The state is committed to protect all the diverse Heritage components regardless of its legal status or type of ownership, in addition the State is committed to develop the needed instruments for documenting this heritage, its restoration and maintenance on a regular basis, according to recognized scientific standards and international conventions.

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[102] http://ow.ly/qTYH7

14.5 APPENDIX 5: LEED-ND 2009 CREDITS

LEED® FOR NEIGHBORHOOD DEVELOPMENT

110 TOTAL POINTS POSSIBLE

SMART LOCATION & LINKAGE — 27 POSSIBLE POINTS

		Points
PREREQ 1	Smart Location	REQ
PREREQ 2	Imperiled Species and Ecological Communities	REQ
PREREQ 3	Wetland and Water Body Conservation	REQ
PREREQ 4	Agricultural Land Conservation	REQ
PREREQ 5	Floodplain Avoidance	REQ
CREDIT 1	Preferred Locations	●●●●●●●●●●
CREDIT 2	Brownfield Redevelopment	●●
CREDIT 3	Locations w/ Reduced Automobile Dependence	●●●●●●●
CREDIT 4	Bicycle Network and Storage	●
CREDIT 5	Housing and Jobs Proximity	●●●
CREDIT 6	Steep Slope Protection	●
CREDIT 7	Site Design for Habitat/Wetland & Water Body Conservation	●
CREDIT 8	Restoration of Habitat/Wetlands and Water Bodies	●
CREDIT 9	Long-Term Cnsrvtn. Mgmt. of Habitat/Wetlands & Water Bodies	●

NEIGHBORHOOD PATTERN & DESIGN — 44 POSSIBLE POINTS

		Points
PREREQ 1	Walkable Streets	REQ
PREREQ 2	Compact Development	REQ
PREREQ 3	Connected and Open Community	REQ
CREDIT 1	Walkable Streets	●●●●●●●●●●●●
CREDIT 2	Compact Development	●●●●●●
CREDIT 3	Mixed-Use Neighborhood Centers	●●●●
CREDIT 4	Mixed-Income Diverse Communities	●●●●●●●
CREDIT 5	Reduced Parking Footprint	●
CREDIT 6	Street Network	●●
CREDIT 7	Transit Facilities	●
CREDIT 8	Transportation Demand Management	●●
CREDIT 9	Access to Civic and Public Spaces	●
CREDIT 10	Access to Recreation Facilities	●
CREDIT 11	Visitability and Universal Design	●
CREDIT 12	Community Outreach and Involvement	●●
CREDIT 13	Local Food Production	●
CREDIT 14	Tree-Lined and Shaded Streets	●●
CREDIT 15	Neighborhood Schools	●

GREEN INFRASTRUCTURE & BUILDINGS — 29 POSSIBLE POINTS

		Points
PREREQ 1	Certified Green Building	REQ
PREREQ 2	Minimum Building Energy Efficiency	REQ
PREREQ 3	Minimum Building Water Efficiency	REQ
PREREQ 4	Construction Activity Pollution Prevention	REQ
CREDIT 1	Certified Green Buildings	●●●●●
CREDIT 2	Building Energy Efficiency	●●
CREDIT 3	Building Water Efficiency	●
CREDIT 4	Water-Efficient Landscaping	●
CREDIT 5	Existing Building Use	●
CREDIT 6	Historic Resource Preservation and Adaptive Reuse	●
CREDIT 7	Minimized Site Disturbance in Design and Construction	●
CREDIT 8	Stormwater Management	●●●●
CREDIT 9	Heat Island Reduction	●
CREDIT 10	Solar Orientation	●
CREDIT 11	On-Site Renewable Energy Sources	●●●
CREDIT 12	District Heating and Cooling	●●
CREDIT 13	Infrastructure Energy Efficiency	●
CREDIT 14	Wastewater Management	●●
CREDIT 15	Recycled Content in Infrastructure	●
CREDIT 16	Solid Waste Management Infrastructure	●
CREDIT 17	Light Pollution Reduction	●

INNOVATION & DESIGN PROCESS — 6 POSSIBLE POINTS

		Points
CREDIT 1	Innovation and Exemplary Performance	●●●●●
CREDIT 2	LEED Accredited Professional	●

REGIONAL PRIORITY CREDIT — 4 POSSIBLE POINTS

		Points
CREDIT 1	Regional Priority	●●●●

40–49 POINTS: CERTIFIED   50–59 POINTS: SILVER   60–79 POINTS: GOLD   80+ POINTS: PLATINUM
FOR MORE INFORMATION SEE THE *LEED REFERENCE GUIDE FOR GREEN NEIGHBORHOOD DEVELOPMENT*

The LEED-ND Rating System was created by the Congress for the New Urbanism, Natural Resources Defense Council, and the U.S. Green Building Council.

LEED for Neighborhood Development offers designations for many types of projects and phases of development. Projects may constitute whole, multiple, or portions of neighborhoods, and may be single- or mixed-use. A three-stage certification model corresponds to the phases of the development process:

Stage 1 – Conditionally Approved Plan: Projects that have not completed the entitlements, or public review, process can earn this designation, envisioned to help gain support from the local government and the community.

Stage 2 – Pre-Certified Plan: Fully-entitled projects or projects under construction may earn this designation, which can help secure financing, expedite permitting, or attract tenants.

Stage 3 – Certified Neighborhood Development: Constructed projects can certify that the final built project meets all attempted prerequisites and credits.

Available under: http://leadingleed.com/blog-2/page/2/

14.6 APPENDIX 6: LEED-ND 2009 PROJECT SCORECARD

LEED 2009 for Neighborhood Development
Project Scorecard

Project Name:
Date:

Smart Location and Linkage — 27 Points Possible

Yes / ? / No

	Points
Y Prereq 1 Smart Location	Required
Y Prereq 2 Imperiled Species and Ecological Communities	Required
Y Prereq 3 Wetland and Water Body Conservation	Required
Y Prereq 4 Agricultural Land Conservation	Required
Y Prereq 5 Floodplain Avoidance	Required
Credit 1 Preferred Locations	10
Credit 2 Brownfield Redevelopment	2
Credit 3 Locations with Reduced Automobile Dependence	7
Credit 4 Bicycle Network and Storage	1
Credit 5 Housing and Jobs Proximity	3
Credit 6 Steep Slope Protection	1
Credit 7 Site Design for Habitat or Wetland and Water Body Conservation	1
Credit 8 Restoration of Habitat or Wetlands and Water Bodies	1
Credit 9 Long-Term Conservation Management of Habitat or Wetlands and Water	1

Neighborhood Pattern and Design — 44 Points Possible

Yes / ? / No

	Points
Y Prereq 1 Walkable Streets	Required
Y Prereq 2 Compact Development	Required
Y Prereq 3 Connected and Open Community	Required
Credit 1 Walkable Streets	12
Credit 2 Compact Development	6
Credit 3 Mixed-Use Neighborhood Centers	4
Credit 4 Mixed-Income Diverse Communities	7
Credit 5 Reduced Parking Footprint	1
Credit 6 Street Network	2
Credit 7 Transit Facilities	1
Credit 8 Transportation Demand Management	2
Credit 9 Access to Civic and Public Spaces	1
Credit 10 Access to Recreation Facilities	1
Credit 11 Visitability and Universal Design	1
Credit 12 Community Outreach and Involvement	2
Credit 13 Local Food Production	1
Credit 14 Tree-Lined and Shaded Streets	2
Credit 15 Neighborhood Schools	1

Green Infrastructure and Buildings — 29 Points Possible

Yes / ? / No

	Points
Y Prereq 1 Certified Green Building	Required
Y Prereq 2 Minimum Building Energy Efficiency	Required
Y Prereq 3 Minimum Building Water Efficiency	Required
Y Prereq 4 Construction Activity Pollution Prevention	Required

Green Infrastructure and Buildings, Continued

Yes / ? / No

	Points
Credit 1 Certified Green Buildings	5
Credit 2 Building Energy Efficiency	2
Credit 3 Building Water Efficiency	1
Credit 4 Water-Efficient Landscaping	1
Credit 5 Existing Building Use	1
Credit 6 Historic Resource Preservation and Adaptive Reuse	1
Credit 7 Minimized Site Disturbance in Design and Construction	1
Credit 8 Stormwater Management	4
Credit 9 Heat Island Reduction	1
Credit 10 Solar Orientation	1
Credit 11 On-Site Renewable Energy Sources	3
Credit 12 District Heating and Cooling	2
Credit 13 Infrastructure Energy Efficiency	1
Credit 14 Wastewater Management	2
Credit 15 Recycled Content in Infrastructure	1
Credit 16 Solid Waste Management Infrastructure	1
Credit 17 Light Pollution Reduction	1

Innovation and Design Process — 6 Points

Yes / ? / No

	Points
Credit 1. Innovation and Exemplary Performance: Provide Specific Title	1
Credit 1. Innovation and Exemplary Performance: Provide Specific Title	1
Credit 1. Innovation and Exemplary Performance: Provide Specific Title	1
Credit 1. Innovation and Exemplary Performance: Provide Specific Title	1
Credit 1. Innovation and Exemplary Performance: Provide Specific Title	1
Credit 2 LEED® Accredited Professional	1

Regional Priority Credit — 4 Points

Yes / ? / No

	Points
Credit 1. Regional Priority Credit: Region Defined	1
Credit 1. Regional Priority Credit: Region Defined	1
Credit 1. Regional Priority Credit: Region Defined	1
Credit 1. Regional Priority Credit: Region Defined	1

Project Totals (Certification estimates) — 110 Points

Yes / ? / No

Certified: 40-49 points, Silver: 50-59 points, Gold: 60-79 points, Platinum: 80+ points

Available under: www.usgbc.org/redirect.php?DocumentID=6407

14.7 APPENDIX 7: DEVELOPMENT OF KHEDIVIAL CAIRO

Directly after the revolution there was no stability and the change of the governors was frequently in addition the governmental decision makers were concerned with other critical issues in the country. With the gradual return of the political stability there was a desire in retrieving the civilized face of the city and its neighborhoods.

The project going on currently in Khedivial Cairo neighborhood is concerned with upgrading and renovating its streets and heritage buildings proceeding in phases. Looking-at the phases carried out in Khedivial Cairo experience with the lens of the proposed sustainability criteria catalogue it is possible to see:

Action	Can be put under the sustainability criterion
Priority of work goes to developing and upgrading pedestrian streets encouraging walkability within the heritage city streets	Walkable streets
The new Tahrir underground parking along with other existing parkings should provide more parking areas underground after parking in main streets is prohibited.	Green Infrasctructure
Minimizing private vehicle move within the area while providing minibuses from the parking to the khedivial Cairo streets for a better connectivity (is this there?)	Energy-efficient Transport
Renovation of buildings by Banks located in the area	Inclusion of private partnership
Shop owners in Alfy Street contribute in meetings	Citizen participation
Renovation of the external façade only	Energy-efficient Retrofitt
Happens automatically with the upgrade of the area attracting investors to the area	Economic revitalization