

Coexistent Urbanism

**An Environmental Planning Approach to the
Development
of Informal Areas**

By

Salma Anas

A Thesis Submitted in Partial Fulfillment

Of

The Requirements for the Degree of

Master of Science

In

Design and Environmental Planning

Department of Architecture

Faculty of Engineering, Fayoum

FAYOUM UNIVERSITY

2014

Coexistent Urbanism

An Environmental Planning Approach to the Development of Informal Areas

By

Salma Anas

Bachelor of Engineering, Department of Architecture

Faculty of Engineering, Fayoum

This thesis for M. Sc. degree has been

Approved by:

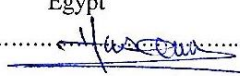
Prof. Dr. Ayman M. Ismail

Prof. of Planning, Faculty of Engineering, Fayoum University

Signature.....

Prof. Dr. Husam Bakr Khalil

Prof. of Architecture, Faculty of Engineering, the British University (BUE), El Shorouk,
Egypt

Signature.....

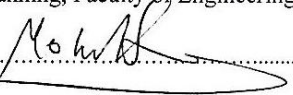
Prof. Dr. Ahmed M. Yousry

Prof. of Urban Planning, Dean of Faculty of Urban and Regional Planning

Signature.....

Prof. Dr. Mohamed A. Salheen

Prof. of Integrated Design and Planning, Faculty of Engineering, Ain Shams University.

Signature.....

Date of Examination: 7 / 7 / 2014

Coexistent Urbanism

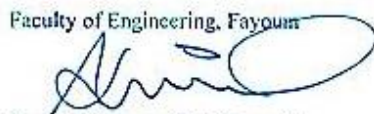
An Environmental Planning Approach to the
Development of Informal Areas

By

Salma Anas

Bachelor of Engineering, Department of Architecture

Faculty of Engineering, Fayoum



Prof. Ayman M. Ismail

Department of Architecture, Faculty of Engineering, Fayoum University

Prof. of Planning

Signature

Prof. Husam Bakr Khalil

Department of Architecture, Faculty of Engineering, the British University (BUE),
El Shorouk, Egypt

Prof. of Architecture

Signature



Acknowledgment

I am gratefully for the important guidance and contributions provided by my supervisors; Prof. Ayman M. Ismail and Prof. Husam Baker. Special thanks for Prof. Ayman Ismail for his great efforts and for continuously encouraging and supporting me.



Dedication

To my WONDERFUL

DEEPLY MISSED MOM.

Forever you remain in my soul.

Your guidance, love and care

will never end.

Many thanks to your major

Contribution in shaping

my personality

& realizing my goals.

Resume

Salma Anas Abdel Hakam, is a graduate of class 2010 Architecture Department, Faculty of Engineering, Fayoum University.

She works as an Urban Planner at the Department of Urban Planning at the Governorate of Fayoum.

She is the author of three published papers on Informal Settlements and Space Syntax.

Motivation

"The robbers and the pickpockets of Shubra and Roud El Farag were of the most patriotic of the Egyptian people during October war 73"*

These words caught my attention and made me think how political changes and events can affect the whole society. Shubra and Roud El Farag were suffering from high crime rate (about 500 robberies daily), yet during October war no robbery case was observed!

This fact stimulated my thinking into how "coexistence" was a strong force that can amalgamate segregated parts of the city. After the political changes since the 25th of Jan, coexistence was expressed in the unity and the community will to develop Egypt hand in hand starting from beautifying the squares and cleaning the streets, while ignoring our differences whatever they were. A revolutionary spirit swept through my body and gave me a hint that we were not the obstacles to development, but the whole surrounding environment was, and we could change it.

A common coexistent spirit was strongly found in society. I tried to invest this spirit in slum areas by overcoming what I saw as just physical barriers NOT social ones. Coexistent urbanism was a term I devised that I believe summarizes the approach I envision: One that targets the *human development* as the core of slums upgrading, not as a by-product.

*

TawfeekAleesh, Brigade commander in the 1973 October War

Contents

Chapter One.....	1
Introduction and Scope.....	1
1.1 Background of the Problem.....	1
1.1.1 Causes for Slums Emergence.....	6
1.1.2 Ways of intervention in slum areas.....	7
1.1.3 Global attempts for upgrading slum areas	9
1.2 Problem and scope.....	13
1.2.1 The problem Statement.....	13
1.2.2 Aims and Objectives	13
1.2.3 Hypothesis.....	13
1.2.4 Thesis Methodology.....	14
1.2.5 Scope and limitation	15
1.2.6 Literature review	15
1.2.7 Slum definition.....	24
Chapter 2	28
Egyptian Experience: Informal areas Upgrading Schools *.	28
2.1 Slums' features: Ways of looking at slums: problem or a resource or both?	28
2.2 Reflection of the different Egyptian political philosophies on informal settlements phenomenon:.....	29
2.2.1 Socialism:.....	29
2.2.2 Economic Liberalization (Openness).....	31
2.2.3 Capitalism:	34
2.3 Approaches provided by the government to deal with informal settlements	36

2.3.1 First stage: Post Earthquake and Terrorism Attention:	38
"1994-2004 Informal settlements Development program"	38
2.3.2 Second stage: 2004-2008 informal settlement belting program:	40
2.3.3 Third Stage: (ISDF) Post Duwayqa Rockslide (2008-Present):	41
2.3.4 Post 25 th January Phase: Transition period (11Feb 2011-30 Jun 2012):	54
2.3.5 Post 25 January Phase: Elected Government	58
2.3.6 Post 30 June: Transition period.....	62
Chapter Three	65
Coexistent urbanism	65
3.1 Vision.....	67
3.2 Definition.....	69
3.3 Why Accessibility?.....	69
3.4 Correlation between Integration Values and Socioeconomic and Urban Parameters	71
3.5 Tributaries of coexistent urbanism	76
3.5.1 Principles & values of Islam	76
3.5.2 Sustainability.....	77
3.5.3 Political transformation after 25th Jan. Revolution	77
3.6 Coexistent Urbanism vs. Patchwork Upgrading.....	77
3.7 Model for applying coexistent urbanism as an integrated approach for upgrading informal areas	78
3.8 Principles of Coexistent Urbanism	83
3.8.1 Individuality	83

3.8.2 Solution prioritization decision making criteria	83
3.9 Tools	84
3.9.1 Space Syntax	85
3.9.2 Geographic Information Systems (GIS)	90
3.10 Application in thesis	90
Chapter Four.....	92
Case Study.....	92
4.1 Introduction	92
4.2 Methodology of Coexistent Urbanism	93
4.2.1 Section One (Prioritization Scheme)	94
4.2.2 Section two (Classification Scheme)	108
4.2.3 Section three (Solution scheme)	114
4.3 Proposed roads hierarchy.....	126
Chapter Five	127
Conclusions and recommendations.....	127
5.1 Conclusions	127
5.2 Recommendations	130
5.3 Suggestions and Future Research	132
References	133

List of Figures

Figure 1 - Egyptian slum population as percentage of urban	2
Figure 2 - Illegal residential towers, entrance to Fayoum city	5
Figure 3 - Controlling factors of housing system.....	7
Figure 4 - Ways of intervention in slum areas.....	7
Figure 5 - Favelas, Rio, Brazil	12
Figure 6 - Dimensions of slums problem.....	27
Figure 7 - Rent and Owned housing before & after Rent law.....	30
Figure 8 - Housing investments 1983/1984	32
Figure 9 - The role of oil price & migration in slum emergence.....	33
Figure 10 - Bolak El Dakror	35
Figure 11 - Informal settlements development in Egypt	36
Figure 12 – Official policies provided to deal with slum areas.....	37
Figure 13 - Zienhum new housing 2004	41
Figure 14 - Rockslide disaster in Dwaiqa.....	41
Figure 15 - classification of the Official policies to upgrade slum areas	43
Figure 16 - Tahzeem al Ashwaet in strategic plan (2027) of Fayoum city	48
Figure 17 - Hakora slum area in Fayoum.....	49
Figure 18 -- Fayoum strategic plan 2027	49
Figure 19 - Kohafa slum area, Fayoum, Google earth 2013	50
Figure 20 - Three new villages in Fayoum (Hinterland Villages).....	51

Figure 21 - Talae village (Hinterland Village)	51
Figure 22 - Strategic plan of Fayoum city 2027 (land use).....	53
Figure 23 - Existing Haez and the proposed one (2027)	54
Figure 24 - Some of NEBNY Foundation's events.....	55
Figure 25 - "Dream for Your Block" workshop.....	61
Figure 26 - The collapse of El Sheikh Mansour Bridge in El-Marg	63
Figure 27 - Governmental motivations for slum area development	64
Figure 28 - Nile city towers & Ramlet Bolak. Google earth 2013	66
Figure 29 - Nile City Towers in downtown Cairo.....	66
Figure 30 –Vision for Coexistent Urbanism.....	67
Figure 31 - Scenes from 25 th Jan revolution.....	68
Figure 32 - Different urban modes in Egypt	68
Figure 33: - The Slum areas' domino effect.....	70
Figure 34 - Rind Road linking 13 slum areas in Damietta.....	73
Figure 35 - Overlaying Non residential building with 10 % core of Integration.	74
Figure 36 - El Sofy Area, Fayoum city.	75
Figure 37 - Tributaries of Coexistent Urbanism	76
Figure 38 - Coexistent Model	80
Figure 39 – Informal housing in Egypt.....	82
Figure 40 –Priorities Triangle	84
Figure 41 –Tools of Coexistent Urbanism	85

Figure 42 - Axial map of London.....	86
Figure 43 - Axial map of Fayoum slum areas.....	87
Figure 44 - Axial map of Fayoum city	88
Figure 45 - Segment test of Fayoum city.....	89
Figure 46 - Ten informal areas of Fayoum city.....	92
Figure 47:Methodology of Coexistent Urbanism	93
Figure 48 - Decision support tools.....	97
Figure 49 - Decision making chart for prioritizing intervention	98
Figure 50	99
Figure 51 - Core of integration 10% Fayoum city	101
Figure 52 - Axial map of Fayoum city within the ring road	102
Figure 53 - Effectiveness and Needness Indices using GIS	103
Figure 54 - Building index using GIS	104
Figure 55- Roads index usng GIS	104
Figure 56 – Applying the methodology to Fayoum city informal areas	107
Figure 57 - Google Earth image of Allawy	108
Figure 58 - Different types of informal areas.....	109
Figure 59 - Informal areas in Egypt	110
Figure 60 - Informal areas Classification Algorithm	111
Figure 61 - Components of the EDPI.....	112
Figure 62 - Allawy 2013	115

Figure 63 - Axwoman extension on Arcmap 10	116
Figure 64 - Integration analysis of Fayoum city	117
Figure 65 - 'Get isolated lines' step.....	118
Figure 66 - Allawy borders with agriculture	118
Figure 67 - Costallocation analysis	119
Figure 68 - Transformability index for building map.....	120
Figure 69 - Land price	120
Figure 70 - Hazards of Allawy	121
Figure 71 - Land use, Allawy	121
Figure 72 - Vacant plots, Allawy	122
Figure 73 - EDPI Map of Allawy.....	123
Figure 74 - Modified roads along northern and eastern borders	123
Figure 75 - Integration analysis, after & before	124
Figure 76 - Kernel density analysis	125
Figure 77 - Proposed roads hierarchy.....	126

List of Tables

Table 1 –Official policies categories	39
Table 2- unsafe areas according to the level of danger.	42
Table 3 - Differences between Patchwork Upgrading and Coexistent Urbanism	78
Table 4 - Basic data of the ten informal areas in Fayoum city	100
Table 5 - Socio-economic indices	100
Table 6 - Depthmap indices.....	102
Table 7 - Building index	103
Table 8 - Roads index	103
Table 9 - Urban Edge Length (m).....	105
Table 10 - Informal areas Classification Cases and Intervention Rules.....	113
Table 11 - Reclass land use.....	122

Chapter One

Introduction and Scope

1.1 Background of the Problem

Slums are a global growing phenomenon; around 33% of the urban population in the developing world in 2012 (about 863 million people) lived in slums¹. The highest proportion is located in "sub-Saharan Africa"²; a depressing proportion reflects a serious slum areas crisis in Africa.

The Central African Republic reached the highest slum proportion in the world in 2009 by having 95.9% of its population living in slums³.

Locally, Egyptian demographics of the size of the problem vary from one institution to another. Some data report positive indicators about slum population while others say that informal areas became a majority urban mode besieging a minority planned formal areas.

This great data variation reflects the use of different definitions or the lack of updated true data. For example, the UN-HABITAT indicators mentioned that the Egyptian slum population decreased gradually from 50.2 % in 1990 to 13.1% in 2009 (Figure 1), a positive indicator. However, this contradicts other reports which shows the increase of informal areas from 916 informal areas in 2000 to 1,171 areas in 2007⁴ and reached 1,221 areas later inhabited by 15 million dwellers⁵.

¹ "State of the World's Cities Report 2012/2013: Prosperity of Cities". UNHABITA

² A term used in the statistics of many UN institutions referring to all African countries excluding North African ones overlooking the Mediterranean

³ "State of the World's Cities Report 2012/2013: Prosperity of Cities". UNHABITA

⁴ (IDSC).

⁵ (Annual Report of the United Nations Fund for population)

Similarly, official indicators even considered that about three quarters of the Egyptian urban areas are unplanned slum areas⁶.

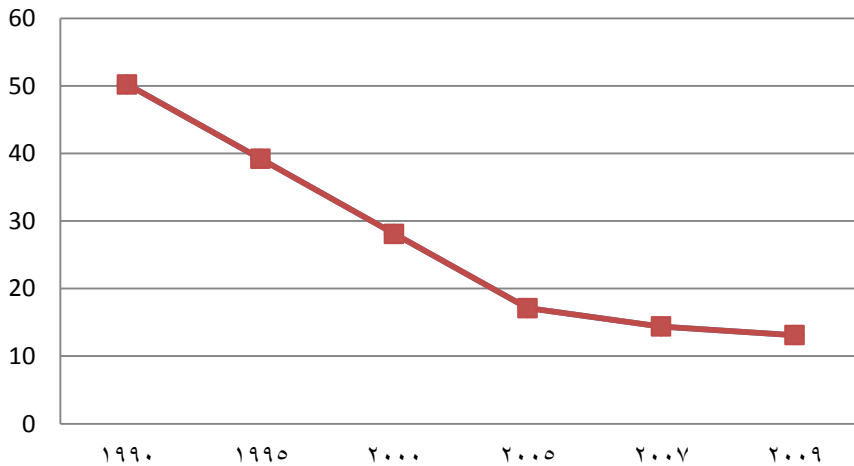


Figure 1 - Egyptian slum population as percentage of urban

Source: UN-HABITAT, Millennium Developments Goals Indicators

Informal areas in Egypt are a planning problem with many dimensions; environmental, socio-economic, institutional, legislative and physical. Yet, the problem of these areas is falsely summarized just by the deteriorated urban environment and the depressing socioeconomic indices of dwellers. Slum areas problem entails a new perspective with a deeper look towards these areas, the motive behind upgrading them, the ways of intervention, and the institutional formation.

All these factors make informal areas problem one of the most depressing problems in Egypt. We see its tip, but it hides an iceberg of problems beneath it. Underneath its depressed physical appearance are a lot of sub-problems affecting its urbanization, identity and security.

⁶ Ministry of Local Development, 2013

Although informal areas in Egypt were formed along decades and decade, official policy has usually provided more opportunities for their aggravation rather than their amelioration. Starting with the socialist period that sought “social justice” - but produced an array of blocks neither capable of satisfying their basic needs nor their numbers, and all the way to the "Infitah- or Open Door Policy" that sought “prosperity” - but ended up with brutal lawless opportunistic capitalism.

The official role in dealing with informal areas was not as effective as the official contribution in forming the problem, official efforts over the years failed to tackle the problem from its roots or even control its growth, reflecting official strategies outputted of a rational (high modernness) point of view towards informal areas.

This rational point of view and despite the opinions of many great Egyptian planners, reflected a “blind man’s view” on informal areas; seeing them merely as disease infected outposts that need to be either quarantined from the healthy surrounding urban or amputated. This view ignored the facts; first the potentials of such areas; and second, that most informal areas were formed by self-efforts of the dwellers at the time when the state failed to fulfill its basic responsibilities in providing adequate shelter. As a result and despite the efforts, informal areas have grown to cover almost 75% of the Egyptian cities and villages⁷.

In recent years, the policy has usually been reactive. Before the 25th January revolution 2011, disasters and catastrophes (rockslide, terror, floods, etc.) were the primary motivation for intervention. In post 25th Jan, which called for social justice the approach was extreme tolerance resulting in a dramatic increase in slum problems

⁷ Dr. El Faramawy, el youm el sabe3 online 19 October 2012

and building encroachment of the agricultural lands.⁸ Exploiting the lawlessness of this period and the lack of enforcement; such problem is estimated to reach two to threefold increase since 2011⁹. The following stage (post 30 June, 2013) the policy went to the exact extreme: brutal demolition of selected violations, as if the problem can be simply solved by showing a guarded bulldozer.

The post 25/1/2011 also witnessed a qualitative change in the mode of informal settlements. This was represented by the formation of a new type of informal areas; "Slums of the rich". Unlike poverty slums, kiosks and huts that suffer from depressing social conditions and deteriorated urban environment, this new type covered huge areas of illegal residential towers in prime locations of the city and surrounded by various services without official land-subdivision or proper road widths. This type was seen in Maadi's cornice and in Fayoum's entrance.

⁸ The period also witnessed signs of genuine concern and new methods of interventions in informal areas especially from the NGOs and the civil society, yet violations reached 942,792 cases encroaching 40,354 agricultural acres during the period from 25th January 2011 to December 2013 - Adel Labib, Minister of Local Development, 2014

⁹ David Sims, urbanist expert



Figure 2 - Illegal residential towers, entrance to Fayoum city

Thus "informal areas" expression in Egypt describes a wide range of different urban modes varying in their location, surrounding, urban morphology, urban characteristics, sensory features and potentials. This variation is one of the major reasons for the failure of the unified official solution and the routine interventions in informal areas.

On the other hand, informal areas have different potentials; most slums are productive and dynamic areas reflected by a strong

economic network and an unemployment rate lower than the national one¹⁰.

Unlike unemployment rate of slum areas, other socioeconomic indices are depressing; ignorance, crime rate, lack of services and overcrowding.

1.1.1 Causes for Slums Emergence

Various causes are responsible for slums emergence; internal migration, unemployment, politics and rapid urbanization where formal housing markets cannot cope with the huge demand and urgent need for shelter by the urban poor. In addition to demographic, social and economic causes, slum area emerged due to the combination of some of these causes which should be taken into consideration when dealing with slums problem.

Despite variation of the causes, slum emergence could be traced back to a defect in the housing system which consists of three controlling factors; demand, supply and affordability (Figure 3). The unbalance of this system whatever the defect is social, economic, political or urban, results in the emergence of slum areas problem.

¹⁰ Mohamad abo samra, Planner in the United Nations Human Settlements Programme (UNCHS), "Akher Kalam" Talk show, May 2014.

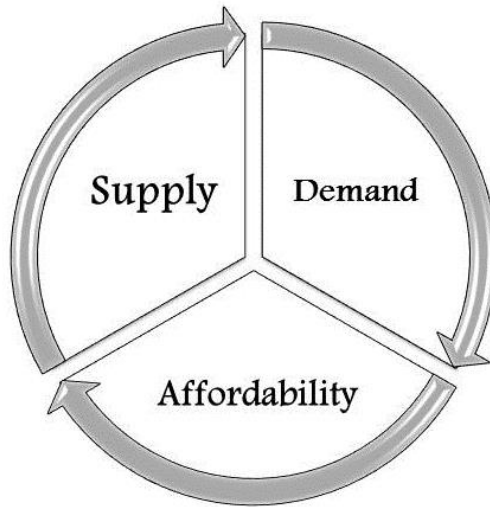


Figure 3 - Controlling factors of housing system

1.1.2 Ways of intervention in slum areas

Ways of intervention varied in details, yet all of them can be included within two main approaches; slum clearance and slum upgrading. Though public housing is not a way to intervene in slum areas, yet it should be added to the main approaches to deal with slum problem.

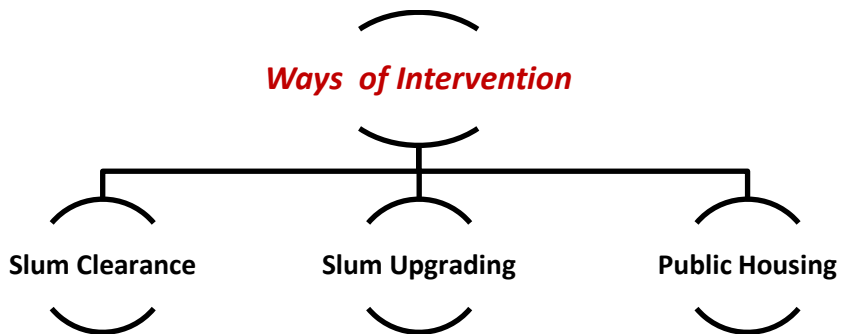


Figure 4 - Ways of intervention in slum areas

Slum clearance is one of the strategies applied to deal with slum areas in various countries with different motivation. Some consider clearance as the most appropriate strategy, citing that slums started

illegally on state land property and the land in many cases has high investment value. Others apply clearance as an immediate unavoidable intervention in life threatening slums.

China is one of the countries that applied clearance strategy to illegal slums dwelled by migrant workers. For example: Chinese government removed numerous slum areas to beautify the country as a preparation for the 2008 Olympics and relocated the dwellers to alternative areas a bit further from their slums. Although this strategy is criticized for not providing the adequate alternative or even in some cases the dwellers remain homeless, the Chinese case when surveyed, fewer than 10% of the affected slum residents planned to return to their home region.

Thus clearance strategy can be applied in definite cases, yet it cannot be the unified model approach to deal with slums over its variation. In addition, in case of applying clearance approach a satisfying alternative should be provided and the socioeconomic network should be taken in to consideration, otherwise this approach would be removing certain areas while the causes for creating such areas are still existent.

Slum upgrading approach was applied for the first time during the 1970s and 1980s influenced the writing of F.C.Turner¹¹. This approach seeks to improve the physical and the urban environment represented in providing basic services and infrastructure. The early evaluations of upgrading projects during 1970s in various areas underpinned the success of this approach, while later evaluation done by the end of the 1980s were depressing showing that the initial results and benefits of upgrading were ephemeral due to maintenance factors as upgrading approach is a temporary non-sustainable intervention.

¹¹ British architect who has written extensively on housing and community organization, UK

Public Housing projects is an approach applied since the 1960s. This approach deals with one main cause of slum areas which is the lack of supply of affordable housing by mass construction of public housing for low-strata or as an alternative housing for slum dwellers when relocated.

This approach has proven its success in some cases, yet has proven its failure in others. The success factors of this approach are summarized in respecting the socio-economic network of the slum dwellers, providing secure tenure and the dwellers satisfaction for these housing.

1.1.3 Global attempts for upgrading slum areas

There are a lot of successful experiences in dealing with slum problem in the world. This thesis will focus only on two: the Chinese and the Brazilian experience owing to their similarities with the Egyptian situation. The Chinese experience has its success in applying the clearance strategy. Thus highlighting the success factors of this strategy is quite important because we do not achieve the same results when applying the same policy in Egypt.

On the other hand, Brazil has a different type of slum areas that started due to similar causes and with similar features to those in Egypt.

Chengdo-China

Slums in Chengdo existed since the 1950s and varied according to specific phases of economic development and policy change in to three types of slums;

- The first types were those slums formed on the bank of the FU and Nan rivers as low-rent flats on the fringe of the city. Then, changed to be the inner city slums since the 1970s as a result for the city growth.

This type ends in the 1990s when slums were eradicated as an application for housing and relocation policies.

- The second type of slums resulted from the economic reforms (1980s) that created a sudden unemployment and poverty.
- The third type resulted from the rapid urbanization development (1990s). A category of about one million low-educated and peri-urban was created (floating population). The problem with this type was neither in the structure nor the size of the slums; it lies in the social exclusion of the inhabitants and the location of slums outside the scope of the municipal services.

The Chinese policy targeted raising the urbanization from 36% to 50 %, and focused on 18000 existing secondary and tertiary towns through the developments of markets, infrastructure and services.

China applied a housing and urbanization policy that proved its effectiveness evident in the rapidly decreasing numbers of slum areas and slum dwellers in Chengdo. Slum dwellers include those without income, those with no work ability (long illnesses, injuries or the handicapped), those with no one to care for them, those people waiting for new jobs owing to the collapse of their enterprises, low-paid employees with heavy family burdens, and people who receive relief funds.

Chengdo started its lowest living standards guarantee system in 1997 and applied it in all of its areas, and focused on the poor living conditions in the city center since 2001 through large-scale rehabilitation, relocation and low-rent housing program. In 2001 less than 500 households benefited from this policy and applied for alternative apartments matching their need and rented by the government that planned to provide 1000 households with new low-rent apartments in 2002.

Chengdu succeeds in poverty alleviation, slum eradication, urban transformation and environmental improvement of the city.

Success factors of the Chinese attempt:

- Applying a participatory approach in slum relocation through involving the residents, social groups and the public.
- Focusing on the causes of poverty rather than the poverty itself.
- Raising the resident's awareness of the need to handle urban poverty and improve the environment through public meetings and consultations.
- The three-tier local government management system that proved unusual effectiveness.
 - a) The first tier (the metro-level) is in charge of formulating macro-policies and overseeing their implementation by subordinate departments.
 - b) The second tier (the district government and its subordinate Departments) is in charge of implementing the policies established by the first tier.
 - c) The third tier (neighborhood committees) is in charge of specific political, social and economic affairs¹².

RIO DE JANEIRO – BRAZIL

Rio's slums were a result for various causes starting from the industrial and infrastructure development, the urbanization that led to the displacement of the urban poor and the mass construction of cheap housing in the suburbs away from the city and its infrastructure (1930s-1950s). All these factors led to the spread of favelas (one out of four types of slums in Rio, favelas are highly consolidated residential areas of self-construction on invaded public and private land, without infrastructure, existing in large numbers all over Rio especially the eastern part) during the 1960s (Figure 5).

¹² UN-HABITAT, The Challenge of Slums, 2003

By the 1970s about 13% of the city population lived in slums and the issue continued to increase during the 1980s and the 1990s.

Numerous slum programs were operated; most significant of them is "Favela-Bairro" that targeted urbanizing favelas and the social inclusion of neighborhoods through promoting social program of health and education at the same time. It introduced a social project within the urbanization program.

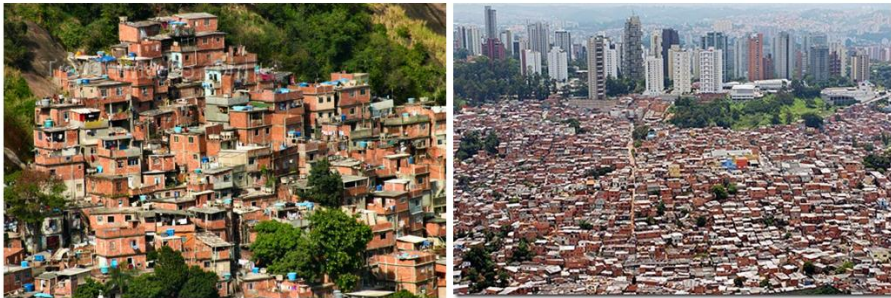


Figure 5 - Favelas, Rio, Brazil

Summary and conclusions of these two cases

Both these cases show how dealing with slums on a micro level brings some success, but also create others. In China, clearance is a success because the dwellers of informal areas were involved in the upgrading process. Applying a participatory approach ensures the satisfaction of the dwellers majority with the final results and with the alternative housing units. But it needs a central government with a strong repressive force and plentiful resources. We do not have the luxury of these resources in Egypt. In Rio, the "Favela-Bairro" proved its success as a practice example of the housing policy to deal with informal areas in Brazil because of introducing social projects within the urbanization. This program adopts a key idea of integration between areas of social exclusion and the formal boroughs of the city in order to resolve the segregation that is a characteristic of Rio.

1.2 Problem and scope

1.2.1 The problem Statement

Global comprehensive approaches would be more effective in dealing with informal areas problem rather than local patch work upgrading. Respecting each informal area identity, working on a wider scope and depending on computerized indicators would achieve better results.

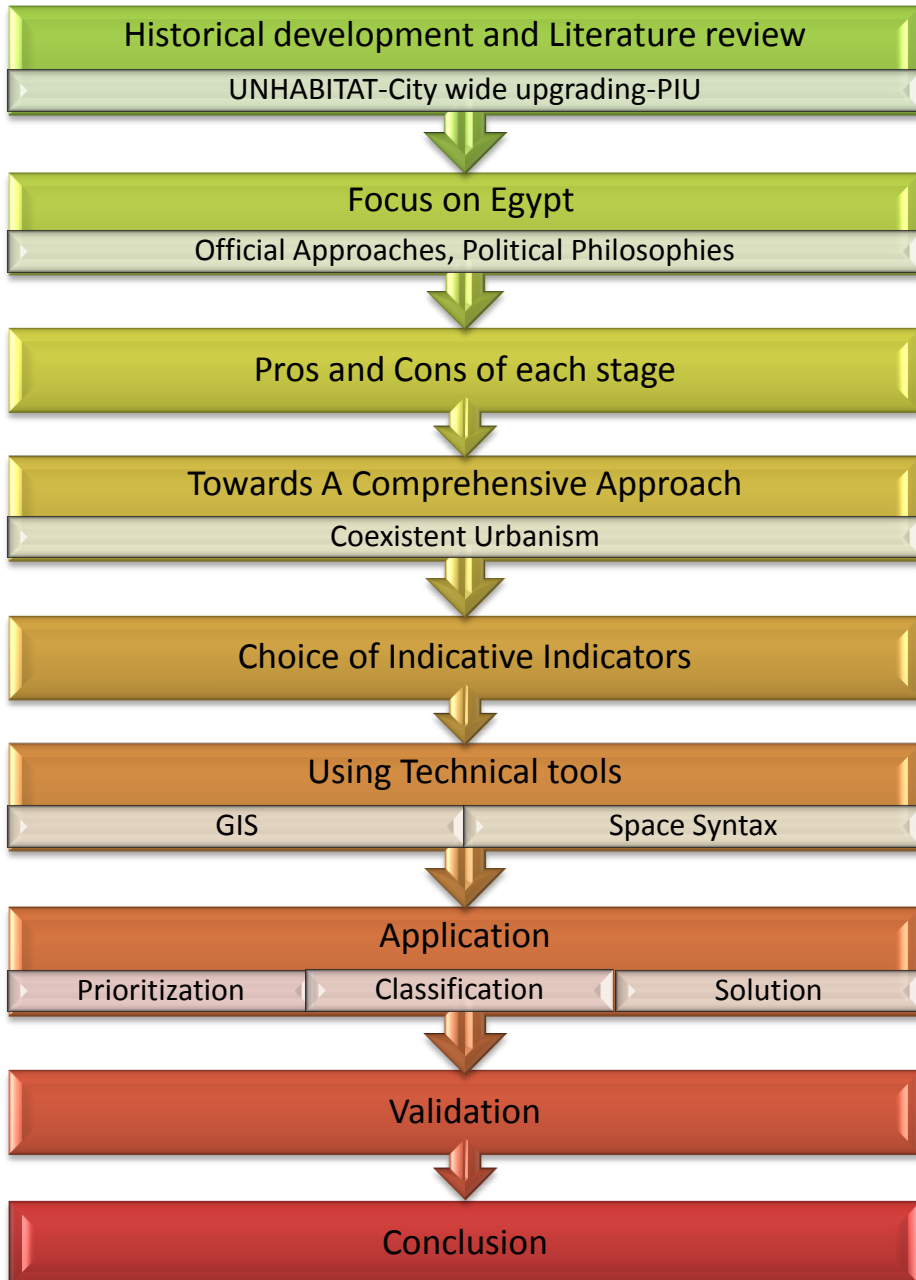
1.2.2 Aims and Objectives

Develop and test a methodology to integrate slums with their surrounding urban areas - that has at its core human development - in a comprehensive and sustainable way using theoretical tributaries and technical tools as GIS and Space Syntax.

1.2.3 Hypothesis

Improving road networks accessibility in informal areas can gradually change them into integrated and assimilated settlements with the surrounding urban environment. This process assumes the presence of a set of success factors that include an environmental approach (which shall be termed 'Coexistent Urbanism'), serious community will, supportive institutional formation and well-designed programs and mechanisms. Road networks accessibility shall be measured empirically using Space Syntax's key indicator integration value. 'Coexistent Urbanism' as a term shall be defined in the next chapters.

1.2.4 Thesis Methodology



1.2.5 Scope and limitation

Coexistent Urbanism as a term is used to delineate a comprehensive multi-faceted and desegregated approach to slum upgrading. Therefore, it is not limited to governmental classifications of slum areas (based on their safety level) or type of residence. It is developed to be flexible enough to offer various ways of intervention according to variations in slums' nature and location. Its focus is on urban feature segregation such as roads and accessibility. However, the true limitation appears when segregation exceeds these urban morphological features so that society itself becomes characterized racial or class apartheid. In this case, a different level of coexistence should take place side by side with Coexistent Urbanism; namely social coexistence.

1.2.6 Literature review

Informal areas/slums are complex and forked problem with mutual effects on various aspects. Thus, it is addressed a lot in many thesis and researches. These researches can be classified into two groups: the first focuses on *analyses* and the second on *new approaches* for upgrading.

A wide range of thesis and researches on informal areas focus on analyzing and evaluating one or more of the approaches applied to deal with slums problem. For example: Mahmoud (2010) evaluates the methods of upgrading deteriorated areas by using computer simulation models as a case study. Sameh (2007) focuses on one of the most important dimensions of the problem which is the role of indicators in developing slum areas.

Baker and McClain (2009) review the current experiences of private sector initiatives in slum upgrading activities with an aim to identify challenges and encourage good practice and opportunities. This paper presents different approaches such as the mobilization of private sector finance by community groups, direct marketing to the

urban poor, and the use of innovative land-use management techniques such as “transferable development rights”. Additional to examples of how the development community can innovate to encourage further private sector participation in slum upgrading activities.

Freire and Maria E (2013) discuss the alternatives available to finance slum upgrading in metropolitan areas and large cities. This paper reviews successive approaches to slum upgrading implemented by donors and governments alike. It then discusses various approaches to financing slum upgrades. Additional to showing the potential that combinations of private, public, and external finance provide for committed communities. Five cases of slum upgrading policy are reviewed, identifying the key elements that make them successful and discussing whether their methods can be successfully implemented in other regions and large urban areas.

Finally this paper concludes that success in upgrading slums depends on several factors, notably the capacity of the urban government to finance infrastructure and deliver basic services and the capacity of the slum dwellers to mobilize resources to improve their dwellings.

Sietchiping (2005) provides an improved methodology for analyzing the dynamics of slums in Developing Countries through integrating Geographic Information Systems (GIS) and Cellular Automata (CA) to model, simulate, predict and dynamically visualize the growth of slums. This paper examines factors that contribute to the existence and spread of informal settlements. Then, explains how factors underpinning emergence and growth of slums are accommodated within an Informal Settlement Growth Model (ISGM) that was applied to simulate and predict the growth of informal settlements in Yaoundé, Cameroon with slum allocation

accuracy up to 73%. In doing so, the model tests various mechanisms that motivate slums' growth, such as proximity to roads, rivers, market places, existing informal settlements, cultural and ethnic groups. Integrating physical, socio-cultural and economic factors that underpin slums growth provides a much stronger practical framework to achieve slum reduction.

This paper concludes that the proposed model can potentially enhance decision-making processes in urban planning, informed prospective slum policies and help predict the likelihood of slum emergence and growth, which will eventually improve the quality of life within developing countries' urban areas.

This paper is not limited to analyzing. But it proposes an integrated model that can evaluate, predict and contribute to slum reduction.

Also Thomson and Hardin (2000) offer a study that reviews the development of remote sensing and geographic information system (GIS) techniques for urban analysis. It then applies these techniques to evaluate several types of planning related information in a raster based (GIS) to identify potential low income housing sites in the eastern portion of the Bangkok Metropolitan Area. Their work demonstrates how satellite imagery can provide both site specific information on land cover for mapping urban residential land use, and also act as a medium to generate a variety of GIS coverages. The need for housing and the provision of related services is of the most common problem of rapid urbanization. This study advocates overcoming this problem through providing suitable data to achieve quality of planning and decision making processes

Other trends in the analytical aspects of informal areas problem depend on an analytical comparison between numbers of slums in different countries, aiming to achieve better living conditions. Verfasser (2010) compares three informal settlements in Africa-Khayelitsha (Cape Town), Kibera (Nairobi) and Manshiet Nasser (Cairo) as a tool to improve the living standard.

Another group of theses and researches offer a definite approach to deal with informal areas. For example, Syagga (2011) proposes slum upgrading through tenure security and improving infrastructure to provide a better living standard of the residents. His paper highlights the fact that a slum is often not recognized and addressed by the public authorities as an integral part of the city (UN-HABITAT, 2003). Considering this as one of the reasons why little data on slum dwellers can be found. Thus the legal status should be the key solution to upgrade slums. Aiming to alleviate social and economic conflicts rather than being just a legalization approach. This paper reports slums in Kenya with a particular interest and mentions its three distinct development paradigms concluding that individual titling is not the only form of tenure security and incremental approaches to tenure security need to be acknowledged and harnessed besides titling.

UN Habitat (2010) proposes a research to overcome one of the most obstacles to formulate appropriate policies and intervention programs for upgrading slum areas which is lack of strong knowledge base for these areas. This research develops a physical deprivation index that allows the ranking of small geographic areas accordingly to their levels of physical deprivation using GIS. This index is a composite index of four main dimensions characterizing physical attributes, sources of pollutions, available services and security of each area. Validation tests of this index was applied in Cairo governorate, Egypt revealed the ability of the proposed index to capture slums identified by the current governmental official list of slums in addition to other areas that were as equally deprived but not included in the official list of slums.

This formulated index focuses on the physical environment only and rank slum areas according to the physical deprivation. However, it acts as a glimmer of hope for those deteriorated areas

excluded from the official list of slums and may act as the starting point for official reclassification of slum areas in Egypt.

A previous use for the GIS by the UN Habitat was within the Department of Civil Engineering at the University of Cape Town. They proposed a model-based approach to informal settlement upgrading that is both structured and replicable through the use of a spatial data management system operated through a GIS system. Spatial database is used in data collection, data process and forms the basis for all decision-making. It covers all physical data pertaining to the site, demographic and socio-economic data, economic opportunities, physical planning and design data. They result is a comprehensive and integrated settlement upgrading methodology that is built upon a GIS-based spatial data management framework considering it as the basic building block for large-scale informal settlement upgrading (UN Habitat 2003).

Neelam et al (2013) proposes a systematic integrated approach to upgrade slum areas through identifying the factors of land associated with physical redevelopment. However the socio-cultural, environmental and economic aspects shall also be taken care of.

The identified parameter addressed in the framework (outcome) incorporate all tangible and intangible measures. The priorities of slum redevelopment strategies should incorporate the suitability of land with respect to identified factor.

This integrated technique to quantify the suitability of land for a proposed development taking in to consideration socioeconomic and cultural dimensions focuses on the land considering it as limited natural resource that is extremely aggrieved from the informal urbanization.

Livengood and Kunte (2012) proposed an approach to enable participatory planning using GIS to upgrade informal settlement. Their paper describes the use of Global Positioning System (GPS) devices to map informal settlements in Cuttack, India (case study) in ways that enhance and support residents' participation in the data collection and planning process.

Rather than relying on remote sensing to identify informal settlement locations, each settlement is visited individually by a mapping team comprised of community leaders and NGO staff. The mapping team meets with settlement residents to develop a detailed settlement profile and map the settlement boundary using a GPS device. This process has helped to open and sustain a dialogue between the residents of informal settlements and city government around "slum" upgrading, and has influenced the use of a central government fund to support local upgrading plans. This Participatory Settlement Mapping Project (PSMP) shows how GPS and GIS can strengthen and support the role of residents of low-income settlements in developing the information base needed for development.

Adopting a participatory approach in all stages of upgrading guarantees the resident satisfaction for the final results and avoids one of the common problems in slum upgrading which is lack of updated data.

Other disciplines - away from architecture and planning - also focused on informal areas problem from their respective field. For example Ali (2012) addresses the human development for slum areas considering these areas as a serious socioeconomic and demographic problem in Cairo governorate.

Adawi (2005) discusses the relationship between slum areas and national security through two dimensions; the first argued slum areas as a threat to national security, while the second dimension

explains a humanitarian approach that focused on the human rights of slum dwellers of the security.

Focusing on a certain dimension in slums problem deepens our understanding to a growing and a changeable problem. Yet, any way to intervene cannot be underpinned on any one scope and ignores the other dimensions. This seems to be the most recent realization in the international literature.

In recent years, a global trend seems to address a comprehensive approach to slum development that uses a citywide upgrading. Of these, two particular ones are interesting. The first is the Principles of Intelligent Urbanism (PIU) which is a planning approach by Charles Benniger (2001), and the second is called Street-Led approach by UNHABITAT (2012).

Unlike focusing either on analyzing the problem and the strategies for intervention or adopting a certain approach to handle the problem from definite perspective, the Principles of Intelligent Urbanism (PIU) is an urban planning theory composed of a set of ten axioms addresses a comprehensive approach to reconcile and integrate diverse urban planning and management concerns.

The ten Principles of Intelligent Urbanism are:

Principle One: A Balance with Nature

Principle Two: A Balance with Tradition

Principle Three: Appropriate Technology

Principle Four: Conviviality

Principle Five: Efficiency

Principle Six: Human Scale

Principle Seven: Opportunity Matrix

Principle Eight: Regional Integration

Principle Nine: Balanced Movement

Principle Ten: Institutional Integrity

Of particular interest are the principles from seven to ten because they resemble the approach of Coexistent Urbanism. Principle Seven: **Opportunity Matrix** enriches the city as a vehicle for personal, social, and economic development, through access to a range of organizations, services and facilities, providing a variety of opportunities for education, recreation, employment, business, mobility, shelter, health, safety and basic needs. This principle advocates creating opportunities that matches the variation in ambitions of the residents. Rather than seeking achieving fairness in opportunities, the controlling factor is the dream of every resident that should be reached through this matrix.

Principle Eight: **Regional Integration**, envisions the city as an organic part of a larger environmental, economic, social and cultural geographic system, which is essential for its future sustainability. This principle strengthens the comprehensive point of view towards any isolated settlements by considering the whole city as an organic part needs to be integrated.

Principle Nine: **Balanced Movement** promotes integrated transport systems composed of pedestrian paths, cycle lanes, express bus lanes, light rail corridors and automobile channels. The modal split nodes between these systems become the public domains around which cluster high density, specialized urban Hubs and walkable, mixed-use Urban Villages. This principle seeks improved accessibility through integrated transport system at the different levels.

Principle Ten: **Institutional Integrity** recognizes that good practices inherent in considered principles can only be realized

through the emplacement of accountable, transparent, competent and participatory local governance. It recognizes that such governance is founded on appropriate data bases, on due entitlements, on civic responsibilities and duties. The PIU promotes a range of facilitative and promotive urban development management tools to achieve intelligent urban practices, systems and forms. This principle is very important in any urbanization practice especially in cases that depends on the institution formation such as upgrading slum areas. Lack of integrity in this formation would obstruct the upgrading process.

Following years of isolated theories and segregated mechanisms for intervention, the UN HABITAT finally reached the conclusion of the need to the comprehensive approaches for intervention to upgrade slums areas, this is highlighted in their paper "Streets as tools for urban transformation in slums: A STREET-LED APPROACH TO CITYWIDE SLUM UPGRADING" (2014), this paper advocates the shift in the slum upgrading approaches from considering these areas as islands of poverty to a more comprehensive point of view by integrating slums with the overall city. UN-Habitat suggests a fundamental shift towards opening of streets as the driving force for citywide slum upgrading considering streets as vital elements in the improvement of quality of life in slums.

This paper outlined the street-led approach to citywide slum upgrading pointing out to the political will of the leaders and encouraging the involvement of residents, NGO's, municipal departments, private entities and civil society organizations in the process to guarantee the success of implementation stage.

Street Led approach is based on the prioritization of streets According to the ones that are likely to bring the best outcome in terms of development opportunities, poverty reduction,

optimization of land use and generation of wealth as a result of increase in property values.

This comprehensive approach adopted by the UN adds value to the approach proposed in this thesis. However, it lacks having indicators that could evaluate intervention. Improving accessibility cannot be a unified strategy for intervention in all slum areas along with the variation in their location, surroundings and urban morphology. Street led approach would rescue slum areas from being isolated settlements and integrate them with the city wide surrounding, but this integration should be directed to desired axes according to a definite methodology with various scenarios matching the variation of each slum case. Otherwise it would be to the detriment of other resources such as the agricultural land.

1.2.7 Slum definition

Informal areas phenomenon is defined by many terms. For example: "Slum areas", "Random areas", "Squatter settlements"....etc. "Informal areas" is the term often used, especially by the governments and official institutions in Egypt. While the term "slums" is sometimes used by various international organizations, for example: UN-HABITAT.

Various definitions explain slum area according to the main criteria on which each definition was formulated. Some institutions and countries formulate their own, while others lack definition though suffering from the problem, the Global Report on Human Settlements (2003) analyzed 29 cities, 8 of them lacked any formal slum definition while the others depend either on the construction materials or the legal status as basic criteria to slum definition.

UN-HABITAT (2002) defines a slum area based on the physical characteristics as "A contiguous settlement where the inhabitants are characterized as having inadequate housing and basic services

of a slum household", and defined a slum household depending on the living condition (the risks) of the residents as " a slum household is defined as a group of individuals living under the same roof facing one or more of the conditions below:

- Lack of access to improved water
- Lack of access to improved sanitation facilities
- Insufficient-living area, overcrowded
- Inadequate structural quality/durability of dwellings
- No security of tenure"

Another definition formulated by the UN-HABITAT (2007) is "a slum is a heavily populated urban informal settlement characterized by substandard housing and squalor". Both definitions target the physical environment represented in the shelter situation and the availability of the basic services, ignoring the human dimension represented by the indices that reflect the human development level. According to both definitions physical upgrading and/or improving public services would automatically remove the area from the national slum list. Any non-comprehensive definition of the area rather than its residents seeks to upgrade the urban area (hardware), while the software (residents) stills infected with many of the same frustrations and challenges. A widely used definition in Egypt has been formulated by the General Organization of Physical Planning (GOPP) in 2006:

“All areas that have been developed by individual efforts, whether single or multi-story buildings of shacks, in the absence of law and has not been planned. They have been developed on lands that are not assigned in the city’s master plan for development. Building conditions may be good, however they may still be environmentally or socially unsafe and lack basic services utilities”¹³.

13 IDSC, 2008.

After the famous Al-Duwyqa rockslide in 2007 that resulted in death of at least 119 and the injury of 55 others, the definition of informal settlements has been revisited by the Informal Settlements Development Facility (ISDF) and replaced with two distinctive terms; unplanned areas, and unsafe areas in the new Building and Planning Law (No. 119 2008).

- Unplanned areas: are areas that have been developed without applying detailed plans, land division plans or planning and building regulations. The most common illegal housing includes squatter settlements on public land, where land acquisition and housing are both illegal and also informal growth on agricultural land. Where land acquisition is legal but land use and housing development is not.
- Unsafe areas: mainly refer to legal deteriorated inner -city slums, squatter shanty towns and also the parts of the cemeteries used for living purposes, some of the areas under this are classified as unsafe.

Unlike the UN-HABITAT definition that focused on the urban environment, GOPP's definition depends on the legal status of the land and the housing, ignoring all other criteria, while the ISDF definition depends on a certain classification resulting in a failure in including all slum areas within this definition that identifies the official priorities for intervention and draws up official policies and strategies for improving slum areas.

Although Building Law 119 mentioned some areas that were excluded in the GOPP definition like cemeteries (slum people dwell a legal area without constructing illegal housing) as unsafe area, there remains many deteriorated areas excluded according to the ISDF classification and by default excluded from official intervention and upgrading.

From the above definition we could deduce a comprehensive slum areas definition as tri-dimensional; "Slum area is any area that suffers one or more of the following challenges:

- Inadequate housing, lack of basic services or infrastructure.
- Illegal status whether insecure tenure or un-planned areas.
- Depressing socio-economic indicators for dwellers."

This definition includes the physical environment, the legal status and the most important dimension which is the human being. Upgrading any slum area should develop all dimensions without excluding.

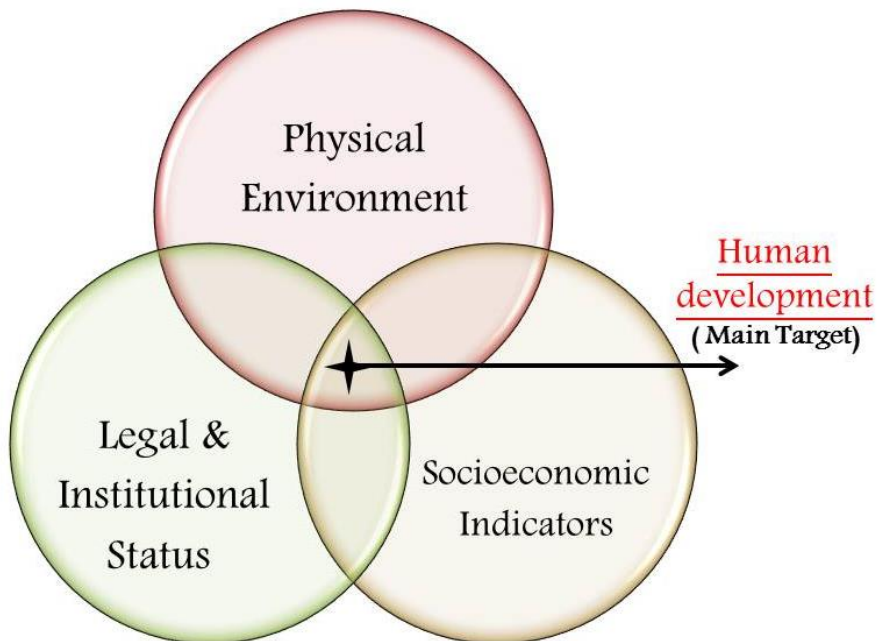


Figure 6 - Dimensions of slums problem

Chapter 2

Egyptian Experience: Informal areas Upgrading Schools *.

2.1 Slums' features: Ways of looking at slums: problem or a resource or both?

“To some extent, if you have seen one city slum, you have seen them all”¹⁴ Such a saying reflects the blind look towards slum areas, considering them all as duplications from each other depending on their most common features and problems; inadequate access to safe water, to sanitation ,to other infrastructure. In addition, environmental pollution is one of the greatest threats to dwellers' health. Most slums are overcrowded with poor structural quality of housing and low standard of living in addition to lack of services and security resulting in high crime rates.

However, by the social characteristics of slums' dwellers, residence is the actual indicator of the socioeconomic status. Insofar that the physical and urban environment are deteriorated, the social characteristics are depressed. This means that the physical reality of slums may reflect a critical socioeconomic status. Especially they may indicate high rates of illiteracy, unemployment, growth rate and low income. This perspective considers slum emergence and growth as a natural consequence for urban development movement (capitalist point of view).

* This Chapter is based on a paper published in The International Fayoum Conference " Prospects for engineering solutions and challenges of Era" Nov. 2013

¹⁴ Spiro T. Agnew (Vice President of the United States from 1969 to 1973)

From another perspective however, slums are a natural representation of the conflict in society between its classes and the wide gap between its strata. In other words, the Bourgeoisie who own the means of production and buy cheap labor power from the proletariat, which is the Marxism point of view (Davis, 2004).

On the other hand, when talking about the potentials of slums and the approaches to upgrade them, slums hardly seem duplications of each other. Each slum has its own location, surroundings and most importantly its people giving it a unique identity from all others. It acts as a hint to planners and stake holders to deal with slum areas not on the scope of its borders but on a wider scope including its interaction with the surroundings. Just as if it is an important urban organ that we are keen to make sure it is healthy, not a cancer we fear its spread by besieging it inside definite borders.

This describes briefly the approach of Coexistent urbanism which will be discussed in details later on.

2.2 Reflection of the different Egyptian political philosophies on informal settlements phenomenon:

The Egyptian society suffered the adoption turmoil of various political philosophies that affected its socioeconomic aspects and consequently affected the slums phenomena on the scope of their emergence, situation and growth. The PSE (Political, Social, and Economical) chain can be classified into three main periods:

2.2.1 Socialism:

While adopting democracy was one of the major objectives of the 23rd of July revolution in 1952. In practice, dissolution of all parties and amputating the pluralistic political system was the result and an inclination towards the Eastern bloc resulted in a socialist approach

(social democracy) where the State became more patriarchal responsible for the delivery of most basic needs.

Such a motive led the government to set new policies and legislations which included in the housing sector:

- The nationalization of the contracting company and restricting activities of the private sector contracting companies to activities not exceeding L.E30,000. Thus, the construction market was greatly affected, especially when the public sector companies alone were not able to meet the growing demand for construction.
- “Rent control law” was a legislation to reduce the rents of housing units built after 1944, where the rent was fixed for all new houses and reducing the rent by 35% of 1944 value¹⁵. This legislation made landlords prefer not to rent their units, the reaction that affected the rent housing ratio negatively.

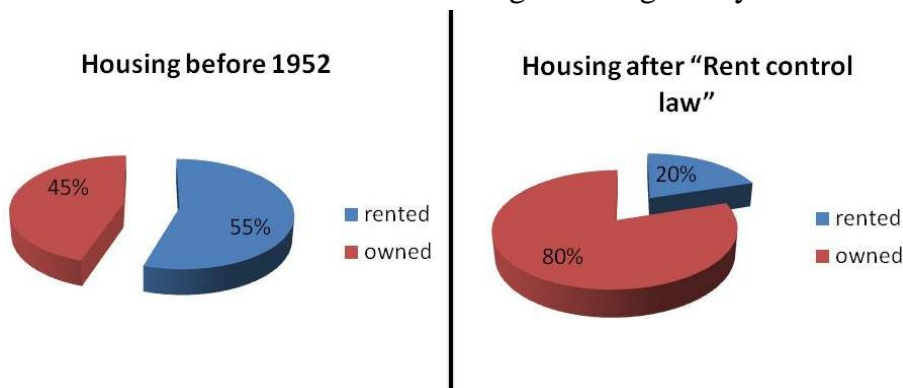


Figure 7 - Rent and Owned housing before & after Rent law

Source: Mohammed Ahmed Alfiky (Integrated Urbanism and Sustainable Development Ain Shams University and Stuttgart University)

¹⁵ El-Batran, M., & Arandel, C. (1998). A shelter of their own: informal settlement expansion in Greater Cairo and government responses. Environment and Urbanization.

- The official production rates for housing decreased from 1965 till 1974 to one-third of the housing units that have been built in the previous ten years.
- In 1960s, the government decided to change Egypt into an industrial country. Thus, establishing different industrial projects. For example: El-Nasr Company for automobiles and Egyptian Iron and Steel Company. This evolution towards an industrial country was accompanied by massive internal migration from rural areas to Cairo –urban area.

Although the results of such policies were not felt at the time and not labeled as slums phenomena, the adopted official policies during this period had a profound impact on the emergence of high urbanization rates beyond the capacity of the State to provide for sufficient affordable and reasonably located housing. Naturally, this later leads to the emergence of slums.

2.2.2 Economic Liberalization (Openness)

Economic liberalization policy was the cornerstone that opened the door for many societal and political transformation that indirectly lead to the growth of informal slums. The most common reasons were:

- The government decided to be responsible only for the provision of low-income housing, and that the private sector will be responsible for the middle and upper classes¹⁶. As a result the private sector started producing only upper class housing units for its profit, and the middle class didn't find an affordable housing so they started to move to the informal sector.
- Distribution of housing investments according to the type of housing units in 1983/1984 was the following:

¹⁶ El-Batran, M., & Arandel, C. (1998). A shelter of their own: informal settlement expansion in Greater Cairo and government responses. Environment and Urbanization.

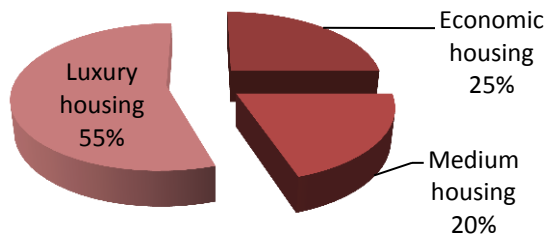


Figure 8 - Housing investments 1983/1984

Source: (ريحان غادة، ٢٠٠٨)

- During the previous period, the military consumed most of the budget creating a huge housing shortage multiplied later on by the demand and supply gap in the housing sector caused by rising prices following the liberalization policies.
- The sudden rise in oil prices 1974 resulted in the increased urbanization movement in the Gulf States, and in turn the migration of skilled Egyptian workers there. Rising wages and decreased productivity in Egypt, accordingly internal migration from rural to cities increased in Egypt to work in construction field, such increased migration met with the official housing policy and led to informal slums emergence.
- The sudden relative wealth of workers from working in the Gulf, declining agricultural land worth, demand for cheap housing, withdrawal of the state from the low-income housing provision created a condition so conducive for exploding slum emergence within and around cities.

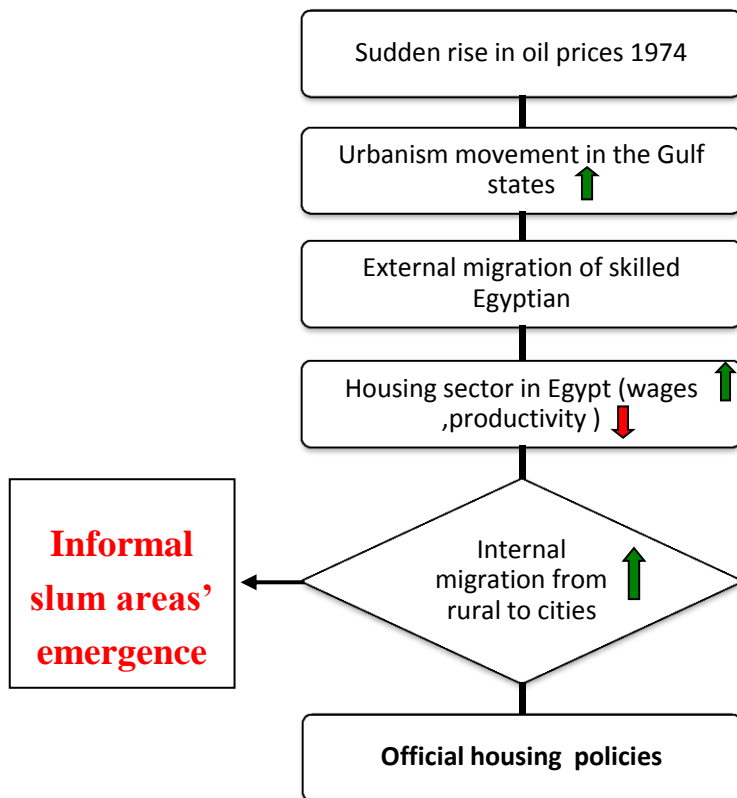


Figure 9 - The role of oil price & migration in slum emergence

Source: By Author

- The average cost of housing increased from (10-12 L.E /m²) in 1960s to (100 L.E/m²) in late 1970s and reached 160 L.E/m² in 1986.
- The government tried to decrease the housing crisis through reconstructing parts of the country (Port Said, Ismailia and Suez), that were destroyed during the war time 1967-1973 and through building new cities with economic and industrial base in the desert nearby Cairo and Giza to minimize population in thus cities. For example: the 6th of October city to West, 10th of Ramadan and Obour to East and 15th of May to South. These cities didn't succeed at that time to get populated by middle class strata as they lacked

services and infrastructure, so people preferred to stay in Cairo or Giza and just commute for work. Also these cities were not connected with good transportation infrastructure with Cairo or Giza so people found it difficult to move their residence to there.

“Infatih” policy was supposed to achieve prosperity for Egyptians, but instead it increased their suffering, changing their lifestyle, in housing and economic livelihood. Economic openness policy opened the door for a private sector to be the manipulator of the housing market and thus the capitalist state started to appear and swell in the Egyptian society without a safety net.¹⁷

2.2.3 Capitalism:

“Capitalism is an economic system characterized by private or corporate ownership of capital assets and goods. In a capitalist economy, investors are free to buy, sell, produce, and distribute goods and services with at most limited government control, at prices determined primarily by a competition for profit in a free market. Central elements of capitalism include capital accumulation, competitive markets, and a price system.”¹⁸

“Capitalism is an economic and political system in which a country’s trade and industry are controlled by private owners for profit, rather than by the state”.¹⁹

Capitalist oriented policies, in addition to the previous political strategies, widened the socioeconomic gap between various society strata and created a severe housing crisis resulting in slum areas’ emergence in 1980s in Egypt. From this time on the slums’

¹⁷ See for example Hinnebusch 1988 Egyptian Politics Under Sadat

¹⁸ <https://en.wikipedia.org/wiki/Capitalism>

¹⁹ Oxford Dictionaries

phenomena began to exacerbate, especially in the capital Cairo for the following accumulated reasons:

- Some agricultural villages were added to the urban edge during the capitalist expansion, as a result, land owners turned to real estate owners while poor farmers turned to unstable labor. For example: Bolak El Dakror



Figure 10 - Bolak El Dakror

- Areas at the edge of the cities offered by the government as temporary shelters: these areas stabilized and grown, attracting a large number of immigrants seeking decent housing, such as Duwaiqa.
- Slum areas in the city center established by the dwellers as a result for either the collapse of their homes or internal migration. For example: Ezbet El Saaida.

- Slum areas formed mainly to be dens for beggars, thugs and robbers. For example: El Mowaslah, Helwan.

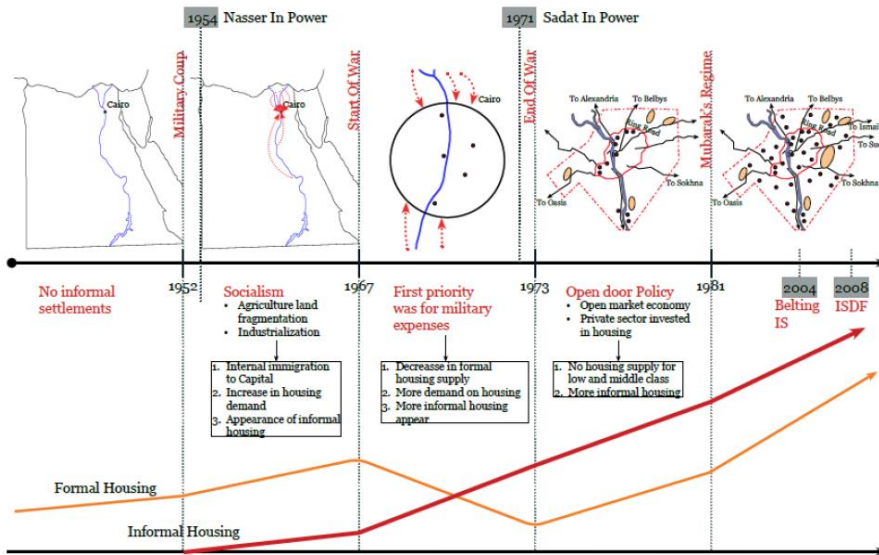


Figure 11 - Informal settlements development in Egypt

Source: Mohammed Ahmed Alfiky (Integrated Urbanism and Sustainable Development Ain Shams University and Stuttgart University)

2.3 Approaches provided by the government to deal with informal settlements

While acknowledging all government and NGO efforts to deal with informal areas in Egypt since the 1960's, this thesis will focus on approaches to deal with informal areas problem since 1993. This date is chosen as it is when an official body has been established to deal with the problem.

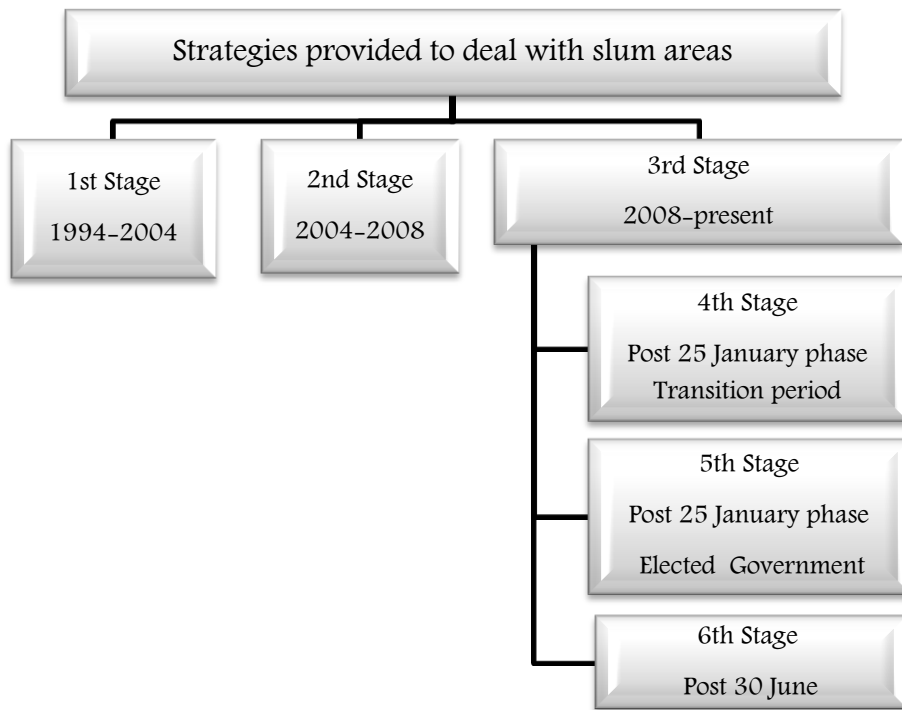


Figure 12 – Official policies provided to deal with slum areas

Source: By Author

Paul Knox (2011) argues that the profession of planning emerges out of series of crises and people’s responses to them. Planning tries to mitigate the adverse elements of capitalism, but Paul Knox also argues “makes capitalism viable over the long term”.²⁰

The overall view of the official solutions provided by the government to upgrade informal settlements over the years revealed the followings:

Although informal areas were a notable feature in urban since the 1980s, official attention towards these settlements did not started untill1990s.

²⁰ Urbanization: An to Introduction Urban Geography by Paul L. Knox 2011

“Attention is nascent from crisis” These words reflect the reality of dealing with the Egyptian slums.

Attention to certain issue (slum problem) does not arise unless there is an urgent need. In that case it was the security; to combat terrorism and in the wake of the earthquake 92.

Such attention resulted in an official systematic initiative in 1993 by directing national efforts towards informal settlements all over Egypt; this initiative includes two main stages:

2.3.1 First stage: Post Earthquake and Terrorism Attention:

"1994-2004 Informal settlements Development program"

This stage was mainly after the terrorism wave and the earthquake disaster that hit Egypt in 1992 that caused the collapse of many informal buildings. Fighting terrorism needed street widening, as well as infrastructure and basic services provision such as electricity, water supply, sewerage, street paving, tree-planting and landscaping for informal settlements as well as developing deteriorated areas.

Informal slum areas in the 90s suffered official neglect that resulted in converting these areas into outposts exporting extremism, unemployment and terrorism. This change in slum areas features affected negatively national security, which lead to directing intensive official attention towards informal settlements to overcome their threat on society. This governmental neglect during this period was the main reason for the exacerbation of slum issue until they became 567 informal areas in 1998, 81 area of them were concentrated in the capital²¹.

Some of the official interventions to upgrade informal settlements during this period were the following:

²¹ Ahram online, 26th Sep. 1998.

- The official policy towards 81 informal areas in the capital divided into two categories:

Table 1 –Official policies categories

Policy of intervention	Physical upgrading	Full Eradication
Number of areas	68	13
Causes	Areas could be upgraded and planned in addition to providing services and facilities	Informal settlement with large area near the city center. Included relocating dwellers in alternative housing in other areas.

- The government started to upgrade Manshiat Naser area for its location and high population density through the provision of 70,000 alternative adequate housing units for the dwellers on various stages²².
- Providing housing projects for low-income strata and offering some of them from the president to the dwellers as a part of October celebrations 1999²³.
- “The government disbursed two hundred and fifty thousand Egyptian pounds per area yearly (250,000 L.E./year) to provide infrastructure (water, sanitation, electricity and road pavement)²⁴. This segmented finance didn’t provide effective development system and played a role in the increase of informal housing as people were encouraged to move to it”.

²² Ahram, 13th Aug. 1999.

²³ Ahram, 22nd Sep. 1999

²⁴ (Abo-Elnasr, 2006; Alfaramawy, 2012).

- Despite these official efforts Dr. Atef Abid's government (1999-2004) was criticized arguing that such exerted effort was for political motivations as a result for the nomination of some ministers in their constituency to the Parliament.

2.3.2 Second stage: 2004-2008 informal settlement belting program:

The government started different policies to deal with informal areas, such as:

- A preventive policy "informal settlements belting program" that offer a detailed plans that can restrict informal growth of urban settlements.
- In 2006, the parliament passed a legislation to supply the informal settlements with infrastructure .This new legislation encouraged people to move more to the informal settlements instead of moving to the new cities as its more affordable²⁵.
- Participatory upgrading between official organizations, civil society and donor organizations.

For example: The cooperation between the government and the United Nations Development Programme UNDP (2006) to improve the living standards and the urban environment.

- One of the most noticeable projects implemented during this period was Zeinhum housing by the Red Crescent association in collaboration with some NGOs

²⁵ (Abo-Elnasr, 2006)



Figure 13 - Zienhum new housing 2004

2.3.3 Third Stage: (ISDF) Post Duwayqa Rockslide (2008-Present):

In 2008 the rockslide of Al-Duwayqa acted as a turning point in the official ways in dealing with slums.



Figure 14 - Rockslide disaster in Dwaiqa

As happened in the 1990s, this rockslide disaster resulted in paying more attention to slum areas represented by establishing the Informal Settlements Development Facility (ISDF) by presidential decree number 305/2008.

The ISDF took over different functions to ensure dwellers' safety, improve their living standards and Prepare action plans for development project.

ISDF classified informal areas into two main categories; unplanned and unsafe informal areas.

A) Unplanned informal areas: are not subject to detailed plans, land subdivision plans nor compliant with planning and building laws and regulations. Therefore, informal settlements on privately-owned agricultural land and squatter settlements on state-owned land (as identified earlier in Ashwa’iyyat types) mostly belong to this category²⁶.

B) Unsafe informal areas: are categorized according to their level of danger and the priority of intervention into four categories:

Table 2- unsafe areas according to the level of danger.

Level of danger	Level one	Level two	Level three	Level four
Description	threat to life, e.g. unstable geological formations, risk of flooding, railway accidents	unsuitable shelter conditions, such as shacks and makeshift or crumbling buildings	health risks due to lack of access to water or sanitation, or because housing on polluted sites or under high-voltage wires	where there is instability of tenure, for example if homes are built on state-owned land
Intervention	“immediate intervention”	“rapid intervention”	“improvement according to central authorities’ programs”	require action dependant on “priorities of local governorates”
Number of areas	35	281	68	20

²⁶ Unified Building Law (119), Marwa A. Khalifa. Redefining slums in Egypt: Unplanned versus unsafe areas

As a result for the variation in the level of danger and priority of intervention in slum areas, methodologies to deal with slums vary as well. Mainly they can be divided into strategies to intervene in the existing informal settlements and strategies to prevent the formation of new ones.

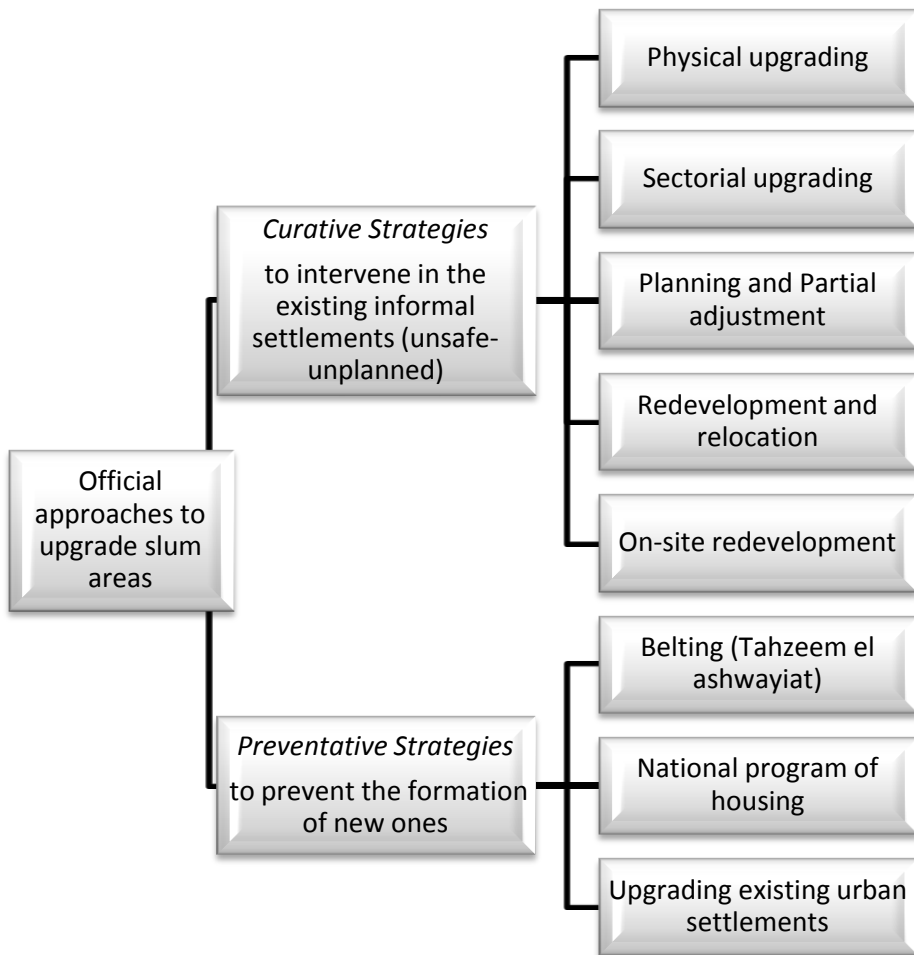


Figure 15 - classification of the Official policies to upgrade slum areas

A) Curative strategies

This strategy seeks to improve the living conditions of existing settlements. It is subdivided into different policies which are:

- Physical upgrading
- Sectorial upgrading
- Planning and Partial adjustment
- Redevelopment and relocation
- On-site redevelopment²⁷

Physical upgrading policy is one of the first official policies provided by the government since 1990s especially in 1993 concurrent with the beginning of preparing plans to upgrade slums in all governorates all over Egypt.

This mode of upgrading concerns mainly with the physical environment such as: providing infrastructure and public services, paving, plantingect.

Such policy can be implemented first by defining the priority of projects depending on the situation of the slum area and the dwellers' need, then saving financial support and setting the schedule.

Physical upgrading policy includes four main actions:

- 1-Providing a database for slum areas including numbers of housing units, families and individuals.
- 2-Setting planning regulations.
- 3- Infrastructure Provision.
- 4- Providing vacant places for public services.

Sectorial upgrading policy focuses on a particular sector in slum areas such as education, health, employment or youth ...etc. Although it is quite similar to physical upgrading, it differs in being

²⁷ Participatory Development Programme in Urban Areas (PDP) in Egypt, May 2010

not limited to physical environment but it focuses on socioeconomic sectors as well.

Such policy is often adopted by the civil society, donor agencies and the private sectors, some of the NGOS initiatives are:

- Individual project sponsorship under the umbrella of Corporate Social Responsibility (CSR) such as building or upgrading youth centers in poor neighborhoods by the Coca Cola Company.
- Donor Agency Involvement such as infrastructure and facilities upgrading in Manshiet Nasser and Boulaq el Dakrour by the Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ).

Physical upgrading policy is implemented on multiple stages and the funds are estimated according to the requirements of each stage, area of the slum, number of housing units and residents. Providing these required funds for the completion of the plan to upgrade slum areas is considered as the major problem in the upgrading process, which often leads to defragment the plan over five years or even more. This results in incompatibility between the current situation of the implemented plan and the target goals. In addition, rising prices would delay the plan schedule and prevent taking the whole advantages of the already implemented stages (ISDF 2008).

On the other hand there is another point of view that explains physical upgrading policy to be based on the argument that “physical interventions provide the bare minimum of humane living conditions that are of higher priority than other types of development, i.e. physical and spatial upgrading provide the ‘hardware’ needed for conducting ‘software’, like socioeconomic development activities”(PDP 2011).

In my point of view even physical upgrading policy is often concise in providing infrastructure and public services as saving funds is

always the controlling factor and acts as the major problem in this policy and supplying slums with pure water, electricity and sewage is the minimum level for dwellers to live in human level, there is no contradiction in paying attention to both physical environment and socioeconomic index at the same time, especially that the second target can be achieved by civil efforts to avoid financial problem.

In another word, physical upgrading can be implemented side by side with sectoral upgrading policy to get better results in the implemented area and offer comprehensive upgrading for both physical environment and its residents.

Planning and partial modifications is concerned mainly with the urban environment represented in roads network, urban fabrics and buildings, such mode sets an urban plan to widen main streets, improve roads hierarchy and provide public services. This urban plan will raise the value of the land; improve the traffic and the connectivity to the city. This mode mainly targets slums with high densities. For example: Hai El Salam -Ismailia

On-site redevelopment refers to a complete replacement of the physical environment through gradual demolition for the dwellings while respecting the legal right of residents in alternative housings in the same place (slum area). This mode targets informal settlements with highly deteriorated housing, chaotic urban fabrics, unsafe tenure and life threatening conditions.

Upgrading Hadayek Zinhom can be situated under this mode of intervention,

Redevelopment and relocation refers to a complete demolition of the slum dwellings and a relocation of the residents to new housings as well, whether at the fringes of the city or in new cities, this mode targets slums with high investment value of the land and slums threatening life (first level of danger according to ISDF categorizing). For example: Doweiq.

On-site development and development with relocation are considered as radical intervention modes.

The problem with these approaches is mainly the criteria on which relocation or on-site development is chosen, such criteria are estimated and not definite depending on the governorates reports about each slum area including the situation of housing units, their number, density of the residents, availability of public services and infrastructure, roads network, location and investment value of the land.

According to these reports the taken decision is on-site development if the slum area is large with high population density in some parts, deteriorated building and vacant spaces available to allow rarefaction. While it is preferable to use relocation of the residents to other places if the area of slum is small with low density, highly deteriorated building, state-owned land, high value of land and the most important factor is the possibility of providing alternative housing units or compensation for the residents.

The problem in development with relocation policy is that relocating residents to other places destroys their socioeconomic network with each others and with their neighbors and the difficulties in adapting to new communities in other places. Additionally ,these alternative housing units provided by the government rarely satisfies the residents needs.

B) Preventative Strategies are applied to prevent the expansion of existing slum areas.

Belting policy (Tahzeem al Ashwaet) is one of the policies adopted by the government to prevent the expansion of the existing slum areas by providing them with “room-to-grow”; an area surrounding the slums to enable their growth within a formal way.



Figure 16 - Tahzeem al Ashwaet in strategic plan (2027) of Fayoum city

Source: strategic plan (2027) of Fayoum city

- This policy offers a detailed plans for areas surrounding informal settlements and it is applied to most of slums even though the surrounding areas are usually vast agricultural lands.
- The detailed plans provided by the government takes too much time to prepare, that by the time they are finished, they do not match the real situation. The centralization in planning makes these areas lack official informal development units in each governorate to take care of them and take the latest updates in to consideration when detailed plans are prepared.
- These policy is applied to some informal areas even it is not the right policy to be applied and it seems to be ineffective.
- For example, El-Hakora slum area in Fayoum governorate, had a negative growth rate as the area became repellent for its residents. The area do not sprawl over the surrounding agricultural lands from 2008 till 2013, yet this was not taken

into consideration and a belting policy is offered to this informal slum area.

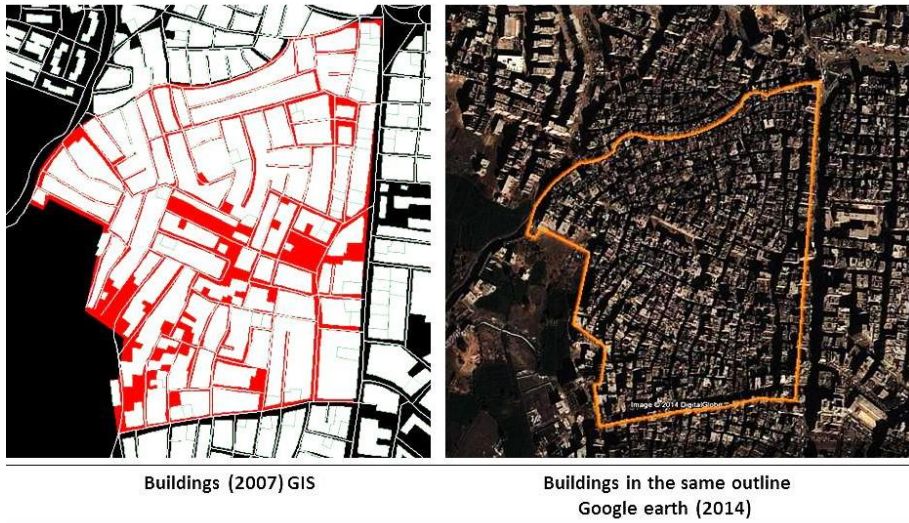


Figure 17 - Hakora slum area in Fayoum

- Many of these plans are not even implemented and they remains theoretical as there is no supervision entities to ensure implementing such plans.

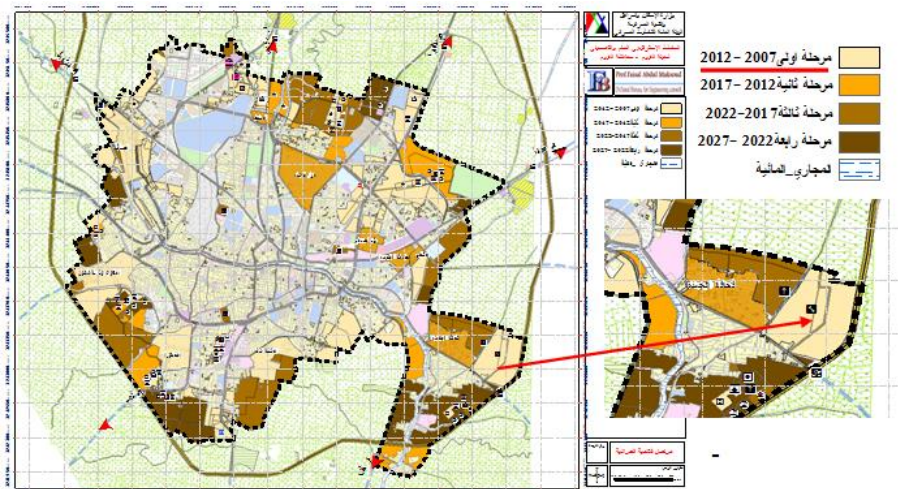


Figure 18 -- Fayoum strategic plan 2027



Figure 19 - Kohafa slum area, Fayoum, Google earth 2013

National program for housing policy tries to overcome some of the main causes for emergence of informal areas which are the lack of affordable housing units and incompatibility of supply with demand in the real estate market by providing new housing units for youth and low income strata. Examples for these units are villages on desert city edges (Hinterland Villages) and projects for the young graduates.

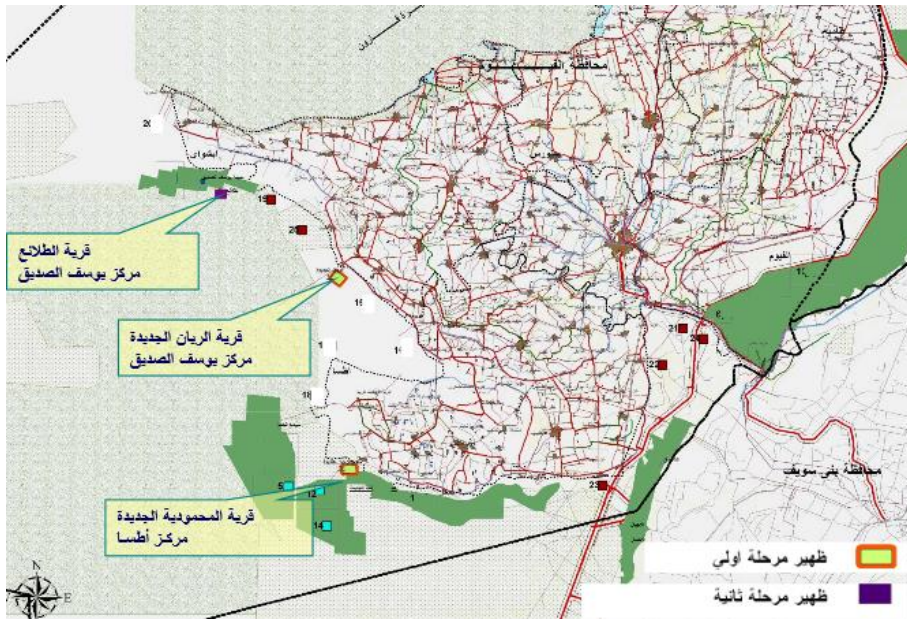


Figure 20 - Three new villages in Fayoum (Hinterland Villages)



Figure 21 - Talaa village (Hinterland Village)

Providing new housing units is an effective policy which contribute to the reduction of the housing crisis, such policy avoid encroaching over the agricultural land even in a formal way (belting policy) by offering housing units to low income strata in new cities or on parties of the city .The problem with this policy

lies in supplying these units with utilities and services to satisfy the residents, providing utilities acts as the major problem in such policy due to financial factors which leads to the delay or suspension of the project, additional to their location in remote places away from the city and lack of affordable transports to and through these new urban communities.

In another word, such policy actually would prevent the formation of some new slum areas and would contribute to minimize the housing crisis but always the problems lies in the implementation stages which decreases the efficiency of this policy.

Upgrading existing urban settlements strategy entails the preparation of strategic plans and detailed plans for the existing settlements to enable formal areas for needed housing and services to absorb the increasing population in a formal way. In addition to the adjustment of the urban edge (Haez) and setting a modified one matching the real situation to prevent informal growth.

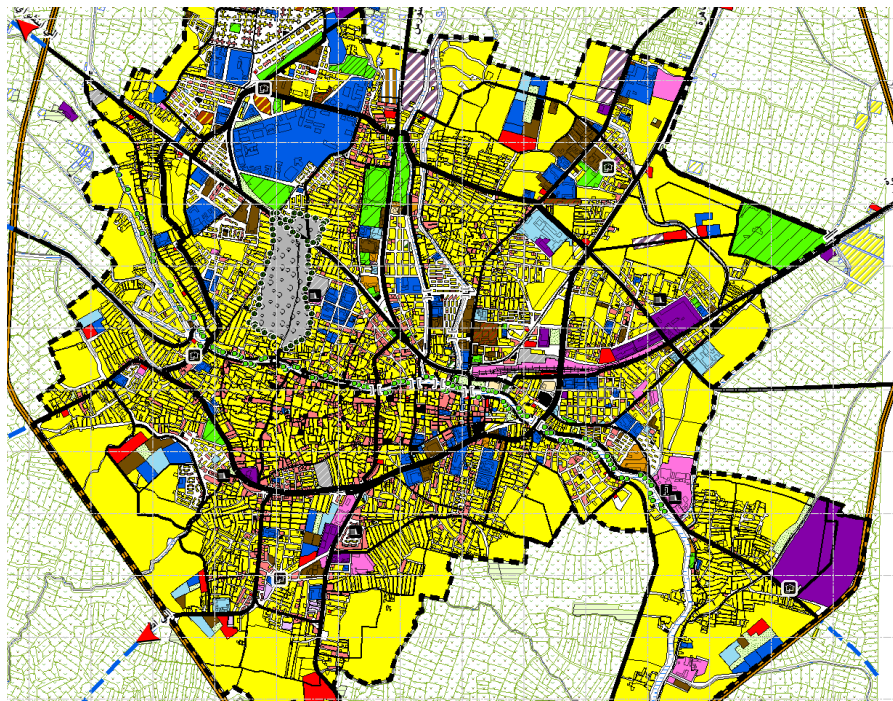


Figure 22 - Strategic plan of Fayoum city 2027 (land use)

This policy was criticized for the following:

- The time gap in preparing the strategic plan and the detailed plan for all cities and villages in all governorates all over Egypt and the centralization in preparing such plans result in incompatibility between these plans and the real situation which rapidly changes without supervision.
- Modifying the urban edge and setting a proposed one (New Haez) depend on area of land needed to satisfy the population in the target year which is estimated from the growth rate and these needed lands are added from adjacent lands to the urban edge, which are in many cases agricultural lands in stead of satisfying the increasing population in new cities. For example: Proposed Haez (2027) of Fayoum city added 668 acres of the fertile agricultural land to the existing Haez.

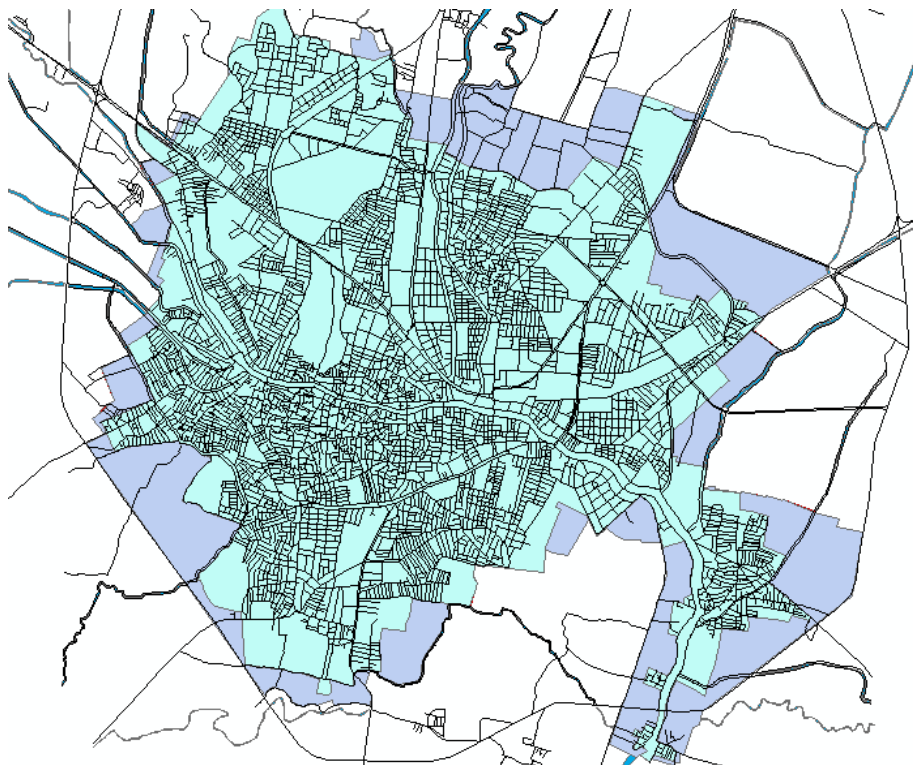


Figure 23 - Existing Haez and the proposed one (2027)

2.3.4 Post 25th January Phase: Transition period (11Feb 2011-30 Jun 2012):

- During the 25th of January revolution, many Egyptians marched in unity calling for “bread-freedom-and social justice”. Such a call reflects the suffering of a large segment in Egypt and a serious community will to change it. This revolutionary spirit had a major role in the formation of many NGOs initiatives (16,000 new NGOs established after the revolution) targeting with 90 % of their efforts the human rights²⁸ to upgrade Egyptian slums and the enhancement for the civil society role since that time.

²⁸ Youm7 online, 16 April 2013

A) Civil Society Initiatives: NGOs and Corporate:

- NEBNY Foundation (www.nebny.com):

Nebny Foundation has been formed by a group of Young Egyptians who participated in the revolution. They believe the success of the revolution did not stop at taking down the old regime, but they believe the revolution will succeed when Egypt becomes one of the leading developing countries in the World.



Figure 24 - Some of NEBNY Foundation's events

Their vision is: “To build a better and more humane socio-economic environment for Egyptians where equal rights are ensured, active involvement is encouraged and Egyptians are unified, which inspires the world to create a path for a better

and a happier tomorrow". This foundation focused its efforts in Manshyat Naser area.

- MA3AN Foundation (ma3an.com.eg):

This institution is under the leadership of a trustee's council including number of Egyptian artists and broadcasters, their dream is to improve the living conditions and achieve the human justice to 25 million Egyptian dwell slum areas, they believe in upgrading slum areas through its dwellers (upgrade human beings rather than physical environment).

One of the initiatives offered by this foundation is the campaign to gather one billion pound to support upgrading slums.

B) Governmental efforts:

Most notable governmental efforts to upgrade slum areas in the transition period (Feb 2010 - Jun 2012) can be summarized in the following:

- Dr. Essam Sharaf's(3rd Mar-1st Dec 2011) government announced to provide 1,000 housing units as a solution to the dwellers living in 16 hazardous and life-threatening slum areas containing 9000 dwelling and relocate residents to these alternative units according to dangerous precedence.
- On the other hand referring to the inadequate housing areas on private owned land, ISDF informed the governorates to allow clearance and demolition licenses for a limited period of time to enhance private sector investments in these areas. In additional to providing low-rent housing by the government to the dwellers of such areas.
- Raising the representation of agencies and ministries concerned with directing ISDF to the ministries' level and providing a comprehensive support from state agencies to enhance their decisions.

- ISDF organized a workshop entitled “local initiatives for the slums development’s field” in the presence of some local initiatives’ representatives contributing in upgrading slum areas to promote their enhanced role in such aspect. For example:
“Build your own country”, “The power of science” , “Set your goal”, “Made in Egypt”, “Human being”, “Initiative for garbage collectors 15 may 2011”.
- Egypt's Supreme Council of the Armed Forces (SCAF) approved the construction of 4000 housing units at its own expense in Port Said, , as part of an effort to counter informal settlements and minimize housing crisis in port said.
- ISDF prepared a national map for the development of random markets in all governorates all over Egypt which are found to be 1103 random market in order to create modern alternative ones to stimulate those markets role in the internal trade development, develop crafts and small industries associated with them and provide employment opportunities through adding these trading units to the official economy and labor market.
- DR. Kamal El Ganzory’s government (7th Dec2011- 25th Jun 2012) in collaboration with ISDF perform a huge project to upgrade unplanned areas which are estimated to be 80% out of the urban Egyptian environment by overcoming one of the major reasons behind informal areas emergence which is immigration from rural to urban areas as a result from lack of services and facilities through focusing on providing services in these areas.
- Official contribution also appeared in this period as a part of NGOs initiatives as the military council offered to donate a sum of LE50 million to build 600,000 housing units in six

months for the people living in slums as a part of the one billion campaign offered from MA3AN Foundation.

Overall, the transition period included various effective initiatives on both official and nongovernmental levels as a result for 25 Jan. revolution spirit that touched all Egyptians and promoted them to hard working ,Even though there are some criticism to be taken on upgrading slums' policy during this period:

- Lawlessness and uncontrollable security negatively affected any positive effort exerted in this period.
- ISDF initiative for the donor countries and local society to compatible their programs with the official priorities to upgrade unsafe areas rather than dealing with unplanned areas would result in nongovernmental neglect additional to the official neglect towards these areas despite their deteriorated situation, low standard of living and lack of services and facilities.
- Most of SCAF efforts were faced by increasing criticism from political parties and activist groups who argued its performance in general describing such initiatives as a try from military council to preserve its popularity and called for a clear timetable for transferring power to a civilian government.

2.3.5 Post 25 January Phase: Elected Government

A) Non-official efforts:

During this phase NGOs and corporate continued offering various ideas and initiatives to upgrade slum areas targeting the neediest and the poorest areas, such criteria makes NGOs initiatives effective rather than being commitment to upgrade areas announced by the government to be informal settlements, the controlling factor to choose areas to be upgraded by NGOS is the extent of need.

One of the most recent initiatives is that offered from Coca-Cola Company to upgrade 100 villages out of the neediest villages in Egypt.

On the other hand the government supported some NGOs initiatives such as; supporting “MA3AN Campaign” through rapid approval of their urban plan as a first project in EL Salam city.

B) Official strategies:

During this period there was intensive official attention towards upgrading slum areas on various levels, the most noticeable efforts from August 2012 till present are:

- The government and ISDF seek for setting new legislation to provide extra financial resources to be used in upgrading slum areas. For example:
 1. New legislation regulating unplanned areas’ fees as a result from providing them with services and facilities.
 2. New legislation for state lands’ management taking in to account social justice.
 3. New legislation to specify part of the real tax proceeds to upgrading slum areas
- ISDF started a huge project for upgrading 311 unsafe slum areas in Cairo governorate through on-site redevelopment policy, for example:

Upgrading “Ramlet Bolak” whose area is about 4 acres, it was categorizes as an unsafe area of the second danger level, such intervention is based on keeping dwellers in the same area after development in 4 residential towers on the same site while the first floor in each is for commercial activity in order to preserve the social and economic dimension.

- Provide lands with a strategic plan in all governorates all over Egypt for businessmen community to enable them

build new housing projects and relocate dwellers in life-threatening areas to such projects

- Signing a protocol for establishing “an informal areas development unit in EL Behara governorate in collaboration with the ministry of agriculture, the university, the ministry of irrigation and water resources and civil society organizations, in order to supervise the upgrading of 12 unsafe slum areas.

The ministry of agricultural provided EL Behara governorate with 50 pistons for agricultural residues that can recycle 50% out of the total governorate output, in additional it would ends the problems of burning rice straw and the black cloud within two years.

Despite the intensive official attention and the serious will for reform by the elected civilian government, the bureaucracy hinders every reform effort. A proposal presented to the ISDF by Fayoum governorate to enable it to upgrade Fayoum slum areas in a more effective way was turned down.

Fourth year architectural engineering students from Fayoum University, Faculty of engineering worked on the upgrading of Fayoum informal settlements for their planning project. The field work and the direct contact between the dwellers and the students created a humanistic concern among the students that motivated them to offer their proposed solutions in participatory planning that included the dwellers’ dreams in a workshop entitled “Dream for Your Block” attended by the governor, stake holders, officials, NGOs and dwellers’ representatives in order to bridge the gap between the aspirations of people dwell informal areas and the official attention and plans (Appendix a).



Figure 25 - "Dream for Your Block" workshop

As a successive step Fayoum governorate addressed ISDF (Appendix B) asking for the approval of forming a special unit to upgrade slum areas in the governorate through the following vision (Appendix C)

Unit's Vision:

Achieving integrated development and comprehensive sustainable upgrading depends on choosing human being as the main development axis (upgrading human being rather than the physical environment); this vision can be reached by developing different capabilities, developing integrated geographical information database and cooperation with NGOs, syndicates and universities. Such initiative was refused by ISDF (Appendix D) arguing that there were no unsafe areas in Fayoum governorate according to their national map. Although the following:

- Categorizing unsafe and unplanned areas is limited only to those areas defined by the government to be informal even though such official categorization has not been updated for a long time.
- There exist many deteriorated areas outside the official classification for informal settlements need to intervention and upgrading for example:

ISDF set a protocol to upgrade EL SOFY in Fayoum city although it is not defined as an informal area, which means that the national map is not enough to describe the situation of governorate slum areas.

Referring to the strategies of the coming stage, Dr. Khaled Gabarty president of ISDF announced that the coming stage includes the demolition of 26 unsafe slum areas containing 23,000 housing units, in addition to upgrading 40 kiosks areas on state-owned land.

2.3.6 Post 30 June: Transition period.

The 30th of June acted as another turning point in the political life in Egypt, this political transformation reflected its effects on various scopes, and informal areas aspect was one of them.

Most noticeable issues raised during this period:

- The decision to shut down about 1055 non-governmental organizations and to freeze their bank account²⁹ which weakens the enhancement of the civil society role in helping the poor and improving their living standard.
- The collapse of El Sheikh Mansour Bridge in El-Marg, Cairo. This accident highlighted various points in dealing with informal areas; the residents of Azbet El Nakhel were evicted

²⁹ Ahram Online, Monday 23 Dec 2013

from their area that became unsafe to alternative houses some of them are interim.

However the eviction took place in 2014, it depends on official statistics taken in 2012 to this area that reflected the time gap and the lack of updated data of informal areas that led to dwell more than one family in the same housing unit and some families remained homeless.

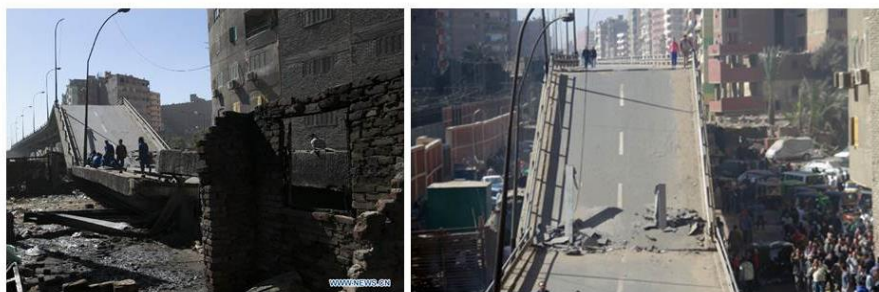


Figure 26 - The collapse of El Sheikh Mansour Bridge in El-Marg

- The eviction of the residents of El-Tawfekia informal area also was a noticeable case in this period, the residents were not evicted neither because the area is not safe nor because the houses are not appropriate, yet they were evicted because a new bridge will pass through the area (Mehwar El Zakah), eviction took place for investment value without proving appropriate alternative housing for the residents who became homeless³⁰.

These cases reflected the change in the official way in dealing with slum areas starting from evicting the residents by the Special Forces using teargas, putting restrictions on civil society participations and many violations using the political security as an excuse.

³⁰ Yehia Shawkat, Researcher in the housing rights of the Egyptian Initiative for Personal Rights

Additional to the effect of the political transformation on informal areas issue, it affected the Egyptian personality as well by causing a societal split.

As the strategies to upgrade informal slum areas varied along the years, some proved its effectiveness other didn't, the motive behind official attention to slum issue varied as well.

The motive behind official concern for informal areas was never based on the respect for the right of the dwellers in a decent life.

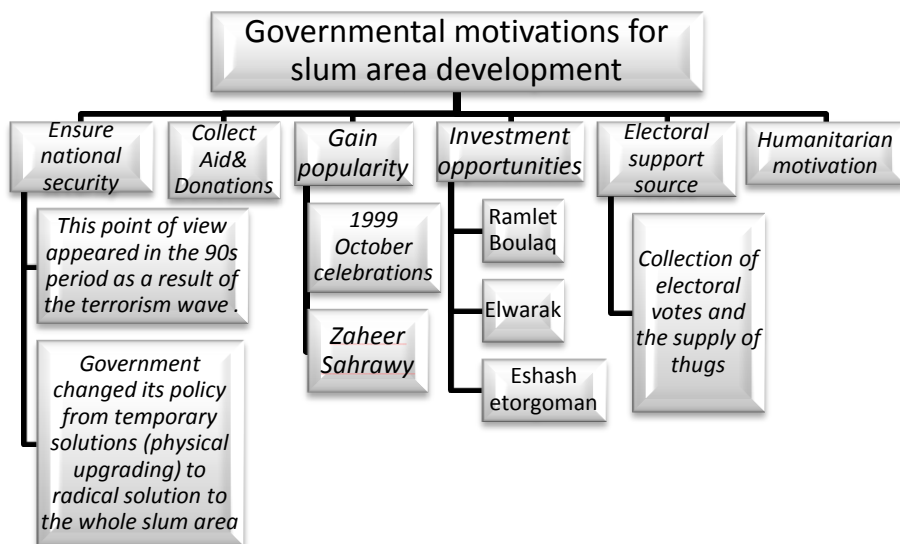


Figure 27 - Governmental motivations for slum area development

Chapter Three

Coexistent urbanism

All policies offered by the government and even the civil society deal with slum areas within their borders, considering them as urban spots with definite area, population, density and characteristics, ignoring the potentials in their neighborhood, location and surroundings that could act as a key entry point for an effective upgrade .

The only time slums are dealt with in a comprehensive way is when the slum location is considered valuable as an investment opportunity³¹.

In general, such policies offered over the years can be entitled "Patchwork upgrading" referring to the focused and limited urban look towards these areas.

Dealing with informal settlements within definite area and borders (Patchwork Upgrading) doesn't change the fact that the same land gathers both formal and informal slum areas adjacent to each other. Ignoring such fact does not prevent the mutual effect between those areas, adjacent in location yet apart in living standards. For example: Clashes at Nile city towers in downtown Cairo (2012).

Nile city towers in downtown Cairo is located adjacent to Ramlet Bolak slum area. This spatial proximity between two different urban modes leads to various problems, one of them was on 27 June 2012 when a fire broke out in one of the wooden shacks in Ramlet Bolak area and as a result to lack of services and facilities in this area the local residents directly headed to Nile city towers' staff asking for water to put out the fire.

³¹ See for example Cairo 2050 plan by GOPP when it was proposed to evacuate Cairo's city center's slums for high investment



Figure 28 - Nile city towers & Ramlet Bolak. Google earth 2013

When the towers' staff refused to help the residents and the fire led to the death of a five-year old boy, the residents of the shacks behind Nile City came to attack the hotel and tried to burn it down³².



Figure 29 - Nile City Towers in downtown Cairo.

³² Ahram Online, Thursday 2 Aug 2012

These events must direct the whole society to bridge the gap between any contradicting urban neighborhoods through integration rather than segregation.

3.1 Vision

This vision is mainly derived from three tributaries:

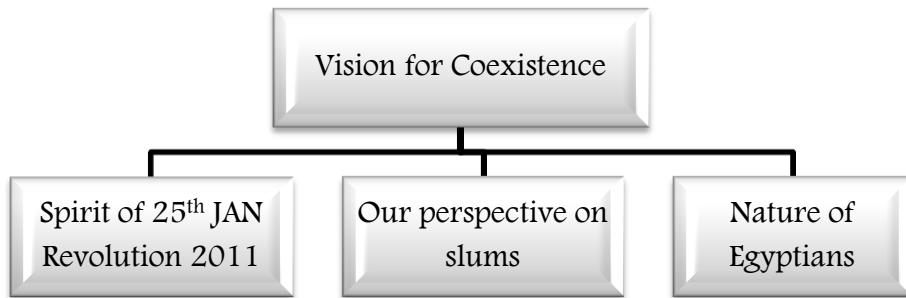


Figure 30 –Vision for Coexistent Urbanism

Spirit of the 25th January Revolution:³³Eighteen days brought out the best of us; cooperation, unification, tolerance, affiliation and altruism. For some time, the 25th JAN Revolution 2011 resulted in some gains that instilled within many Egyptians a new spirit and morals; to clean up and beautify the streets themselves, to determine their own destiny and to care for social justice. These gains should show us how the true spirit of Egyptians can be when they seek justice and have hope. They need to be studied and taken into account by every researcher in different fields, by stake holders, planners, developers, civil society...etc.

³³ This section refers to the 18 days in Tahrir Square (Jan25th – Feb11) in which exceptional manners and morals ruled the diverse crowds that sat-in the midan. These morals are highlighted regardless of what happened later.

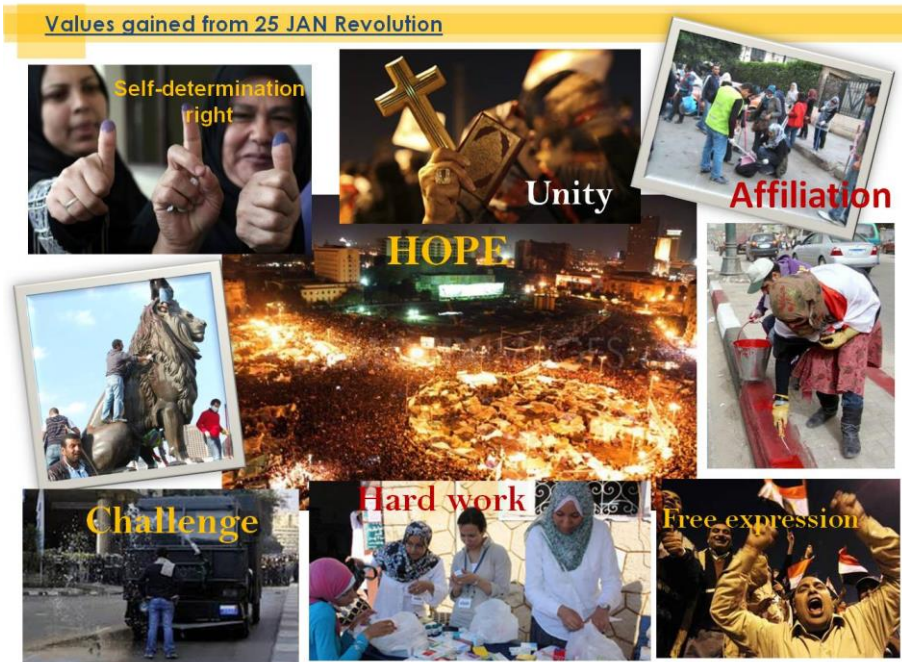


Figure 31 - Scenes from 25th Jan revolution

This revolutionary spirit strongly affected slum areas, their dwellers and strategies for intervention; even though this spirit was ephemeral and did not continue.



Figure 32 - Different urban modes in Egypt

Egyptian society's nature:

Egyptian society has traditionally been homogeneous and coherent. It had no history of apartheid between social strata or between slum dwellers and the elites. Unlike white people and Negroes in the USA or the apartheid in S.Africa for example.

Slums in Egypt are inhabited by all sects; doctors, engineers, employees...etc. The controlling factor that leads them to inhabit informal settlement, slum areas and marginalized urban communities lacking Services is always the financial factor and not the racial or class factor.

In such incorporated community slums', the challenges must be dealt with through a "coexistence vision" rather than marginalization.

This vision targets environmental upgrading, homogeneous urban patterns and harmonic communities through improving both the physical environment and the characteristics of the dwellers of slum areas; it seeks to gradually integrate and assimilate slum areas with their surroundings

3.2 Definition

Coexistent Urbanism is a proposed environmental approach that seeks gradual assimilation of disintegrated communities through dissolving physical, social and eventually economic barriers to naturalizing them as citizen within their greater urban area.

The proposed primary entry point for physical assimilation with the surrounding urban fabric is improving accessibility.

3.3 Why Accessibility?

Accessibility "is a general term used to describe the degree to which a product, device, service or environment is available to as many people as possible. The physical access to a space or service is one of its components" (UNHABITAT, 2012).

Informal slum areas suffer from various problems as inaccessibility, unemployment, ignorance, lack of services, insecurity and low living standards.

These problems are inter-linked, for example: improving living standards is related to job opportunities, and jobs are related to the economic activity, which is deeply affected by security (Figure 33).

In other words, the slum problems are a chain of challenges, in which choosing the right challenge to start with will ensure effective upgrading. From this standpoint, coexistent urbanism mainly targets improving accessibility (integration) as a key entry point to other challenges (proven by the axial test, as shall be shown in chapter 4).

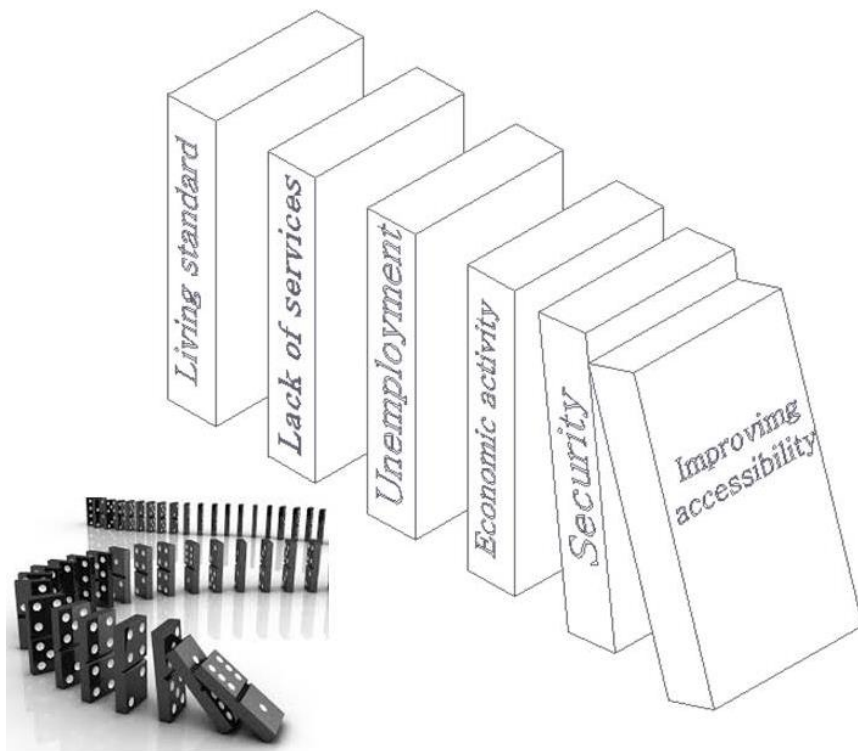


Figure 33: - The Slum areas' domino effect

This approach is dramatically different from patch upgrading, in which the planner chooses a symptom rather than a root cause to work on.

3.4 Correlation between Integration Values and Socioeconomic and Urban Parameters

The Space Syntax integration measure describes and analyses the patterns of architectural space at both the building and the urban level. In addition, it shows the cognitive complexity of reaching a street which is naturally expected to affect traffic flow, the crime rate, the economic activity, services and unemployment rates respectively. A key part of the thesis depends on identifying a relationship between accessibility and socioeconomic development. That is, the more accessible an area is, the higher the activity and the lower the crime is. This has been discussed and proven by many authors such as:

Narvaez *et al* (2012) show that accessibility produces multiplied values of benefits and transactions in terms of economic properties.

In their paper they explore three economic variables applied them in the city of Cardiff, Wales. They correlated it with council tax band, sold house prices and average price for each housing typology. This paper proved that council tax band is highly correlated with integration at a global level and the price per square meter for each dwelling reflects how the cost is higher in dwellings with larger urban blocks and less integrated spaces in the network, in which larger dwellings (terraced) and perhaps more accessible yet smaller dwellings such as flats are with the highest price per square meter.

MI MIN *et al* (2007) identified the influence that spatial configuration exerts on the location of different types of businesses in terms of land use. Their paper proved that Integration (a characteristic of spatial Configuration) is an influential factor that

can reveal the location or allocation for each type of industry. The Integration is a factor that greatly influences the location of commercial facilities. The business facilities and service facilities showed a high location tendency when the Integration values were larger and as for housing facilities, they showed a high location tendency when the Integration value was lower. In addition to the correlation between the Integration and the average declared land price was analyzed to be very high. This shows that the Integration value exerts very significant influence on land value, which reflects the results of land use. Thus they confirmed that Integration, which is a syntactic property of spatial configuration, has a close correlation with land value and the location propensity of leading types of industries.

Another correlation is that between integration values and pedestrian walking volume. Lee and Seo (2013), in their paper indicated that global integration among space syntax variables showed statistically significant associations using the walking survey data for 10,000 locations across the city of Seoul. However, it was only significant in the residential zone.

Others discussed crime as influenced by integration values. Jones and Fanek (1997) offered an approach to deal with crimes through prevention rather than solutions based on the assumption that crime results from too many criminals and insufficient criminal justice. In their paper, they concluded that higher pedestrian and vehicular movements are coupled with higher integration values. It is common sense that criminals, in general, do not prefer to work in environments where there are high risks of detection and apprehension. Risky environments for criminals include those where there is high use by citizens. Thus, lower crime rates should be expected in areas with higher values of Integration.

Local Evidence in Egypt

In Damietta, (Egyptian Cabinet & ISDF, 2010) a project aimed to improve 13 slums areas by constructing a ring road along 8 km and 22m width as a development axis to connect them. It was found that by this increase in accessibility between the settlements, the living standard of the dwellers of these 13 slum areas improved, providing 5,000 job opportunities in furnishing production (Figure 34).



Figure 34 - Rind Road linking 13 slum areas in Damietta

In Fayoum, the same thesis was tested by correlating non-residential buildings in the city with the axial map. It was noticed that almost all of these buildings are located within the 10% core of integration (Figure 35).

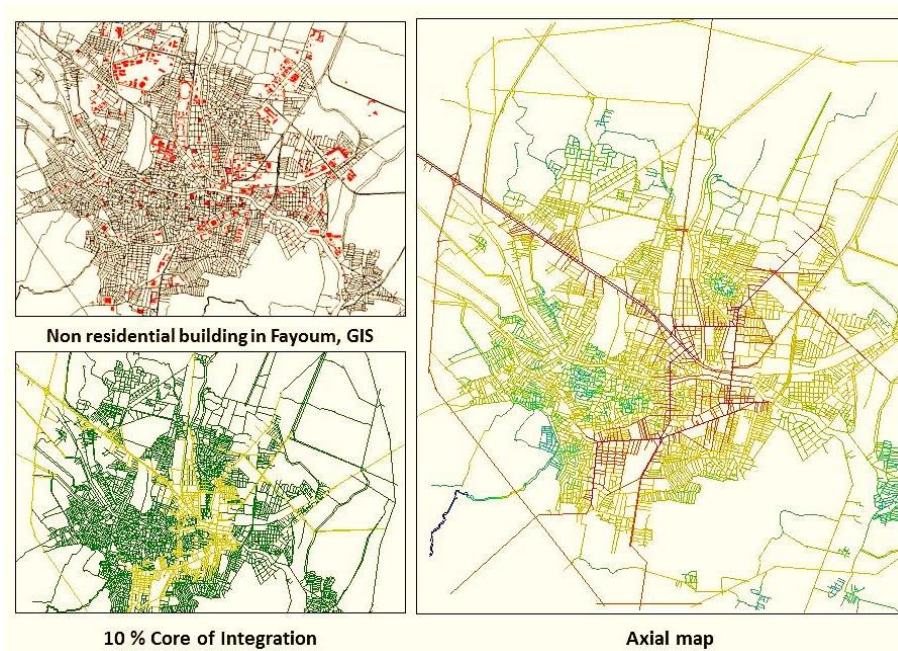


Figure 35 - Overlaying Non residential building with 10 % core of Integration.

Even regarding crime rates, El Sofy is an area considered to be the criminal hub in Fayoum city, according to police records. This area has been found to have the most segregated chaotic urban pattern with the lowest integration values as well.

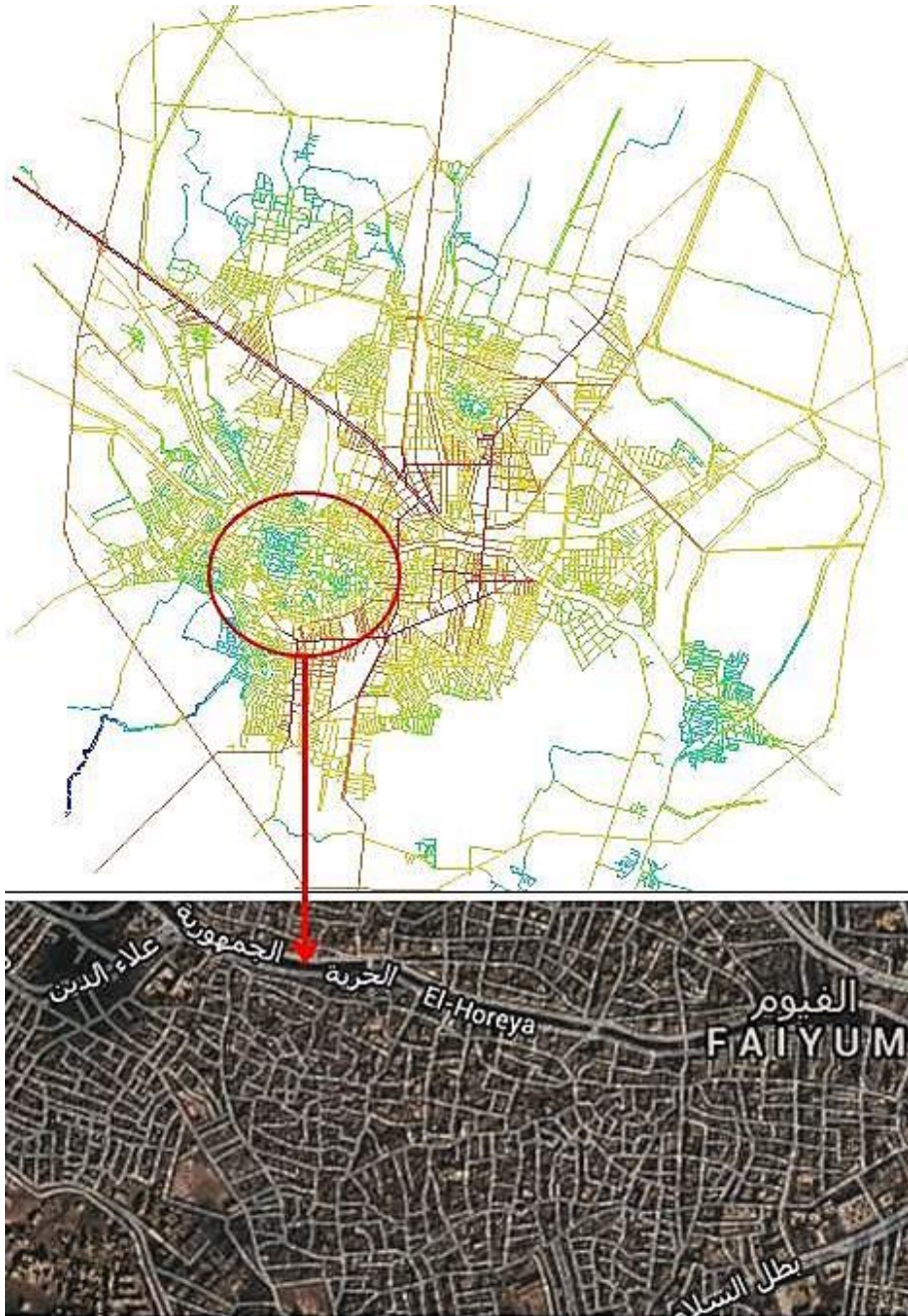


Figure 36 - El Sofy Area, Fayoum city.

Thus, it can be concluded that several socioeconomic and urban parameters such as economic value, social parameters and crime rates are correlated with Integration Values.

3.5 Tributaries of coexistent urbanism

Coexistent urbanism is not a term without roots. It can be analyzed and traced back to several sources that form our culture and paradigms, both locally and globally. Figure shows some of the forming tributaries that make the term viable, logical and adoptable to the Egyptian context in particular.

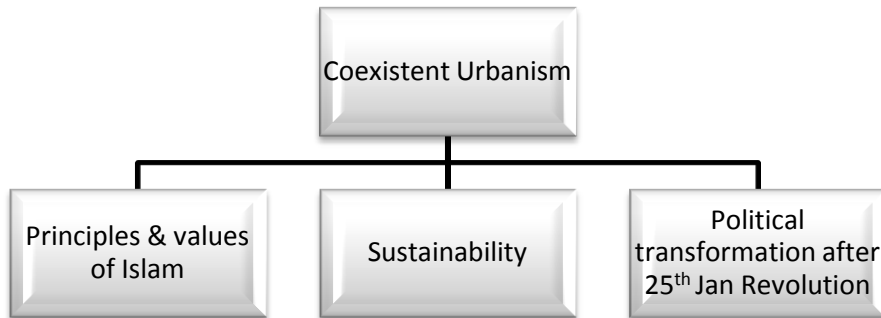


Figure 37 - Tributaries of Coexistent Urbanism

3.5.1 Principles & values of Islam

Islam is the most obvious source for coexistence concepts. Not just social but physical, political and even environmental. Muslim scholars agree that Islam is not only religious teachings and legislation but also it is a way of life. It honors human beings and regulates relationships with all aspects of life. It regulates neighbor rights, nature conservation and urban planning that depends on formulating a city shape that can deal with individuals' daily activities (Akbar, 1992). The concept of coexistence is very clear in Islam's teaching of building height rights, neighbor's rights, public roads rights, etc. These rights are provided regardless of class, race or religion.

3.5.2 Sustainability

Development in a sustainable way ensures long-term coexistence. By cohabitation with the natural surroundings, preserving the resources for both the present and the future guarantees a stable, viable and cohesive society. The 10 principles of Intelligent Urbanism (Benniger, 2001) includes many items about harmony and balanced use of resources and a specific reference to a "city's providing equal opportunities to its citizens."

3.5.3 Political transformation after 25th Jan. Revolution

The fourth and final tributary of the concept is local and specific in nature. The 25th January revolution was a turning point that resulted in a massive (yet short-lived) social transformation including all aspects and all strata. Thus, any development in Egypt must take into account such transformation especially when it is related with slum areas and the destiny of their dwellers. The 18 days in Tahrir square amalgamated all political, ideological, social and economic differences to form a unique model of a totally "coexistent" micro-society. The temporary "euphoria" that followed had many impacts on citizen and NGO involvement in slum area development unwitnessed in Egyptian history and changed the official view of the government towards it.

3.6 Coexistent Urbanism vs. Patchwork Upgrading

We can now approach a clearer distinction between the differences between the classical approaches to upgrading which shall be called "patchwork" development (sometimes referred to as patchwork development) – due its spatial and sectoral selectiveness and the new concept we call Coexistent Urbanism.

Table 3 - Differences between Patchwork Upgrading and Coexistent Urbanism

	Patchwork Upgrading	Coexistent Urbanism
Concept	Slums are regarded as blocks of areas or islands within certain borders ignoring their surroundings	Slums are inseparable organs within the city body. Best dealt with through integration with the surrounding urban areas.
Target	Physical environment	Human potentials
Motivation	Slum areas are either a threat to national security, the regime, an investment opportunity or to collect international donations and sympathy.	Decent living standard is a definite global and unalienable human right. Inhabitants have a right to develop to their maximum potential.
Focus on (Scope)	Micro: slum area itself , within certain borders	Macro: comprehensive view towards slums with their surrounding areas.
Dealing with dwellers	In substantial factor	Essential controlling factor
Continuity	Physical patchwork upgrade includes certain projects (drinking water supply-sewage ...etc. their benefits vanish gradually with increasing population over the time.	Improving slums integration is a starting point to a homogenous urban pattern with the surroundings on the long run.

Source: By Author

3.7 Model for applying coexistent urbanism as an integrated approach for upgrading informal areas

It is now possible to proceed to define and formulate “coexistent urbanism”. Coexistent Urbanism is a new proposed approach that deals with informal areas in different way. Rather than dealing with informal areas locally and through focused intervention, it seeks to gradually assimilate the community with its surrounding urban area socially, economically and physically by integrating its street fabric first until they become totally dissolved with the surrounded urban

areas and become a harmonious part of the surrounded urban social and economic structure. On the long run, such assimilation combined with directing growth along a development axis could even spare away from strategic agricultural land.

The primary tools used to analyze and diagnose the suitability of urban areas for this approach are Space Syntax and Geographic Information Systems.

The Coexistent Urbanism approach is based on a chain reaction that takes place following this key entry point. This chain reaction is not just expected to take place in series, but also in **parallel**. For example (Figure 38) below shows two branches the first is the **physical** and the other is the **non-physical** (which includes the institutional). The Non-Physical includes community mobilization, formation of local NGO's, activating governmental-public partnership and most importantly; mobilizing activists from OUTSIDE the community (e.g. students). This branch of the chain reaction was tested through the Dream for Your Block Initiative. The second branch covers the physical aspects which include urban morphology and sways on to the non-physical such as the social and economic.

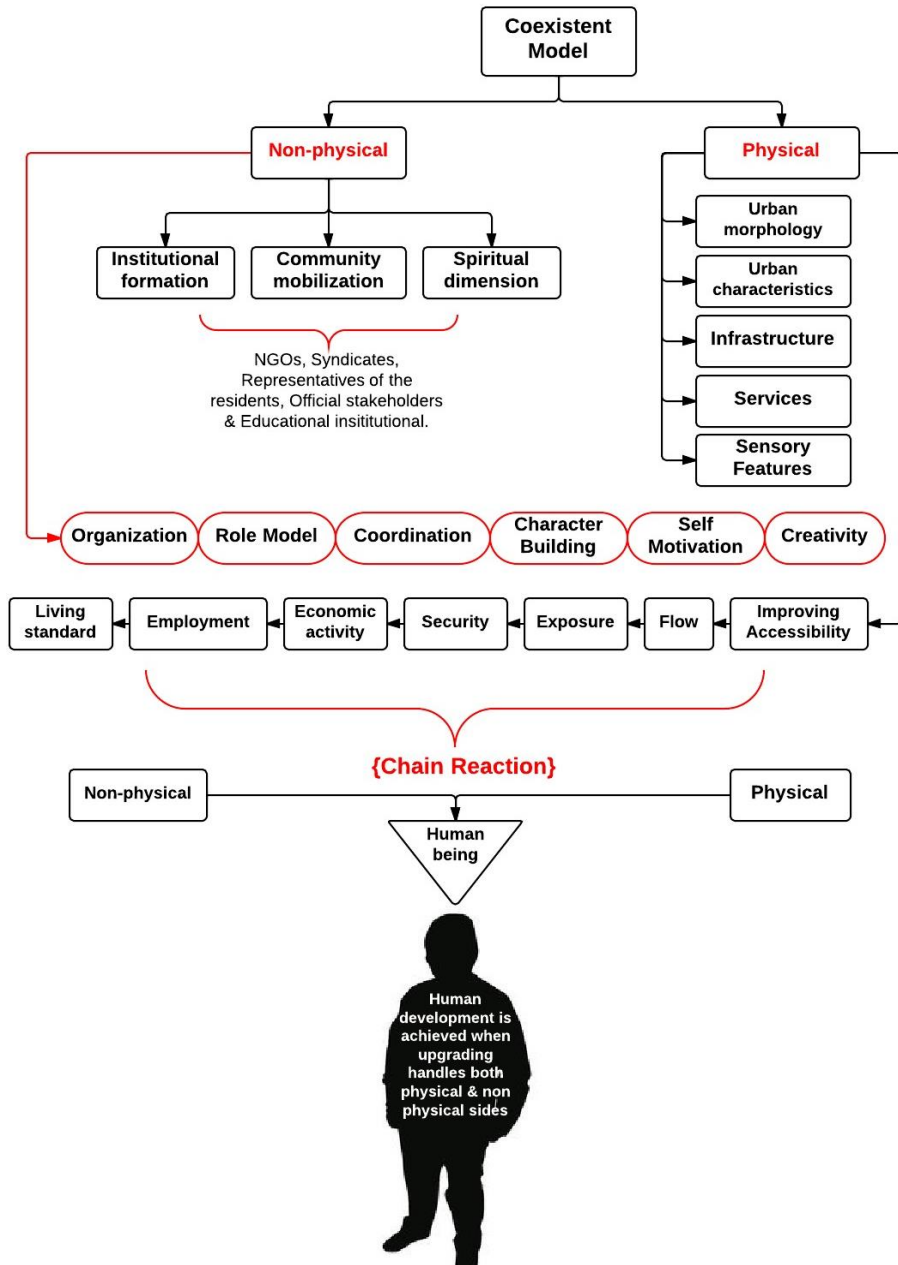


Figure 38 - Coexistent Model

Source: By Author

The physical dimension with its components represented in urban morphology, urban characteristics, infrastructure, services and

sensory features starts from the right side of the chain reaction (physical environment) especially improving accessibility, while the non-physical dimension starts from the left side of the chain.

The human being is the balancing force of this chain (the real indicator of the development) thus human development (the concept of Coexistent urbanism) is not achievable unless the chain is balanced; upgrading both branches side by side.

1- Non- physical dimension: Is an important component of coexistent model; Perfect institutional formation bridge the gap between users (slum dwellers) and stake holders and enable dwellers to share their dreams for their lands with planners and stakeholders (Institutional Integrity³⁴) that would avoid the dwellers unsatisfactory with the intervention methods and final results .

Including NGOs in the institutional formation would help in solving problems excluded from the official attention.

Perfect institutional formation collaborated with community mobilization guarantees achieving the other dimensions;

- The social dimension: slum areas suffer from depressed social conditions represented by high rates of illiteracy, unemployment and crime rates which are always above the average of the city/nation. These aspects should be dealt with side by side with the coexistent theory (improving accessibility).
- The economic dimension: though the recorded high rates of unemployment, most slum areas are characterized by having a strong economic force, despite being informal; not integrated with the formal economy for legislative hurdles, it has noticeable contribution in the national economy. These

³⁴ The tenth principle of Intelligent Urbanism (PIU)

economics need to be encouraged, strengthened and integrated with the national economy.

2- Physical dimension:

This dimension handles the physical environment through coexistent theory: that includes the theoretical methodologies to prioritize, classify and upgrade slum areas depending on various platforms (Arcmap & Depthmap), various steps summarized in the following chart.

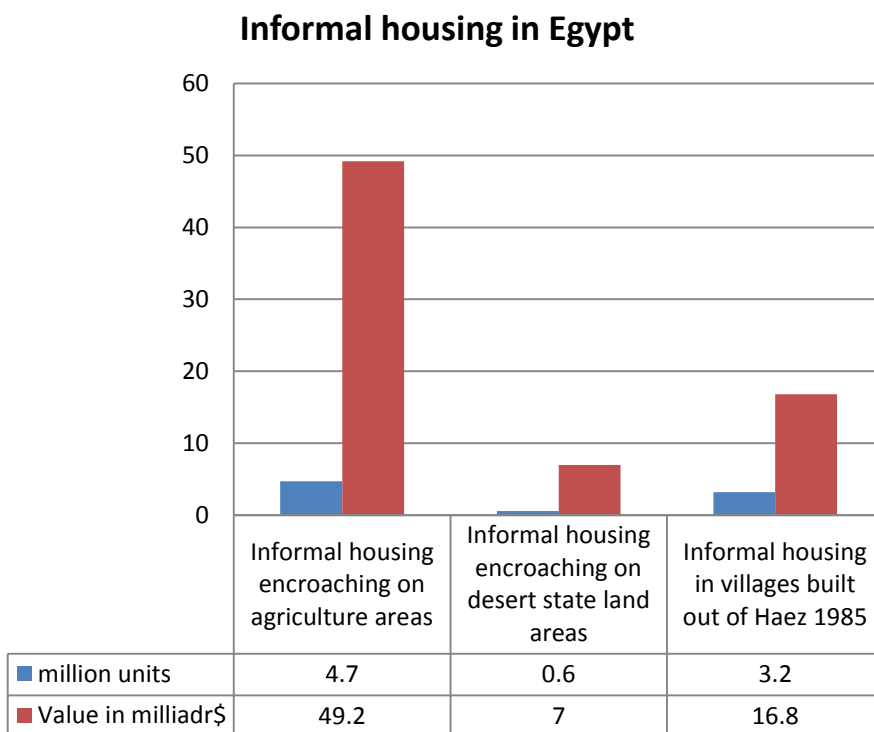


Figure 39 – Informal housing in Egypt

Source: International Labor Organization ILO 1997

Coexistent intervention gives nature the highest rank imposing creating development axes to direct urban growth away from

agricultural land as well as assimilating slum area with its surrounding.

3.8 Principles of Coexistent Urbanism

3.8.1 Individuality

Dealing with slum areas necessitates acknowledging the individuality of each slum area. Coexistent upgrading is not a global model or a unified solution to be applied to any slum, but rather a proposed approach that poses a coexistent vision that could be applied to any slum with different details for each according to the circumstances of each area respecting its distinction.

Although this principle is quite important it is often missing in the official solutions which look at areas' individuality with blind eyes except in case that such informal area has investment opportunities.

3.8.2 Solution prioritization decision making criteria

Priorities Triangle is a triple-edged decision making process to define the priorities in each slum area from a comprehensive point of view. Defining certain priorities derived from complementary factors (Dwellers needs, Programs Analysis, Real situation) from the starting point of the upgrading plan will ensure effective intervention.



Figure 40 –Priorities Triangle

On the scope of differentiating between numbers of slum areas a Hybrid Methodology for Prioritizing Coexistent Urbanism Development is used. This methodology is explained in details and applied to Fayoum city slum areas in chapter 4.

3.9 Tools

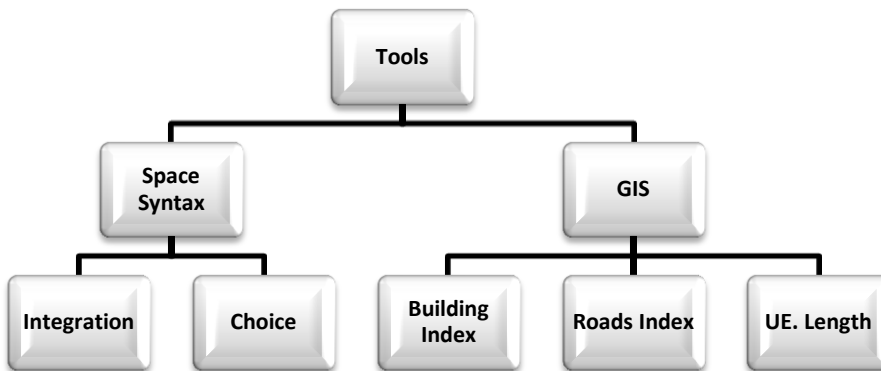


Figure 41 –Tools of Coexistent Urbanism

3.9.1 Space Syntax

Space Syntax software such as Depthmap analyses the spatial configuration of a pattern as a set of axial lines measuring certain indicators such as the integration value and choice. Accessibility between street segments accordingly describes how easily one navigates between streets and where obstructions are. Originally, it was conceived by Bill Hillier, Julienne Hanson and colleagues at The Bartlett, University College London in the late 1970s to early 1980s as a tool to help architects simulate the likely social effects of their designs. Now, it is applied to a wide array of applications such as crime, transportation, military and also informal/civil areas³⁵.

The three most popular Space Syntax analysis methods of a street network are Integration, Choice and Depth Distance. This thesis uses the first two measures, in particular integration analysis, because its values are quite related to various urban and socioeconomic indicators. Thus, integration would help in better understanding of the informal areas features and would contribute to better upgrading approaches..

Integration: Is one of the most popular Space Syntax analysis methods of a street network. It measures how many turns one has to make from a street segment to reach all other street segments in the network, using the shortest paths.

The street segments that require the least amount of turns to reach all other streets are called ‘most integrate’ and are usually represented with warmer colors, such as red or yellow. If an

³⁵ For detailed information about Space Syntax theoretical preliminaries and techniques see (Hillier.Bill and Hanson.Julienne, 1984).

integration radius is identified; it could be in local scale or at a certain radius.

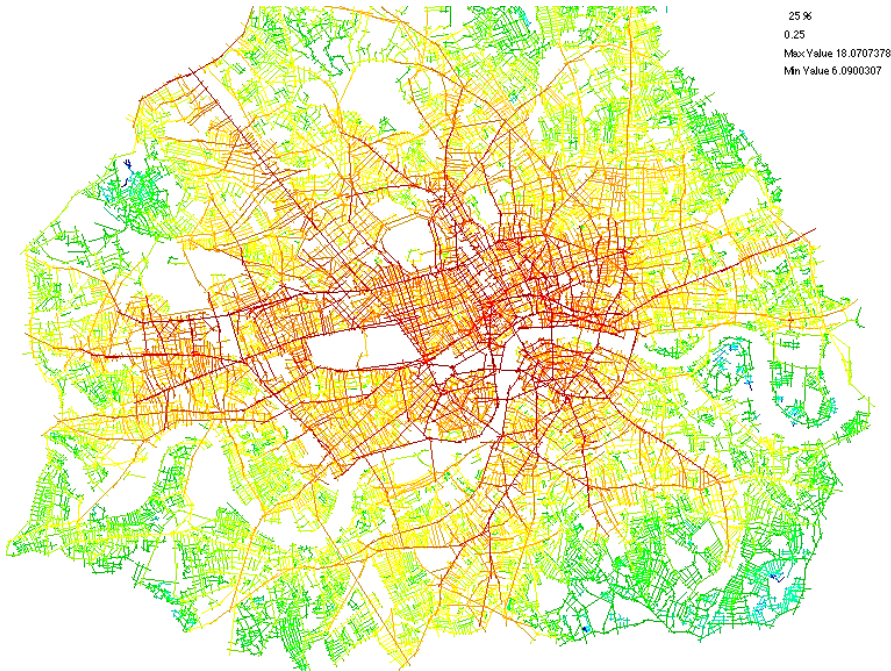


Figure 42 - Axial map of London

Choice: is easiest to understand as a 'water-flow' in the street network. Imagine that each street segment is given an initial load of one unit of water, which then starts pouring out of the starting street segment onto all the other segments that successively connect to it. Each time an intersection appears, the remaining value of flow is divided equally amongst the splitting streets, until all the other street segments in the graph are reached. For instance, at the first intersection with a single other street, the initial value of one is split into two remaining values of one half, and allocated to the two intersecting street segments. Moving further down, the remaining one half value is again split among the intersecting streets and so on. When the same procedure has been conducted using each segment as a starting point for the initial value of one, then a graph

of final values appears. The streets with the highest total values of accumulated flow are said to have the highest choice values³⁶

Application in thesis

Depthmap is applied in this thesis to the case study which is Fayoum city, detailed in running axial and segment tests.

Axial test

This test is applied to a map representing roads network only, each line in map represents a straight sight line and a possible pass in reality, such lines must be connected to each other.

Axial test is applied to slum areas in Fayoum city with a suitable buffer for each to understand the strengths and weaknesses in the roads network of each.



Figure 43 - Axial map of Fayoum slum areas

Source: By Author

³⁶ http://en.wikipedia.org/wiki/Space_syntax

Then it is applied to the whole city within the ring road to get accurate integration values for each slum area or for definite roads with respect to the whole city network and to derive some compound index such as effectiveness and needness which will be explained in detail in chapter 4.

The maximum integration value is found to be 1.21737, while the minimum value is 0.117979 with average integration value: 0.75918 on the scope of Fayoum city network.

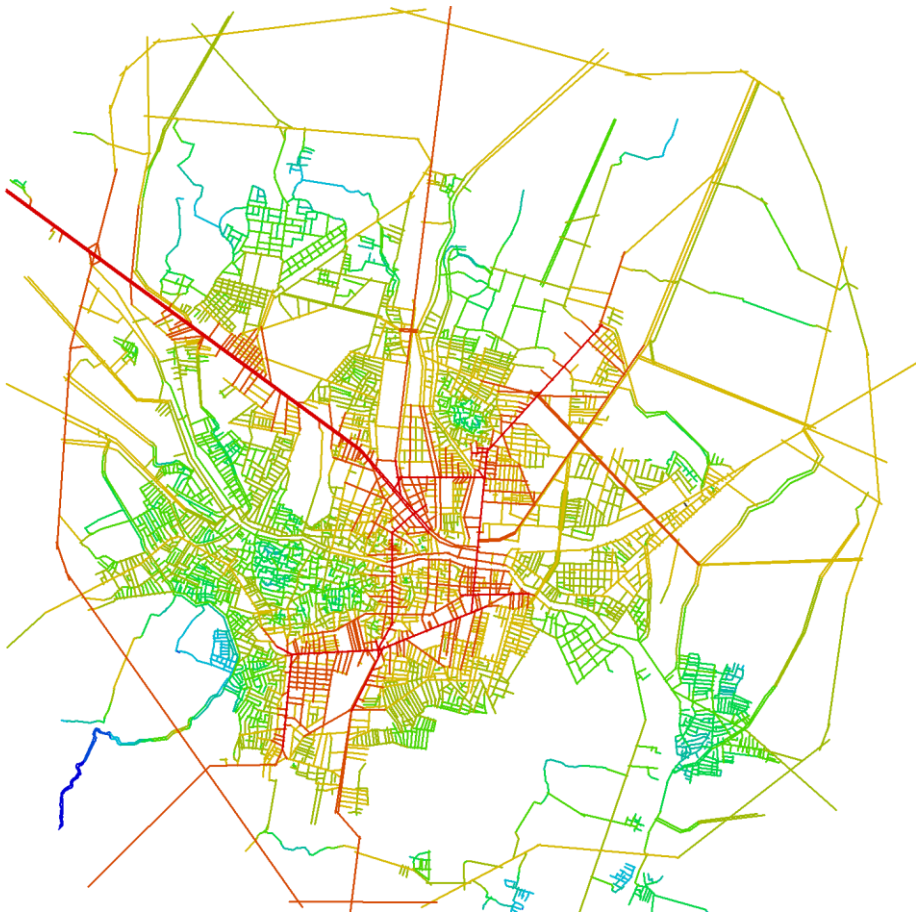


Figure 44 - Axial map of Fayoum city

Source: By Author

Segment test

Is applied to Fayoum city within its ring road to show choice values with maximum value $3.12943 \cdot 10^7$, minimum value equal zero and average value 773985. Space syntax argues that choice values often predict the car traffic flow of streets.

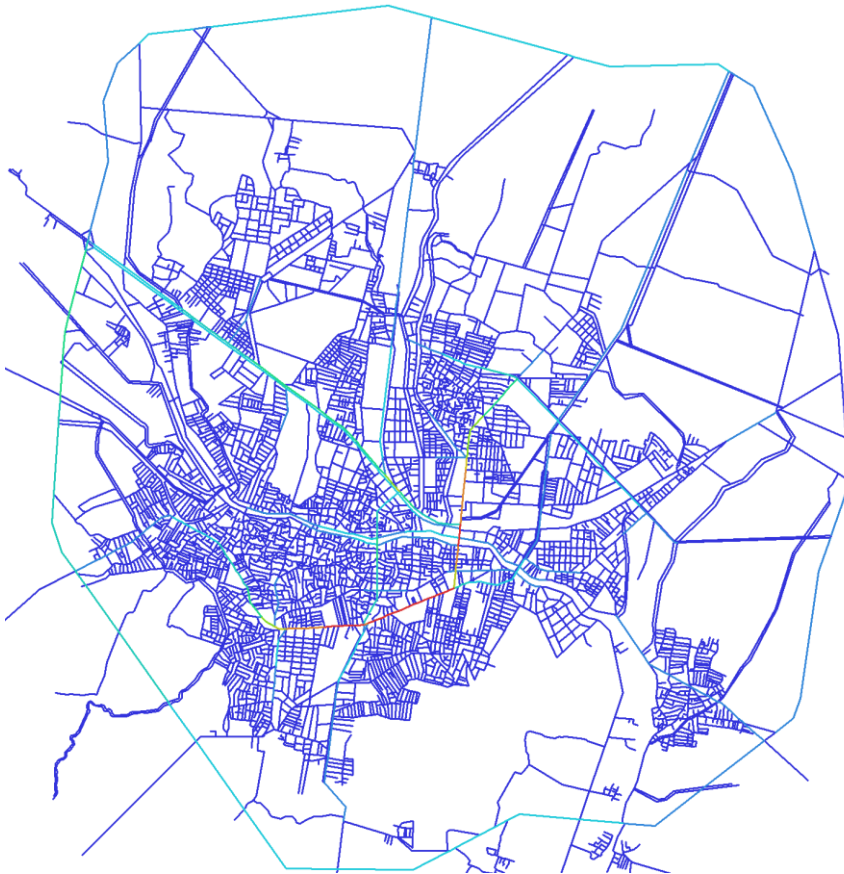


Figure 45 - Segment test of Fayoum city

Source: By Author

3.9.2 Geographic Information Systems (GIS)

GIS is the second analytical tool used in conjunction with Space Syntax in the context of Coexistent development.

A geographic information system (GIS) integrates maps and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.

A GIS helps in solving problems, interpreting, computing complex indices and visualizing data in many ways that reveal relationships and make it quickly understood and easily shared. GIS has been used as a complementary urban analytical tool in many researches (Ismail and Khalil, 2008)

3.10 Application in thesis

Arcmap is used to show building index and road index for each slum area in Fayoum city which is consequently used in a methodology for Prioritizing Coexistent Urbanism Development.

Then it is used on a wider scale in the case study to compare the component of the building index (floor number, construction system and building situation) with each other to produce a compound transformability index for every building to guide effective development with the least modification, the same is done to get roads transformability index.

It is also used to get UE Length (Urban Edge length), which is the length of the common borders between every periphery informal area in Fayoum city and Haez, or the common borders with the agricultural land as Fayoum city acts like an urban spot surrounded by agricultural land along all of its borders. This UEL gives a hint about the threat size posed by each periphery informal area encroaching the agricultural land.

Another application is to calculate the distance from the center of gravity of each informal area to the center of gravity of the whole city (City Centre and core of integration).

Chapter Four

Case Study

4.1 Introduction

This chapter synthesizes the overall vision of the Coexistent approach into an applied working methodology which consists of various stages. These stages are characterized by being flexible enough to be effectively applied to various informal areas in different locations and with different circumstances.

Fayoum city which contains ten informal areas classified by the Informal Settlements Development Facility (ISDF) hosting nearly about 12% of its total urban area was used as a case study. Fayoum is a city in North Upper Egypt region, located about 130 km southwest of Cairo and surrounded by a ring road.

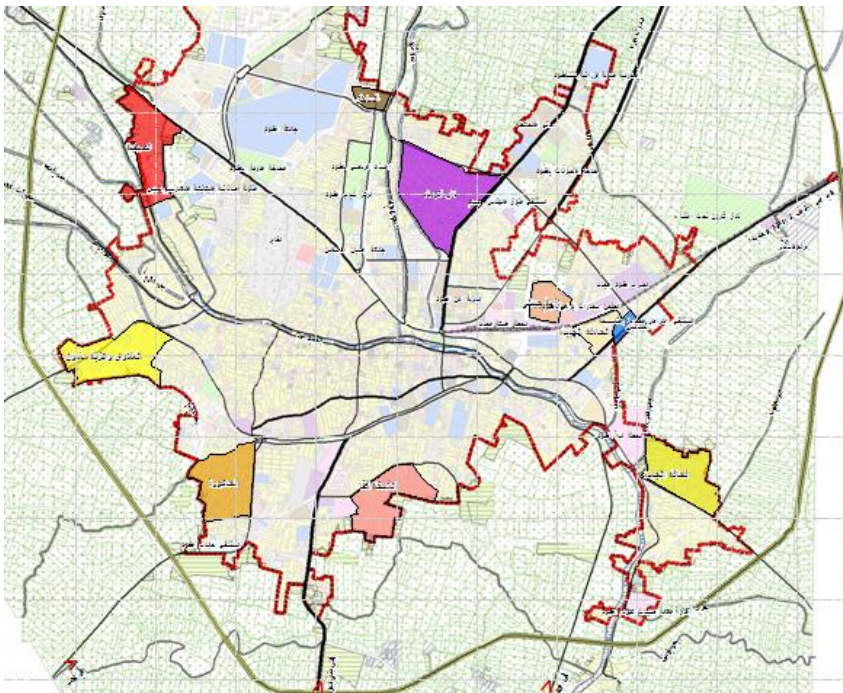


Figure 46 - Ten informal areas of Fayoum city

4.2 Methodology of Coexistent Urbanism

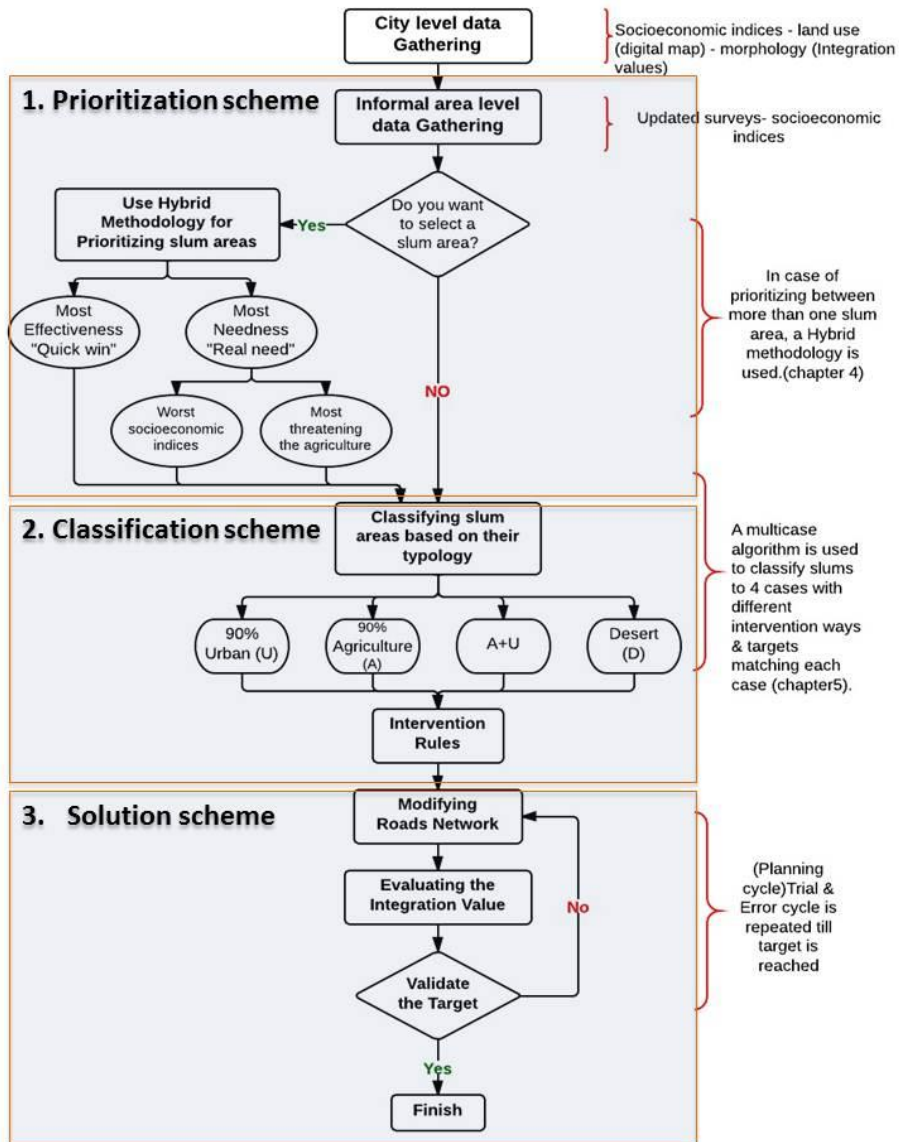


Figure 47:Methodology of Coexistent Urbanism

The methodology of Coexistent Urbanism consists of three consecutive sections (Figure 47). The first section (Prioritization Scheme) is a module used to highlight the importance of differentiating informal areas for the purpose of governmental

intervention according to a certain criteria. These criteria take into account different indicators varying from basic, socio-economic, demographic and morphologic data. This module mimics a decision-support model using a decision-tree and a hybrid GIS and Space Syntax methodology³⁷.

The second section (classification scheme) offers a new methodology that sets a multicas e algorithm to assimilate informal areas in their surrounding by the re-alignment of their roads network based on a computerized set of rules generated from each settlement specific conditions (e.g. how far it is from the core, its location on agricultural or desert areas, etc.). The algorithm is applied on an ArcGIS 10.1 (ESRI) platform integrated with AxwomanTM (Space Syntax) extension.

The third section (solution scheme) is the validation part of the proposed solution and the final results.

The prioritization scheme is applied to the ten informal areas of Fayoum city, while the classification and the solution schemes are applied to "Allawy" informal area³⁸.

4.2.1 Section One (Prioritization Scheme)

Upgrading informal areas is considered as a priority in many developing countries. However, struggling for meager resources makes the case for prioritization a political rather than a technical one. Objective differentiation tools are usually developed based solely on socio-economic or financial criteria, with little regard to the projected outcome of intervention. This part shows how GIS and Space Syntax can be integrated to determine intervention's

³⁷ This section is based on a paper published in the 8th National *GIS Symposium* (2013) Saudi Arabia and MY COORDINATES MAGAZINE (JUNE 2013)

³⁸ Part two and three are based on a paper published in the 9th National *GIS Symposium* (2013), Dammam, Saudi Arabia.

priority to upgrade an informal area given number of socio-economic, urban fabric and spatial factors.

A complex index is devised termed Coexistence Potential (CP) measures effectiveness and needness for intervention.

The index is based on Space Syntax integration values and integrated with number of GIS indices to result in prioritization of intervention. The methodology is applied to Fayoum city, Egypt.

In dealing with theories of diverse city cultures, fabrics, classes and economic strata, one is faced with a limited number that relate all four. Environmental determinism, for one, links behavior change with the built environment (Johnson, 1994). Space syntax on the other hand encompasses a set of theories and techniques to analyze spatial configurations of the urban area to associate economic or social performance of city areas by virtue of their street continuity (or discontinuity). Combining these theories to effectively and humanistically deal with informal area upgrading has not been tried. Conventional approaches consider slums as an urban disease that needs to be quarantined to avoid an epidemic. Others consider it cancer cells or pockets within the healthy urban area that needs surgical intervention. Neither approach has proven effective.

Space Syntax Software and GIS

One limitation of Depthmap is that it ignores wide, situation and degree of streets. It does not consider street properties that are not measured by pure physical continuity. Factors such as street width, pavement, condition and vehicular-pedestrian mix are impediments to connectivity but are not included in the analysis. That is why Space Syntax integrated with GIS in a Coexistent Urbanism development approach may be useful to produce a complex index that would contribute to determine the priority of intervention to upgrade an informal area. Depthmap may be used to measure direct

integration measures, and on the other hand GIS may use to get the indices such as Building Index (percentage of deteriorated buildings in each informal area), Roads Index (percentage of unpaved and less than 6m wide roads), Urban Edge length (length of informal area borders adjacent to the urban edge) and finally distance between the center of gravity for each informal area to the center of gravity of the city which is located inside the core of integration 10%.

In order to differentiate between a numbers of informal areas using a comprehensive approach, we propose that one has to consider three groups of factors: basic and socio economic factors, urban analysis factors and fabric morphologic factors. Basic data include conventional indicators such as area, population size, poverty level, unemployment, crime rates etc. Urban analysis factors present the decision maker with key spatial information on locations of deteriorated buildings, specific street conditions, distance to core etc. Morphologic factors include street fabric connectivity and integration. A compounded index is designed and tested for each of these components. The final decision is based on a tree chain of elimination rather that a mathematical equation of quantitative addition.

Space Syntax is applied to the informal areas network with an appropriate buffer to get integration values for each informal area. Then, they are classified by a devised normalized index called Coexistence Potential index that measures two critical measures called Effectiveness and Needness for intervention.

Effectiveness is achieved to those informal areas having close proximity to the center of the city and high GIS building and roads indices. Thus, effectiveness is measure of how well the informal areas intervention will produce notable impacts to the informal area. Needness, on the other hand, considers proximity to the

periphery and higher informal area growth rate. Thus it is a measure of how badly the informal area requires intervention. In a tree decision structure, it is optional to choose the informal area that has the worst socio-economic index or the informal area having the longest common borders with the urban edge.

The used methodology can be summarized by the chart of intervention.

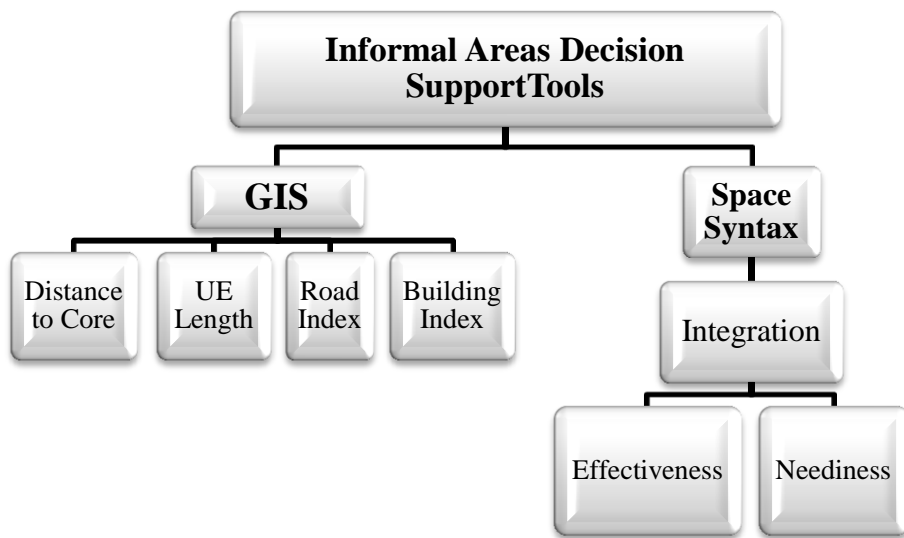


Figure 48 - Decision support tools

Source: By Author

- UE Length: Common length between informal area and Urban Edge.
- Road Index (RI): Percentage of those unpaved roads and less than 6m width.
- Building Index (BI): Percentage of deteriorated buildings.

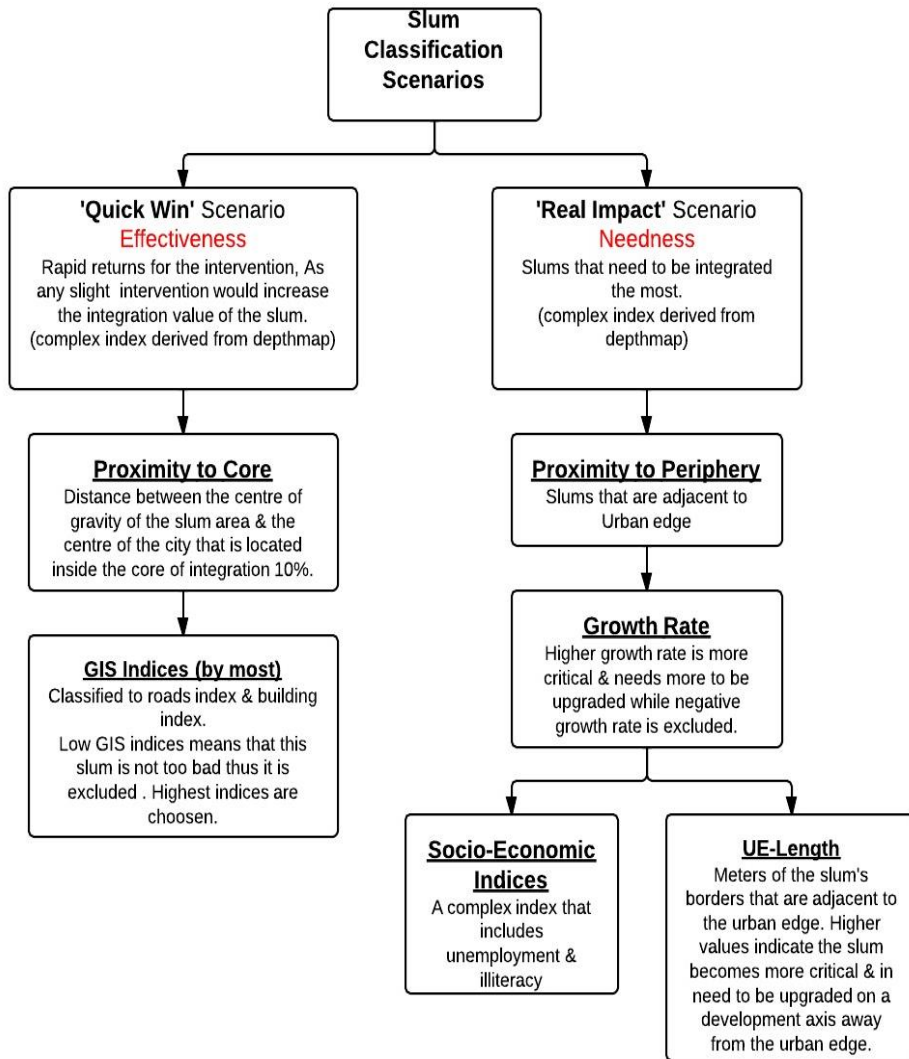


Figure 49 - Decision making chart for prioritizing intervention

Source: By Author

The methodology is applied to the informal areas of Fayoum city to classify and rank each against the intervention policy depending on a series of complex indices derived from GIS and Space Syntax as shall be shown.

Case Study: Fayoum, the City of 10 informal areas

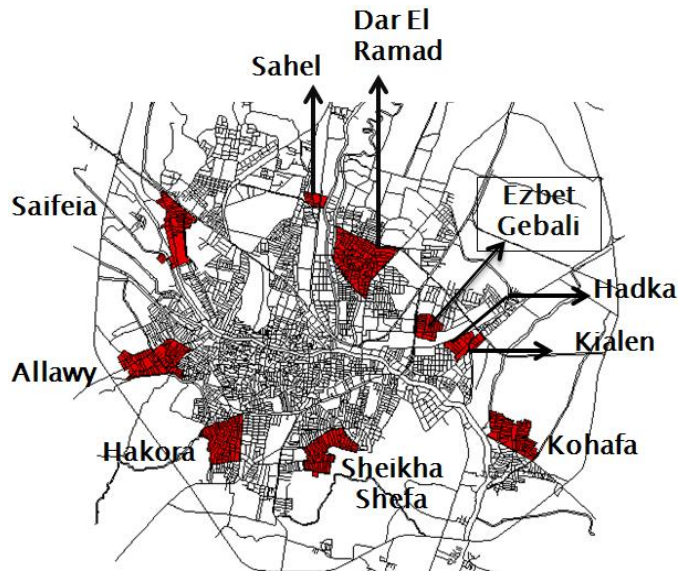


Figure 50

- Informal areas in Fayoum city

Some of Fayoum informal areas were formed over a long period of time; even since before 1800. While others sprawled on the urban edges over agricultural land. The different nature of these informal areas, their formation nature, their current location within the city, their size and population decomposition, makes comparing them a complicated task without a guiding theory .

The guidelines proposed are in tune with the purpose of intervention. Under the policy of coexistent urbanism, a chosen informal area should be selected so that it brings about the *fastest* and most *sustainable path to gradual self-assimilation* within the city structure and fabric, so that in a few years one can no longer identify a statistically significant variation within its key indicators. Within the methodology described above, two scenarios are offered to the decision-maker. Both use Depthmap and GIS. Fayoum city street geo-database is analyzed to get the integration values for each

of the ten informal areas (for the whole city and including the ring road).

The outcome is then divided into two groups; the first group contains informal areas that need slight improvement to yield a measurable improvement (*quick win*), while the second contains informal areas that are in real bad shape and shall improve considerably by intervention (*real need*).

Table 4 - Basic data of the ten informal areas in Fayoum city

Name	Dar al Ramad	Hakora	Allawy	Shefa	Kohafa	Sahel	Gebali	Hadka	Kialen	Saifeia
Established	1800	62-76	31-96	62-76	76-07	76-86	62-76	53-62	53-62	86-96
Pop 2011	10,977	4,681	14,124	18,818	12,544	2,348	5,241	6,272	2,741	7,841
Area (fd)	53	33	38.4	29.9	30.45	5.6	11.43	9.9	3.79	32.7
Density p/fd	208	141	368	630	412	416	458	632	722	239
Growth rate	-1.548	-0.8	0.92	3.7	0.914	1.6	1.36	3.14	3.9	0.914
Informal Type	C	P	P	P	P	P	C	C	P	P
Urban Edge		UE	UE	UE	UE	UE			UE	UE

C: Core P: Periphery

Source: ITC Fayoum governorate

Table 5 - Socio-economic indices

	Kohafa (2006)	Allawy (1998)	Saifeia (1998)	Shefa (QU 2013)
Unemployment (%)	5.35 ↑	10.68 ↑	12.82 ↑	23.53 ↑
Illiteracy (%)	36.43 ↑	45.65 ↑	33.33 ↑	35.29 ↑
4 SE Total	0.25	1.29	0.411	1.16

↑ Above city average. source: Fayoum City Strategic plan 2006 – Research study 1998- Authors survey in 2013

Fayoum city mean unemployment rate (2011): 4.3% Illiteracy rate (2011): 21.7%

The following equations were used to compute Effectiveness and Needness.

$$E_i = A_i - B_i + D_i - X_i$$

$$N_i = X_i - A_i - B_i - D_i$$

A_i =Integration value for informal area (i) roads' network with surrounding streets.

Chapter Four "Case Study"

B_i = Integration value for informal area (i) roads' network without surrounding streets.

D_i = Integration value for surrounding streets only (boundaries of each informal area).

X_i = Distance from centre of mass of each informal area (i) to centre of mass of urban area in Fayoum city (also located in the core of integration 10%).

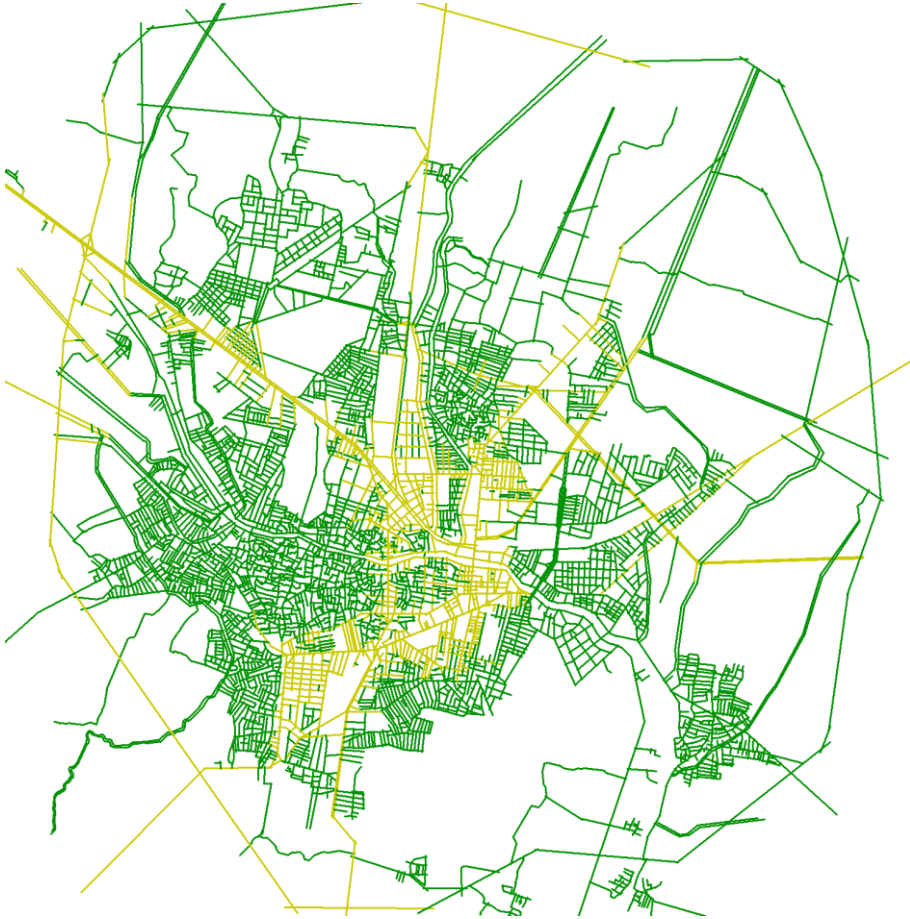


Figure 51 - Core of integration 10% Fayoum city

Source: By Author

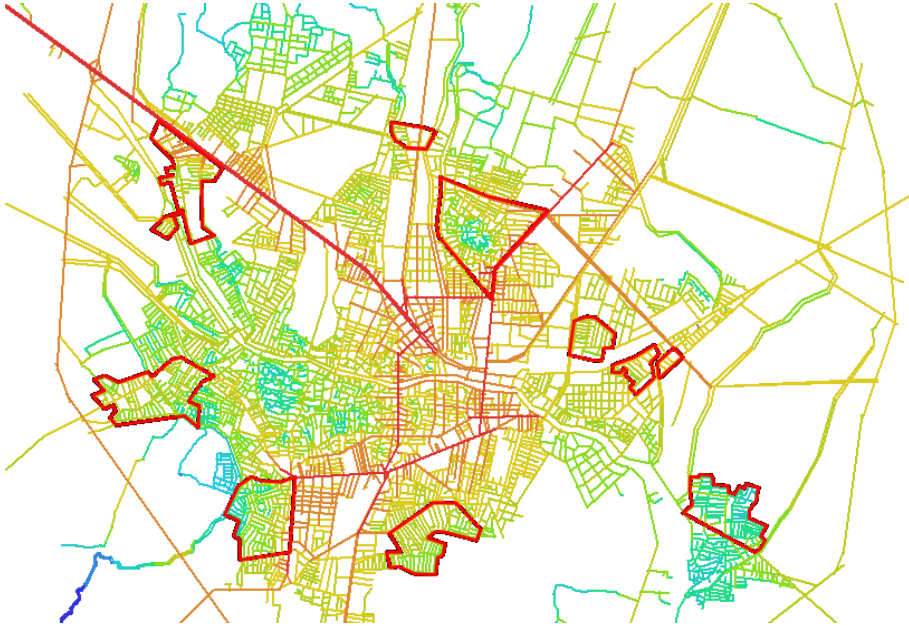


Figure 52 - Axial map of Fayoum city within the ring road

Source: By Author

Table 6 - Depthmap indices

Slum Name	Effectiveness	Needness
Dar al Ramad	0.961	-2.116
Hakora	-0.519	-0.422
Sahel	0.249	-2.068
Ezbet Gebali	0.209	-1.822
Kialen	-1	1
Allawy	-0.64	-0.465
Sheikha Shefa	-0.136	-1.025
Saifeia	-0.237	-1.49
Hadka	0.274	-1.827

Chapter Four "Case Study"

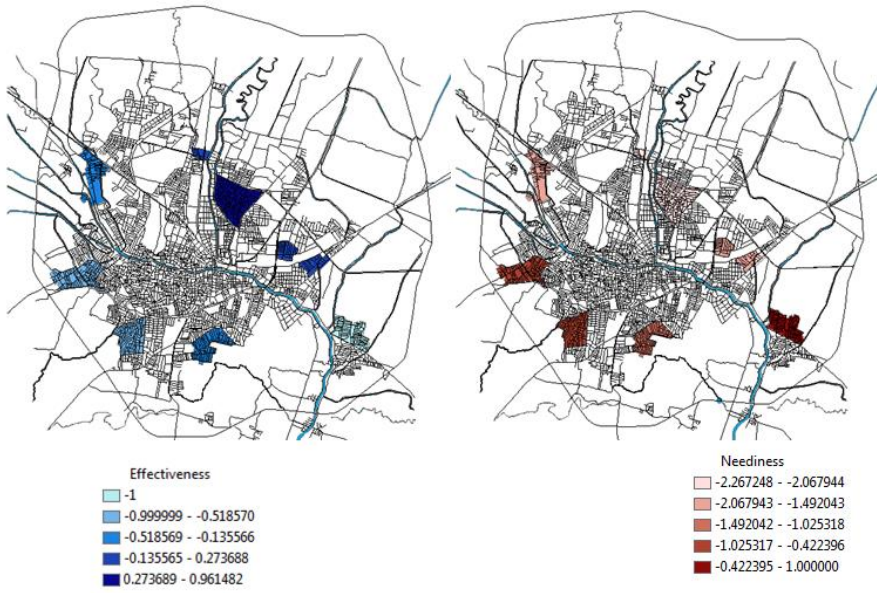


Figure 53 - Effectiveness and Needness Indices using GIS

Source: By Author

Table 7 - Building index

Name	Dar El Ramad	Hakora	Sahel	Gebali	Kialen	Kohafa	Allawy	Shefa	Saifeia	Hadka
% Deteriorated Buildings	12.66	3.75	8.33	8	10.7	1.96	5.5	1.44	1.92	8.4

Table 8 - Roads index

Name	Dar El Ramad	Hakora	Sahel	Gebali	Kialen	Kohafa	Allawy	Shefa	Saifeia	Hadka
Unpaved and < 6m	6592	1205	108.37	0	0	3639.8	2508.4	1858.85	2532.6	40.39
..... ...%	50 %	15.69 %	12.69 %	0%	0%	49.38%	29 %	26.99%	44.5 %	2.2%

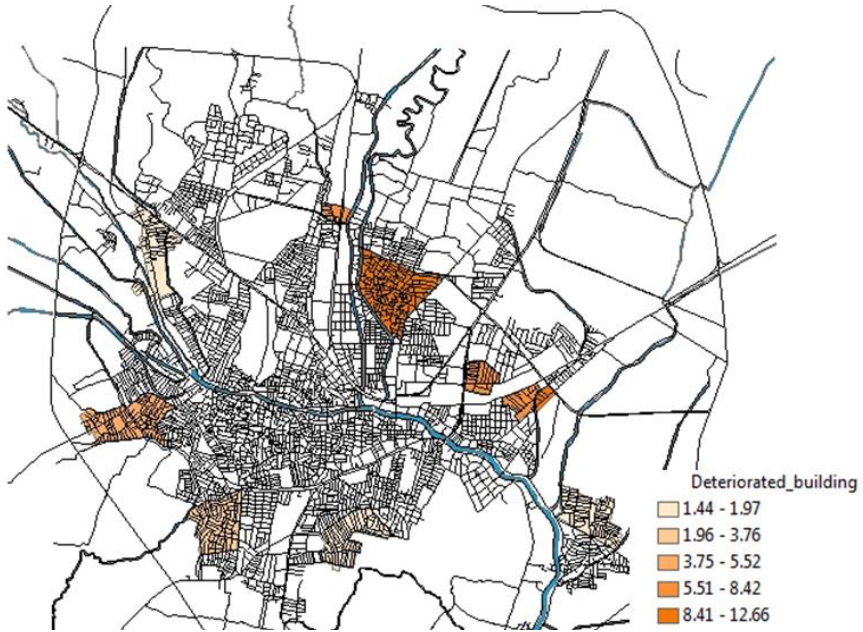


Figure 54 - Building index using GIS



Figure 55- Roads index usng GIS

Table 9 - Urban Edge Length (m)

Name	Kohafa	Allawy	Saifeia	Shefa
UE. Length (m)	390.5	1130.5	257.4	252.4

The “Quick-Win” Scenario (Effectiveness)

Following the computations of Effectiveness by the previous equation, the second iteration is to choose informal areas that have close proximity to the core (Centre of the city), thus Sahel and Kialen are excluded.

The final round, informal areas with the highest GIS indices are chosen (BI and RI).

The “Real Impact” Scenario (Needness)

The other scenario that followed the needness equation yields 5 informal areas (Hakora- Kohafa- Saifeia- Allawy- Sheika Shefa). All five need to be integrated the most to achieve a real impact from intervention.

Neediness considers proximity to the periphery and high growth rate as indicators of needness. All five mentioned informal areas satisfy proximity to the periphery condition but since Hakora has decreasing growth rate (-0.8), it is excluded. The length of the common borders of informal areas with the urban edge is obtained from GIS.

The neediness scenario branches to two; either choosing informal areas having the worst socio-economic indicators, or informal areas having the longest common border with the urban edge (thus presenting threat of expansion over agricultural land).

The proposed Decision Support methodology allows a logical decision-making framework to be followed. Without claiming an optimal decision, it leaves the politician with two clear cut and practical scenarios. One if he needs a quick-win and the other if he needs to make a real impact on the ground. This is achieved through passing the 10 informal areas by a number of filters. Dar El Ramad is the informal area that would match the necessary conditions of the quick win scenario. This means that any slight intervention would improve the integration value of its roads' network. However, using effectiveness only neglects socio-economic indices as it deals with depthmap and GIS indices only.

The first scenario is useful for creating a public trust in stakeholders. However, it can also be useful for politicians in election conditions. The first scenario was avoided in favor of the second one because fortunately both branches in the second scenario recommend the same informal area ("Allawy") as the informal area that achieves the real impact from intervention.

Allawy passed all filters, having the highest socio-economic indicators in addition to having the longest borders with the urban edge (Figure 56).

Once a decision is made for an informal area to begin with, the methodology can be tested to verify the utility of intervention. The quickest and simplest test is to begin making physical and road plan modifications to test whether there was a measurable impact of integration. This was indeed tested in the case of Allawy.

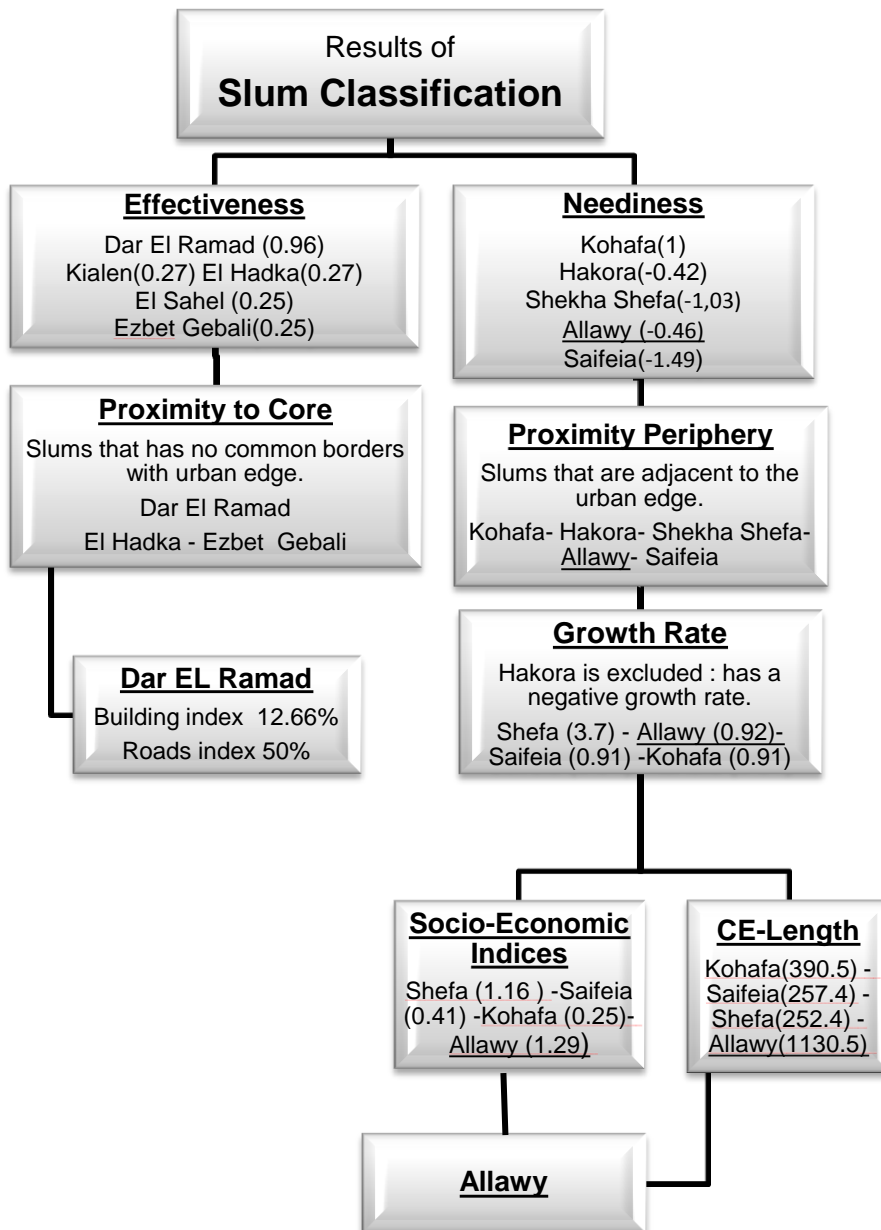


Figure 56 – Applying the methodology to Fayoum city informal areas
Source: By Author



Figure 57 - Google Earth image of Allawy

Allawy is a critical informal area located adjacent to the city's urban edge with edge borders extending 1,130m representing nearly about 52% out of its total perimeter. The borders include several agricultural pockets and extend south-west along a road linking the city to the ring road. Thus Allawy sprawl direction is detrimental to the future of fertile agricultural land.

4.2.2 Section two (Classification Scheme)

Conventional approaches usually prescribe physical modifications to infrastructure, deteriorated building, roads or services. The problem is that these modifications are usually applied to most informal settlements regardless of their uniqueness or individuality. As a result, these policies do not achieve noticeable accomplishments in tackling informal area problems from its roots. On the contrary they act as a catalyst that expedites growth in their number and seriousness. This section sets a multicase algorithm that is tested to the most needest informal area in Fayoum city Egypt (Allawy)

The unified intervention policy for upgrading informal areas proved its failure. Ignoring the individuality of each informal area is

subsequently reflected on the final results which are often unsatisfactory.

If the factors contributing to forming each informal area were considered, then scenarios to deal with it should differ. There is thus a need to identify a number of unique indicators for each informal area to help categorize each informal area and direct planners to an efficient approach to deal with them.

Factors Affecting the Categorization of Informal Areas

There are various factors that matter when dealing with informal areas. Informal areas at the periphery of the city are not the same as those at its core. Informal s adjacent to desert lands differ from those surrounded by agriculture lands (UNHS 2003). The dependent variable here with a Coexistence Development Approach is road re-alignment. Previous research by Ismail et al. 2012 has shown that road connectivity and integration can play a positive role in directing growth to or away from desirable or undesirable lands (Figure 58).

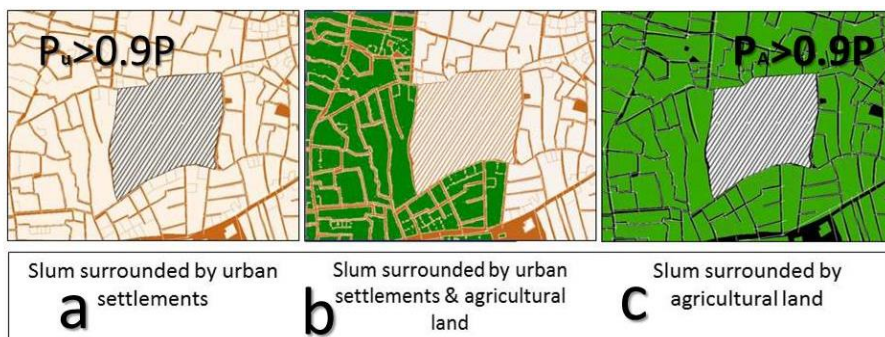


Figure 58 - Different types of informal areas

These areas are characterized by diversity in features, surroundings, potentials, etc. Despite this diversity, the official intervention policy is bi-polar: demolition or upgrading (ISDF 2010).



Figure 59 - Informal areas in Egypt

The proposed algorithm depends on proposing a unique intervention strategy based on automated classification of the informal area. Each case will be defined based by its surrounding physical environment. The planning objective for each case is composed of two directives:

First Directive: urban morphological objective (via space syntax).

Second Directive: physical planning objective (directing growth).

The aim of the first directive is to maximize integration values of its road network, and the aim of the second is to constraint the degree and direction of urban growth.

A complex index that defines the Encouraged Direction of Penetration through roads network will be called (EDPI). This index is a compounded index of land price, land tenure, hazards, land use and transformability index (TI). Transformability Index itself is a compounded index of the degree to which a plot of land is suitable for being changed into another use (Ismail et. al 2013).

Different possible cases are summarized in a multi-case algorithm are shown in (Figure 60).

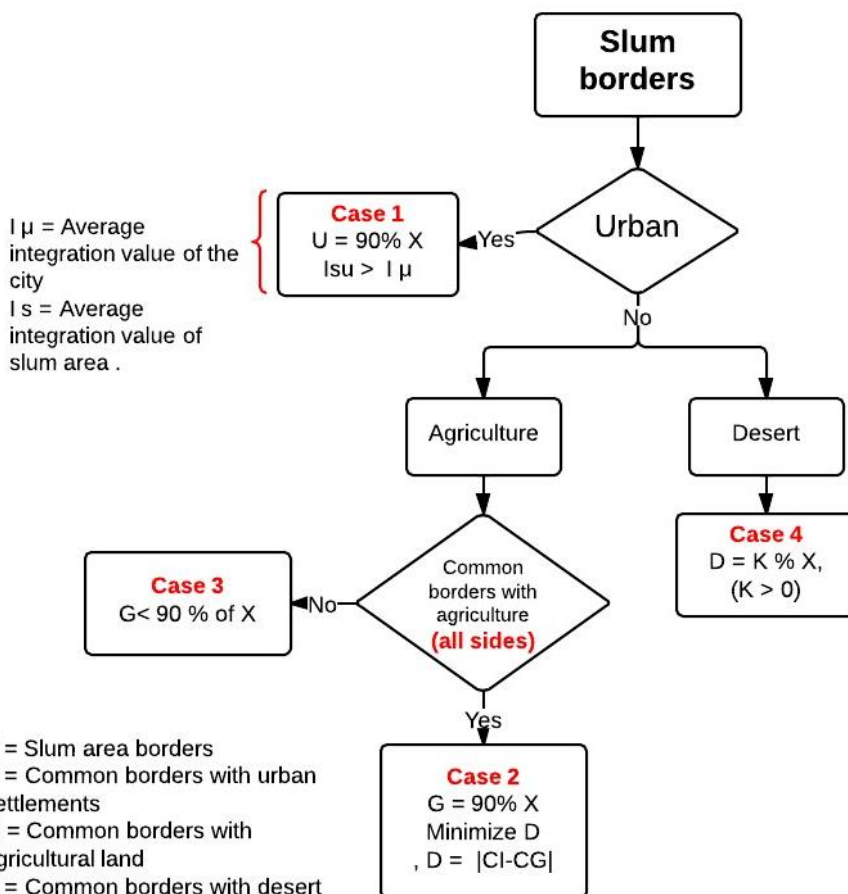


Figure 60 - Informal areas Classification Algorithm

Source: By Author

Encouraged Direction of Penetration Index (EDPI)

Definition: EDPI is a raster map representing various information about the buildings and the informal area to determine the encouraged direction of penetration through which roads realignment would take place.

The most common inquiry for a planner wishing to integrate the informal area with its surrounding is which direction to proceed with? Most commonly planners rely of a subjective visual assessment of that, not knowing the consequences of directing

growth to an undesirable area. The proposed index developed here places some numerical objectivity to the process. EDPI is a raster evaluation based on placing a unique value to every parcel based on the most common variables.

$$EDPI_{(i)} = 3.TI_{(i)} + P_{(i)} + T_{(i)} + Hazards_{(i)} + U_{(i)}$$

Where EDPI is the Encouraged Direction of Growth for Cell (i),

TI (i) is the Transformability index of (i)

P(i) is the property value (Price) of (i),

T(i) is the tenure complexity of (i)

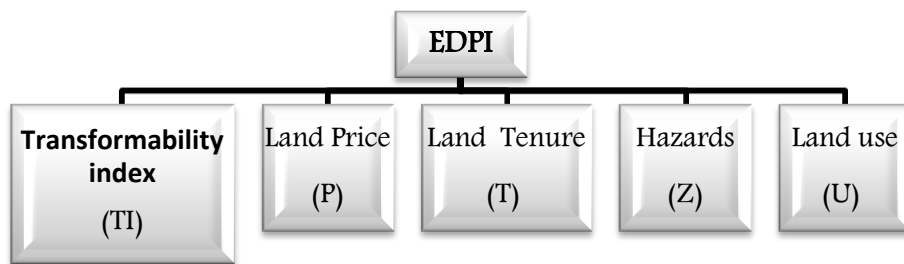


Figure 61 - Components of the EDPI

TI (Transformability index for building) is a complex index. It follows the following:

$$TI = RB_{Ht} + RB_{St} + (2 * RB_{Cd})$$

- R: Reclass
- Ht: Height
- St: Structure
- Cd: Condition

Informal areas Classification Cases and Intervention Rules

The following table summarizes the generated informal areas cases and how to deal with them for derivation of intervention rules.

Table 10 - Informal areas Classification Cases and Intervention Rules

<u>Case No.</u>	<u>Rule</u>	<u>Intervention Policy</u>	<u>Objective</u>
<u>1</u> <u>All</u> <u>Urban</u>	$P_U \geq 0.9X$ P_U :Urban Perim	Core informal area with locked borders. Objective : modifying integration values to assimilate area with its surrounding (i.e. developing NOT directing)	$I_{su} > I_{\mu_{ct}}$
<u>2</u> <u>All</u> <u>Agricultural</u>	$P_G \geq 0.9X$ P_G : Agric Perim X: Total Perim	Change integration values until the core of integration (CI) is in the center of gravity (CG) of the area to avoid encroaching agricultural land surrounded. (i.e. directing growth to the core rather than the borders)	Min. D, where $D = D_{CI} - D_{CG} $ Target $n_i / n_t > 7\%$ n_i :no. of axial line common between the 10 % core of integration and (A), A= area inside buffer from CG of informal area by 10 % of total informal area. n_t : no. of all axial lines forming informal area roads network
<u>3</u> <u>Mixed</u> <u>U/A</u>	$X = PU + PG$	Choose side to direct urban growth to. Chosen side: with the least common point or edges with the agricultural land.	Chosen side through : <ul style="list-style-type: none"> • Min. common vertices with G • Gradual integration with the highest value at the chosen side decreasing gradually towards agricultural land.
<u>4</u>	$D = K\%$ $X, (K > 0)$	Directing urban growth towards desert direction.	Less critical case (no controlling rule)
Desired target in all cases except (2): Raising integration values of informal			

area to be higher than the mean integration value of the whole city.

Common rule in all cases: Improving integration & roads realignment should be based on EDPI map

Source: By Author

The desired target in all cases except in case two is raising integration value of informal area to be higher than the mean integration value of the whole city ($I_{\mu_{ct}}$). The mean integration is a relative value not an absolute number. The target ($I_{\mu_{ct}}$) should be derived from the whole city surrounding the informal area as it varies from one city to other depending on the city urban pattern. For example: settlements with linear pattern have higher integration values than those settlements with chaotic pattern.

The mean integration of the city is a dynamic target as it is affected by the modifications of the roads network of any informal area within the city. Yet, this dynamism is not clearly observed due to the scale variation between the city and any informal area within its borders. The magnitude of this dynamism is an indicator to the standard deviation of the city integration values and to the efficiency of city roads network by default.

4.2.3 Section three (Solution scheme)

The previous methodology is applied using GIS and AxwomanTM (Space Syntax) extension. AxwomanTM is an extension on an ESRI products for urban morphological analysis based on space syntax theory (Bill Hillier and his colleagues at the Bartlet School of UCL London 2012).

Rather than using two platforms, Axwoman allows creating axial maps on the same GIS layer by converting existing roads network to axial lines on which integration analysis would be done.

Using Axwoman extension on Arcmap makes analysis easier because the proposed algorithm depends on various indices; some of them are obtained from ARCGIS (TI) while the integration analysis is executed on Depthmap.

Case study (Allawy informal area)

Allawy area in Fayoum, Egypt is chosen among ten informal areas of Fayoum city by a process called Prioritizing Coexistent Urbanism Development (Ismail et al, 2013). It was the informal area with the highest Needness Index.



Figure 62 - Allawy 2013

Allawy is a periphery informal area with common borders with agricultural land and urban settlements (Case 3). The morphological directive then would be to improve integration value of the informal area until its mean value become higher than the mean of the whole city. The physical planning directive would be to direct urban growth away from the agricultural land towards the surrounding urban.

Axwoman 6.0 is used as an extension on ARGIS10 (Figure 63) to execute integration analysis for Fayoum city roads network which was imported as a CAD file to Arcmap 10 (Figure 64). While

Allawy area data is obtained from the Strategic Plan of Fayoum City 2007 and updated by field survey in 2013.

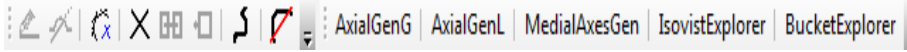


Figure 63 - Axwoman extension on Arcmap 10

Axwoman is a free extension installed on various ARCGIS versions to execute integration analysis in a sequence of steps: importing data into ArcGIS, selecting the right area (clip), making the right map projection, connecting or eliminating isolated arc segments, chopping arc in junctions (building up topology in terms of GIS), generating natural streets and finally generating axial lines and calculating space syntax parameters for the axial lines.

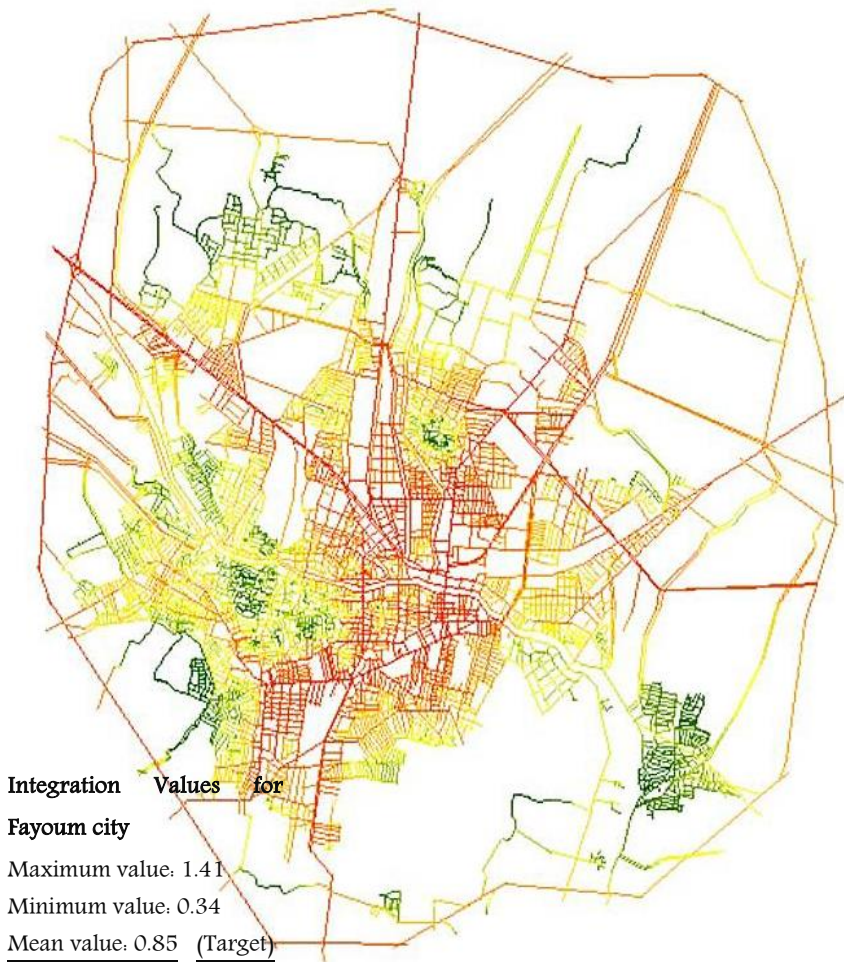


Figure 64 - Integration analysis of Fayoum city

Findings

Axwoman does not begin to function unless all these steps are executed in exactly the same order. Yet some of them are not necessary for all data (clip, projection). In addition, step 4 (Getting isolated lines) does not show all isolated lines from the first time and need to be done multiple times. (Figure 65) shows the results for this step after the first and the second time when applied to Fayoum roads.



Figure 65 - 'Get isolated lines' step

Implementation on Upgrading Allawy

The first step is to define borders that are not favored for directing urban growth. Allawy is partially bordered by agricultural land. A suitable distance buffer is made from all sides, and borders whose buffer intersects with the agricultural land use are excluded from desired sides (Figure 66).

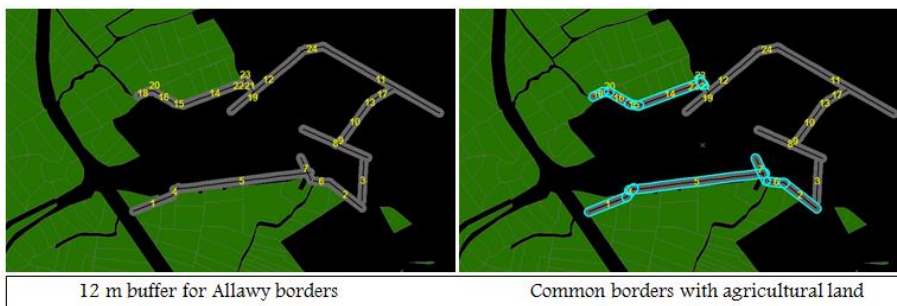


Figure 66 - Allawy borders with agriculture

1. Cost allocation analysis function is executed on the remaining borders according to their integration values (Figure 67).

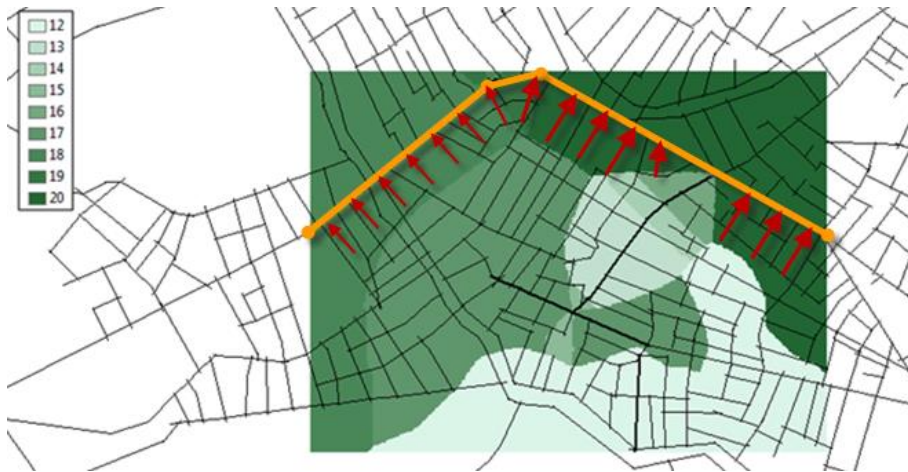


Figure 67 - Costallocation analysis

The last step in the algorithm before road modification is getting the EDPI map to define the encouraged direction of penetration through which roads realignment can take place.

EDPI map is a complex map formed by the overlay of different layers to represent the unique physical and economic features of the informal area. Represented – in this case - by land price, land tenure, hazards, land use and TI (transformability index). The later (TI) has a multiplier of 3 as it has 3 different building features (building situation, heights and construction system).

The Transformability index map of Allawy area is shown in Figure 68 , where higher TI index refers to more degraded buildings.

$$TI = RB_{Ht} + RB_{St} + (2 * RB_{Cd})$$



Figure 68 - Transformability index for building map

Land price : Land price varied in Allawy areas from 3,000 L.E/m² for lands around main streets to 1,200 L.E/m² for lands around wide streets about 8m, 750 L.E/m² around school area, 700 L.E/m² for the north housing area and the lowest price 600 L.E/m² for the lands around segregated narrow streets network.



Figure 69 - Land price

Land tenure: Land tenure is not an effective factor in Allawy informal area as all lands are private property.

Hazards: Hazards in Allawy is represented by a high voltage line passing longitudinally across the site. Its graduated impact is measured using costallocation analysis (Figure 70).



Figure 70 - Hazards of Allawy

2- Land use: Land use ease of transformation is measured on a scale of 1-4 where 1 being the hardest and 4 being the easiest and the EDPI is shown in (Figure 71).



Figure 71 - Land use, Allawy

Table 11 - Reclass land use

		Value			
		1	2	3	4
Land use	Educational	Commercial	Residential		Vacant plots
	Religious	Station	parking		Handicraft
	Residential-Religious	Residential-Commercial			Residential-Handicraft
	Factory	Residential-Services		-	-



vacant plots (2013)

vacant plots (2008)

Figure 72 - Vacant plots, Allawy

$$EDPI=(3*"Reclass_TI")+"Reclass_landUse"+$$

$$"Reclass_pricmap"+ "Reclass_Euclidean_distance_hazard"$$

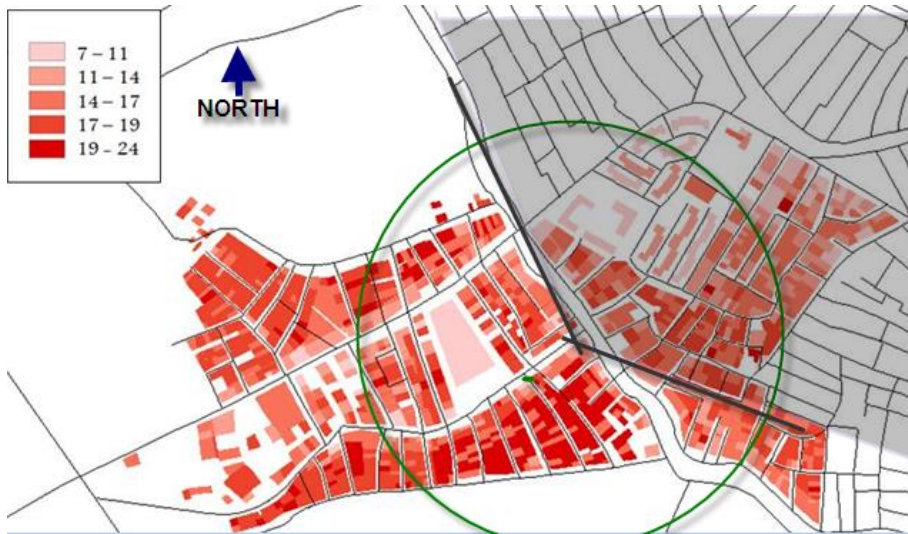


Figure 73 - EDPI Map of Allawy

Road Modification and Re-alignment

Roads are modified on the basis of EDPI map which shows areas north and north-east are more favorable for assimilation, and a gradual decrease towards the north-west and south - agricultural lands (Figure 74).

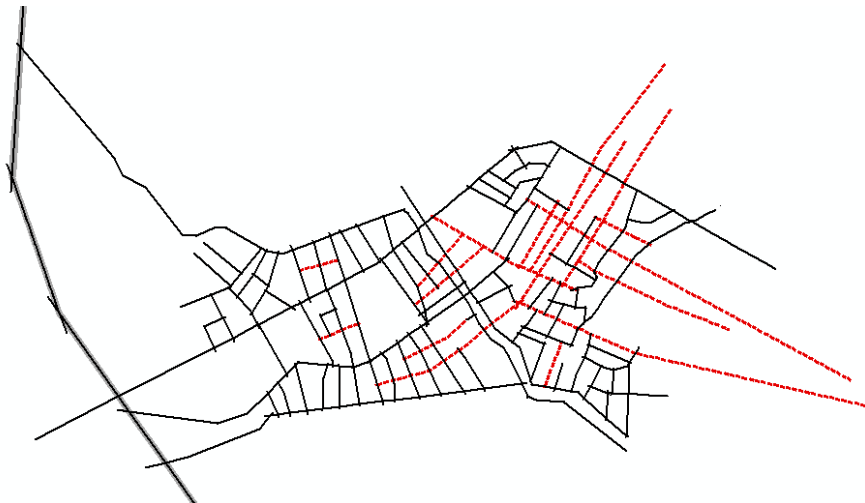


Figure 74 - Modified roads along northern and eastern borders

Results

The modifications are tested by re-measuring integration values before and after modification. The results show a statistically significant increase in the mean integration values of the whole Allawy roads network from 0.82 to 0.87 (which is higher than the desired value 0.85 – the mean value of Fayoum city). The resulting proposed road network is further arranged to suggest a sound road hierarchy using the space syntax findings (Figure 75).

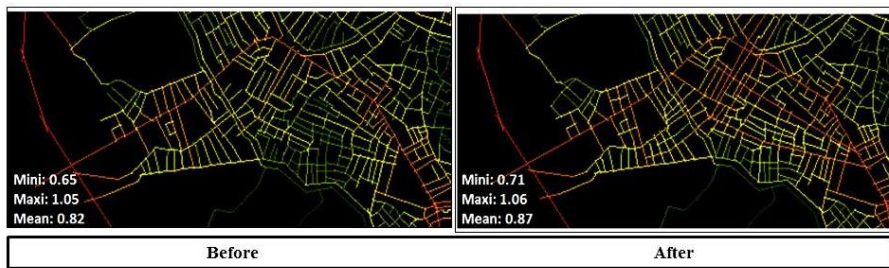


Figure 75 - Integration analysis, after & before

In addition, the bias of the integration's core is checked using Kernel Density function before and after modification (Figure 76) using integration values.

Kernel density analysis before modification showed segregated zones of integration outside of Allawy in the east and the north. These zones expanded after modifications in Allawy creating a harmonious contiguous lump of integration values, gradually decreasing towards agricultural land.

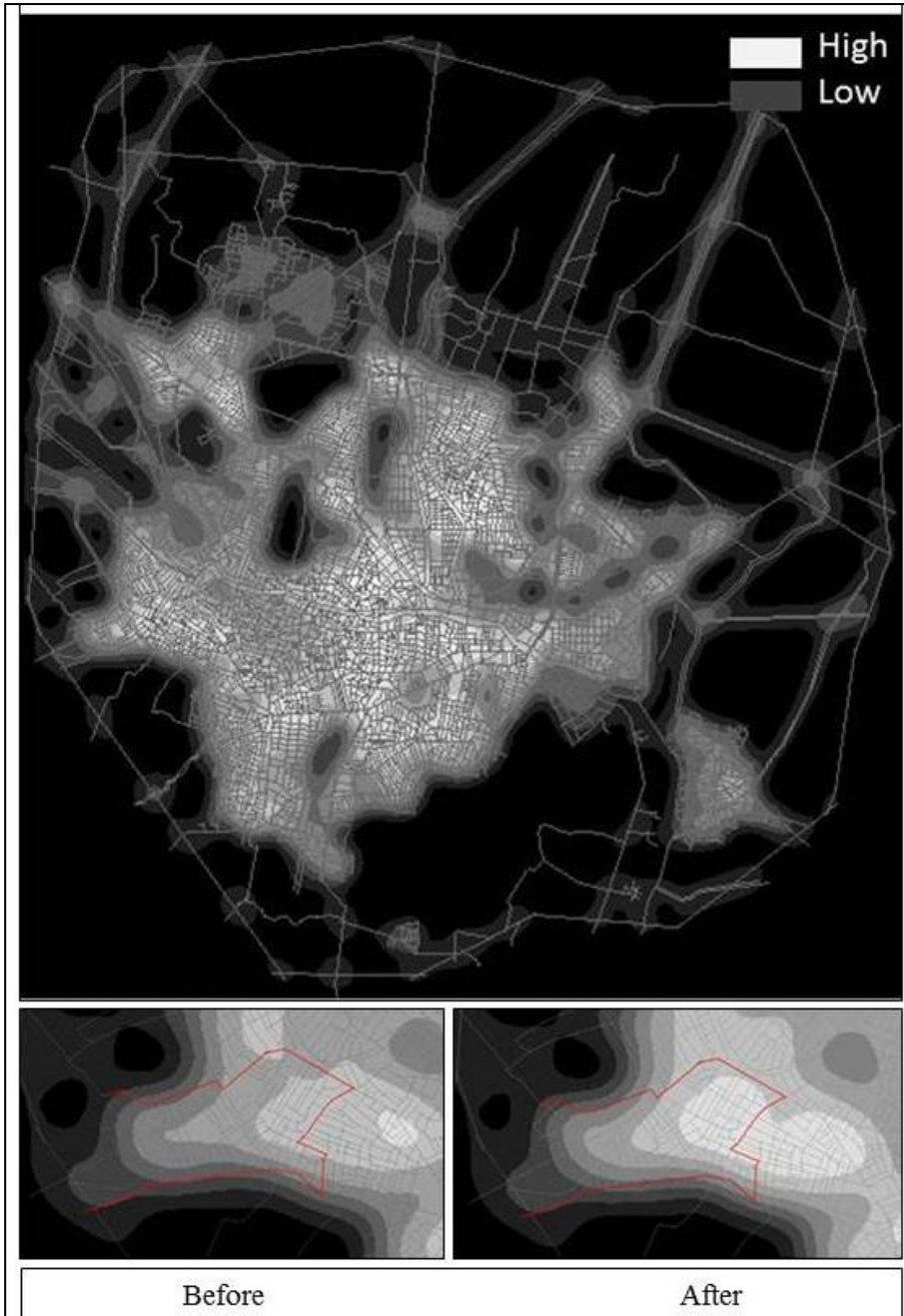


Figure 76 - Kernel density analysis

4.3 Proposed roads hierarchy

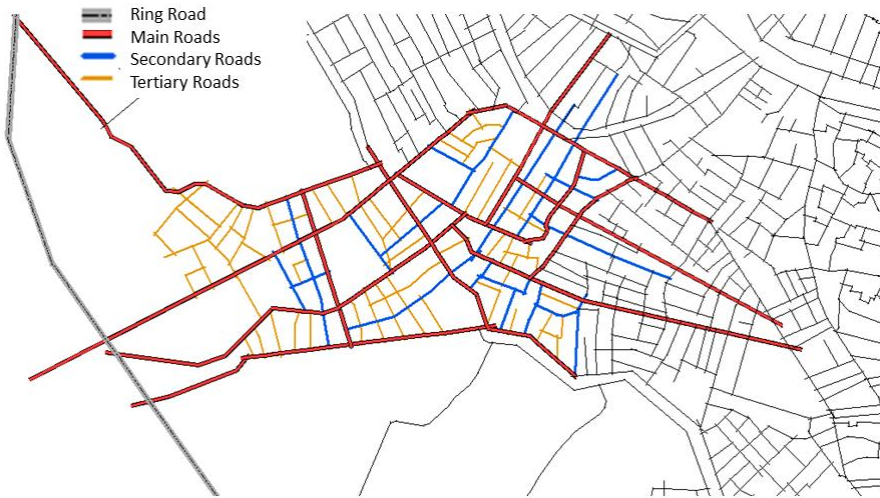


Figure 77 - Proposed roads hierarchy

Chapter Five

Conclusions and recommendations

5.1 Conclusions

Over time, it has become clear that the relationship between informal areas and its surroundings is not limited to their borders. This mutual effect between these areas and their surrounding should be taken into consideration during upgrading. Thus, dealing with informal areas as essential component of the urban fabric that needs to be assimilated with their wider surrounding in a harmonious way is essential.

The official intervention approaches in some informal areas varies according to the balance of power whether they tend to favor the authority or the people represented in informal area dwellers. For example: "Ramlet Bolak" area; this highly deteriorated informal area was suggested to be upgraded and relocating its dwellers. However, the political change was reflected on the upgrading policy of this informal area by changing the official intervention mode to onsite redevelopment (2012). Then, for the second time the government changed its policy to redevelopment the area with force eviction of the dwellers³⁹.

Despite these governmental approaches in upgrading informal areas since the 1990s, the sufferings of its dwellers continue to escalate and their challenges are growing. The motivation behind the official concern for informal areas in recent history

³⁹ Ahram Online, 22nd Feb, 2014.

does not seem to be based on respect for the right of their dwellers for a decent life, rather either to patch a problem causing an imminent political threat, or to grab an investment opportunity.

Some official solutions negatively affect strategic resources in Egypt, such as fertile agricultural land. Modifying the urban edge and the belting policy to provide an expansion area even though the surrounding area is agriculture are examples of such policies.

Curative governmental policies to upgrade informal areas would be more effective if the following was taken into account:

- Centralized planning, the time gap and the lack of updated data are the three edges of the belting policy's failure.
- Also the poor location, lack of affordable transport and deficient infrastructure and services are the main factors for the lack of success of some new settlement projects for young graduates.

Any developing approach ignores the spatial proximity of informal areas and their surrounding widens the gap between the contradicting urban neighborhoods depending on virtual barriers.

Political Changes (Post January 2011)

The 25th of January revolution 2011 had a positive turning point for enhancing the role of NGOs (16,000 new NGOs established after the revolution) and civil society in upgrading

informal areas, targeting improved living standard and ensuring human rights through a revolutionary spirit among Egyptians which was reflected in various initiatives in different fields (sector upgrading in a modern and wider scope). For example: "Build your own country", "The power of science", "Set your goal", "Made in Egypt", "Human being", "Initiative for garbage collectors 15 may 2011".

Although some of the gains of the 25th January revolution included increased loyalty, willingness for hard work, compassion, and unity reflected in the noticeable effective involvement of the youth segment in informal areas upgrading field, these gains were negatively affected by bureaucracy and the lack of institutional framework hindered every reform effort to upgrade informal settlements, whether official or not. For example: Dream For Your Block Initiative.

Also the later period (post 30 June) proved that the overall mode is quite affected by the political changes and the revolutionary spirit of January 2011 vanishes gradually. As well the civil community contributions in development do.

Proposed Approach (Coexistent Urbanism)

Any effective intervention policy needs to first formulate a comprehensive picture of the characteristics of the informal area similar to the framework identified in this thesis.

This approach includes preserving the socio-economic network between residents and strengthening this network rather than destroying it. In addition to respect the individuality of each informal area and classifying them into different cases. This classification is desirable, objective and possible.

Also, the correlation between integration values and some socioeconomic and urban parameters proved that improving accessibility could be the key starting point of the informal areas challenge chain represented in unemployment, ignorance, insecurity, deteriorated urban environment and low living standards.

Applying the proposed approach to the case study concludes the following:

- Prioritization of intervention should not be hap-hazard or politicized or random. It needs to be based on objective criteria and according to a sequence of logical filters, while respecting some form of political decision-making.
- Offering various scenarios of intervention prioritization facilitates the decision making process to the stake holders.
- Directing urban growth is an inseparable target from the upgrading plan to any growing informal area with positive growth rate and critical surroundings.
- GIS and Space Syntax are two synchronized tools that help define a specific target and intervention roles for each case of informal areas.

The problems are not the only perspective of the informal areas, there is always a potential perspective in each area as well. Thus, pillars of success in upgrading informal areas are integration, respecting dwellers and perfect institutional formation.

5.2 Recommendations

- Activating the participation of NGOs and the civil society in upgrading informal areas and integrate their effort with the official plans to achieve more satisfactory results.
- It is recommended to redefine and reclassify informal areas, as the current classification is since 1993, yet only minor

modifications took place, even classifying informal areas to unplanned and unsafe 2008, was applied to those informal areas announced since 1993 without review or comparing such areas with the current situation.

- The formation of informal units to upgrade informal areas in each governorate in order to achieve better supervision and avoid centralization that proved ineffectiveness.
- Using various platforms during upgrading and depending on computerized results to be easy compared with the current situation.
- Establishing special units responsible for creating and gathering data about informal areas represented in digital maps, updated surveys and socioeconomic indices.
- Establishing control units to observe the magnitude of encroachment over the agricultural land and to report the competent informal units about informal areas with the highest threat to agriculture, owing to the noticeable increase in the number of cases encroaching the agricultural especially after the 25th of January revolution in an accelerated way that imposes any proposed solution for upgrading informal areas must be away from agricultural. Otherwise, we will face the problem of a shortage in one of the most important natural resources in Egypt no less dangerous than the problem of informal areas.
- Review the ISDF upgrading plans to ensure that they are consistent with the international human rights standards.
- Toughening the sanctions to those encroaching the agricultural land and build without license.
- Ensure creating a perfect institutional formation to deal with informal settlements problem in an effective way.

5.3 Suggestions and Future Research

As the radical social and ideological polarization are the true limits of Coexistent Urbanism, it is suggested to focus future research on social coexistence as a topic for deeper understanding and for offering creative solutions to this limitation.

Other future research could be on how to include public participation in the Coexistent Urbanism Model to ensure users (informal area dwellers) involvement in the upgrading process at all stages and their satisfactory with the final results, besides their contribution in gathering information stage.

Also trying to automate the Coexistent Methodology to become a full-fledged Decision Support Model (DSS)

References

- Adawi (2005), "Slums and National Security in Egypt 1990-2000: A Study in the Internal Dimensions of Security", Department of Political Science, Cairo University.
- Akbar (1992), Earth Architecture in Islam.
- Ali (2012), "Human development for slum areas in Cairo governorate" Department of Biostatistics and population, Cairo University.
- Alfiky, M. " Informal Settlements Phenomenon As A Result Of Egypt's Policies", IUSD Integrated Urbanism and Sustainable Development Ain Shams University and Stuttgart University.
- Amnesty International, 2011, "WE ARE NOT DIRT"
- Baker and McClain (2009), " Private Sector Initiatives in Slum Upgrading", THE WORLD BANK GROUP, WASHINGTON.
- Benninger. 2001, "Principles of Intelligent Urbanism", International Congress of Modern Architecture.
- Davis (2004), Planet of Slums.
- Egyptian Cabinet & ISDF, (2010). "Egyptian Approach to Informal Settlements Development", International Disaster and Risk Conference (IDRC), Davos.
- Freire, Maria E. 2013. "Slum Upgrading", Conference on Financing Metropolitan Governments in Developing Countries at The Brookings Institution organized by the Lincoln Institute of Land Policy.
- GTZ (2009), "Cairo's Informal Areas between Urban Challenges and Hidden Potentials".
- Hillier. Bill and Hanson. Julienne (1984). The Social Logic of Space. Cambridge University Press.
- Hillier, Bill (1996) Space is the Machine. Press Syndicate of the University of Cambridge.
- Jia T. and Jiang B. (2011), "Measuring urban sprawl based on massive street nodes and the novel concept of natural cities", Preprint, arxiv.org/abs/1010.0541
- Jiang, B and Xiaowei Sun (2008) "Tutorial for Automatically Generating Axial Lines", , Department of Technology and Built

- Environment, Division of Geomatics , University of Gävle, 801 76
- Satellite images from Arcgis ESRI, DeLorme, HERE, USGS, METI/NASA
 - Jiang B. (2012), Axwoman 6.0: An ArcGIS extension for urban morphological analysis, <https://sites.google.com/site/axwoman60/>, University of Gävle, Sweden.
 - Johnson, Paul (1994). The Theory of Architecture: Concepts, Themes, and Practices.
 - Jones and Fanek. (1997). "CRIME IN THE URBAN ENVIRONMENT", First International Space Syntax Symposium, LONDON.
 - Khaled Abdelhalim, "Participatory Upgrading of Informal Areas", GTZ, Participatory Development Programme in Urban Areas (PDP) in Egypt, May 2010.
 - Ismail and Khalil (2010) " Non-Defensible Cities: A Space Syntax-GIS Approach", the Third National GIS Symposium, Khobar, KSA
 - Lee and Seo (2013), "COMBINING SPACE SYNTAX WITH GIS-BASED BUILT ENVIRONMENT MEASURES IN PEDESTRIAN WALKING ACTIVITY", 9th International Space Syntax Symposium, Seoul.
 - Mahmoud, (2010), Ph.D. thesis "Methods of action plans for upgrading deteriorated residential areas: Evaluation of action plans using computer simulation models as a case study", Faculty of Engineering , Cairo University
 - MI MIN, K. et al (2007) "THE EFFECT OF SPATIAL CONFIGURATION ON LAND USE AND LAND VALUE IN SEOUL", 6th International Space Syntax Symposium, Istanbul.
 - Mohammed Ahmed Alfiky, "Informal Settlements Phenomenon As A Result Of Egypt's Policies"
 - NARVAEZ, L. et al (2012) " SPACE SYNTAX ECONOMICS: decoding accessibility using property value and housing price in Cardiff,

Wales", Eighth International Space Syntax Symposium, Santiago de Chile.

- Neelam et al (2013) "Conceptual Framework of Land Suitability Analysis for Slum Redevelopment Initiatives", International Research Journal of Social Sciences
- Safaa Marafi, M.A. Sociology & Anthropology, The American University in Cairo.
- Sameh, (2007), master thesis, "Defining the role of indicators in the development of urban slums and in following up the implementation in Egypt" Faculty of Engineering, Cairo University.
- Satterthwaite, David and Bicknell, Jane (1989) Environment and Urbanization. SAGE Publications.
- Syagga (2011), "Land Tenure in Slum Upgrading Projects.". In Slum Upgrading Programmes in Nairobi: Challenges in Implementation. Nairobi: French Institute for Research in Africa.
- Thomson and Hardin (2000)," Remote sensing/GIS integration to identify potential low-income housing sites", Cities, Volume 17, Issue 2, April 2000, Pages 97–109.
- UNHABITAT, 2003. "The use of GIS in informal settlement upgrading: its role and impact on the community and on local government"
- UNHABITAT, 2010. "Egyptian Experience Strategy for Intervention in Informal areas".
- UNHABITAT, 2010. "Using GIS in constructing area-based physical deprivation index in Cairo Governorate, Egypt".
- UN-HABITAT (2012) VAGGIONE, PABLO. Urban planning for city leaders.
- UN-HABITAT (2012), " Streets as Tools for Urban Transformation in Slums: A Street-Led Approach to Citywide Slum Upgrading".
- VAGGIONE, PABLO (2012). EIGHT OPPORTUNITIES FOR URBAN PLANNING INNOVATION.
- Verfasser (2010), Master thesis, "Analysis on three Informal Settlements in Africa-Khayelitsha (Cape Town), Kibera (Nairobi) and Manshiet Nasser (Cairo)", WIEN University.
- Wakely, P. (2002). Reporting on Slums in Selected Cities. DPU–

UCL London, UK

- ZEINAB KHADR, LAMIA BULBUL, "EGYPTIAN RED CRESCENT IN ZEINHUM: Impact Assessment of Comprehensive Community Development Model for Slums Upgrading", SOCIAL RESEARCH CENTER, THE AMERICAN UNIVERSITY IN CAIRO, July 2011.

المراجع باللغة العربية:

- أحمد السيد النجار (٢٠٠٨)، الاقتصاد المصري بين حربي يونيو ٦٧ وأكتوبر ٧٣
- المركز الوطنى للحقوق الانسانية، القنات المهمشة والمشاركة السياسية .
- ربحان. عادة (٢٠٠٨) ، عمليات الارتقاء بالمناطق العشوائية فى فاعلية تنفيذ المخططات.
- عويس حازم، الغنيمى. اسلام ، انماط الحيازة وتأثيرها فى تطوير وتحسين حالة الاسكان بالمناطق العشوائية.
- قناوى. عبد الرحيم (٢٠١٣) ، العشوائيات مشاكل وحلول.
- مجلس الوزراء ودعم اتخاذ القرار(٢٠٠٨) ، "العشوائيات داخل محافظات جمهورية مصر العربية".
- طه. يس، محمود. امنية، (١٩٩٦)، أزمة الرأسمالية وسكن الفقراء.

- <http://www.ahram.org.eg/>
- <http://www.arcgis.com/>
- <http://www.esri.com/>
- <http://fromto.hig.se/~bjg/Axwoman.htm>
- <http://www.isdf.gov.eg/>
- http://en.wikipedia.org/wiki/Marxism#Social_Classes

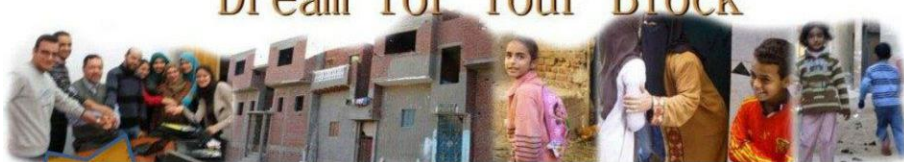
Appendices

Appendix A (Flyer of Dream for Your Block)

ورشة عمل التخطيط بالمشاركة بعنوان

جامعة الفيوم - كلية الهندسة

Dream for Your Block



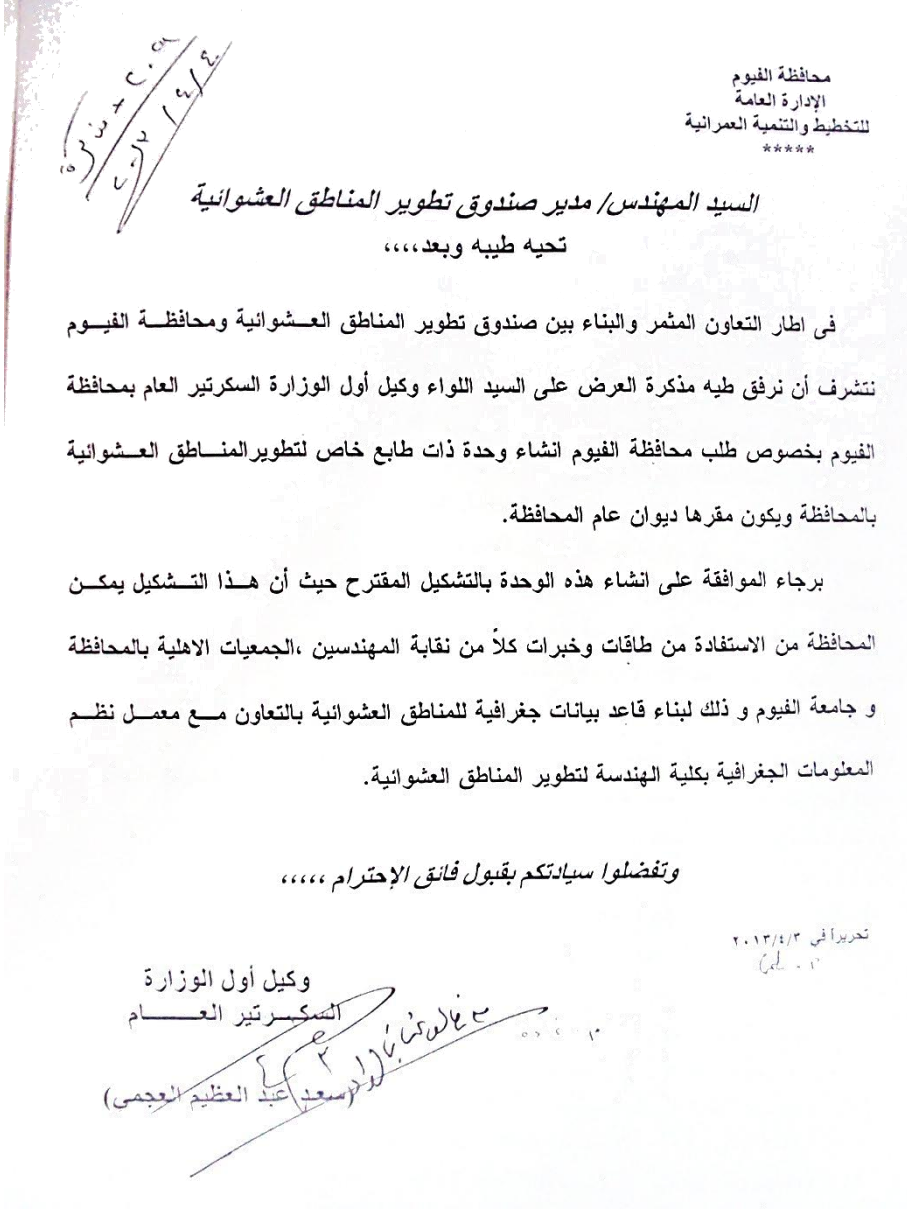
إحلم لمنطقتك

التطوير المستدام بالمشاركة للإرتقاء بالمناطق العشوائية بمدينة الفيوم
الثلاثاء 5 مارس 2013
قاعة احتفالات كلية الهندسة - العاشرة صباحا

**A Sustainable Participatory Approach to the
Development of Fayoum Informal Areas**
Tuesday 5/3/2013
Department of Architecture – Faculty of Engineering

دعوة

Appendix B (Letter from Fayoum Governor to ISDF)



Appendix C (Informal Unit)

الإدارة العامة
للتخطيط والتنمية العمرانية

مذكرة

للمعرض على السيد اللواء / وكيل أول الوزارة السكرتير العام

نظراً للظروف التي تمر بها المحافظة من كثرة التعديلات وخاصة بعد ثورة ٢٥ يناير ٢٠١١ مما أدى إلى نفسي ظاهرة إنتشار العشوائية بمحافظة الفيوم بالإضافة إلى المناطق العشوائية الموجودة أصلاً .

لذلك أرتأت الإدارة أن نقترح على سيادتكم إنشاء وحدة ذات طابع خاص لتطوير المناطق العشوائية ويكون مقرها ديوان عام محافظة الفيوم تسمى (وحدة تطوير العشوائيات) :

تشكل اللجنة برئاسة سيادتكم وعضوية كلاً من : -

- ١) السيد الأستاذ الدكتور / أيمن المغربي المستشار الهندسي للمحافظة
- ٢) السيد الأستاذ / مدير عام الإدارة العامة للشئون القانونية
- ٣) السيد الأستاذ / مدير عام الإدارة العامة للشئون المالية والإدارية
- ٤) السيد الأستاذ / مدير عام الإدارة العامة لشئون العاملين
- ٣) السيد الأستاذ / مدير عام الإدارة العامة للتخطيط والمتابعة
- ٤) السيدة المهندسة / مدير عام الإدارة العامة للتخطيط والتنمية العمرانية
- ٥) السيد المهندس / محمد أبو خلف مندوب مديرية الإسكان والمرافق بالفيوم
- ٦) د/ أيمن إسماعيل أستاذ بكلية هندسة جامعة الفيوم ومدير معمل نظم المعلومات الجغرافية بكلية
- ٧) عضو ممثل من إدارة الحسابات
- ٨) ممثل عن الجمعيات الأهلية
- ٩) ممثل عن أهالي المناطق المراد تطويرها
- ٨) م/ عادل وفاني جرجس مهندس بالإدارة العامة للتخطيط والتنمية العمرانية (المدير التنفيذي للوحدة)
- ٩) م / رشا مخلص عبد المنعم مهندسة بالإدارة العامة للتخطيط والتنمية العمرانية عضواً
- ١٠) م / سلمى أنس عبد الحكم مهندسة بالإدارة العامة للتخطيط والتنمية العمرانية عضواً
- ١١) م / منسى إبراهيم محمد مهندسة بالإدارة العامة للتخطيط والتنمية العمرانية عضواً
- ١٢) م / مينا ميلاد عبد الله مهندس بالإدارة العامة للتخطيط والتنمية العمرانية عضواً
- ١٣) م / فاطمة حسن محمد مهندسة بالإدارة العامة للتخطيط والتنمية العمرانية عضواً
- ١٤) أ / ناصر رياض ونيس فني بالإدارة العامة للتخطيط والتنمية العمرانية عضواً
- ١٥) السيدة / أسماء نبيل محمد سكرتيرة بالإدارة العامة للتخطيط والتنمية العمرانية

على أن تختص الوحدة بالمهام التالية :-

- ١) تختص الوحدة بكل ما يحال إليها بشأن العشوائيات بالمحافظة
 - ٢) إقرار خطط وأساليب المتابعة وتقييم الآراء مع المتابعة مع صندوق تطوير المناطق العشوائية بالقاهرة .
 - ٣) التركيز على التنمية المتكاملة التي يكون محورها بناء الإنسان وقيمه وثقافته [بناء البشر لا الحجر]
 - ٤) حصر ورصد الطاقات والإمكانات المجتمعية في تلك المناطق وبناء قاعدة معلومات جغرافية لها (بالتعاون مع معمل نظم المعلومات الجغرافية بكلية الهندسة)
 - ٥) المساهمة في تخطيط وتطوير النسيج العمراني أسلوب حديث يضمن التنمية المستدامة
 - ٦) متابعة تقديم الدعم الفني والتقني والمالي لتطوير صناعات وحرف ومشروعات المناطق الصغيرة ومتناهية الصغر [سواء رسمية أو غير رسمية] للنهوض بمستواها وجودتها ودمجها تدريجياً في القطاع الرسمي (بالتعاون مع كلية الهندسة وأكاديمية البحث العلمي وجهات التمويل)
- على أن تستعين الوحدة بمن تراه بناءً على خطة التطوير .
- برجاء الموافقة على إرسال الموضوع إلى صندوق تطوير المناطق العشوائية بالقاهرة للموافقة على إنشاء هذه الوحدة بديوان عام محافظة الفيوم .

والأمر معروض على سيادتكم للتفضل بما ترونه ،،،،
وتفضلوا سيادتكم بقبول فائق الإحترام ،،،،

تحريراً في ٢٠١٣/٣/٢٨

علي .

مدير عام الإدارة

علي .

رأى السيد اللواء/ السكرتير العام

على وجه الخصوص السيد اللواء/ السكرتير العام
بالتفويض من السيد اللواء/ السكرتير العام
٢٠١٣/٣/٢٨

قرار السيد المهندس/ المحافظ

مدير إقليمي
و في تطوير صندوق

علي .

عمران التعايش

مدخل تخطيطى بيئى لتطوير المناطق غير الرسمية

تتناول هذه الرسالة تطوير منهجية جديدة لتطوير العشوائيات وإظهار إمكانية دمجها مع المحيط العمرانى عن طريق تكامل شبكة الطرق بصورة مدروسة مبنية على أسس تقييم كمية ومن خلال مدخل بيئى جديد متكامل في سياقه المجتمعي، ألا وهو "عمران التعايش".

وعمران التعايش هو مدخل بيئى جديد تصيغه الرسالة يستهدف تحويل العشوائيات الى وحدات مدمجة مع البيئة العمرانية المحيطة من خلال توجيه محاور النمو في اتجاهات محددة تتلائم مع ظروف المنطقة الأوسع وتحترم الخصائص المميزة لهذه المناطق لتحقيق التنمية البشرية لسكان هذه المناطق.

والباعث لهذا الموضوع أن العشوائيات فى مصر (وفي العالم بصفة عامة) يتم التعامل معها على أنها مناطق معزولة عن المحيط العمرانى بالرغم من وجودها فى كثير من المناطق الحيوية وبجانب مناطق كثيرة جيدة على المستوى العمرانى. فبالإضافة إلى ضعف فاعلية الحلول التقليدية التى قدمتها الدولة فى السابق لحل مشكلة العشوائيات، فقد اغفلت جميعها الهدف من التطوير ألا وهو الدمج والذى ينبغى أن يتم على أسس جغرافى، و اجتماعى، و شمولى وعلى وجه الخصوص الأساس البيئى .

وقد انتهت الرسالة الى تطوير منهجية لتحديد اولويات التدخل فى المناطق العشوائية وتقسيمها الى نوعين: المناطق الأكثر إحتياجاً، والمناطق الأعلى فائدة عند التدخل. وذلك لتسهيل على متخذ القرار اختيار منطقة التطوير تبعا لأولويات واضحة. وهذه

المنهجية تعتمد على دمج تطبيقات نظم المعلومات الجغرافية GIS مع التركيب الفراغى Space Syntax للوصول الى مخطط بيانى يوضح اولويات التدخل.

وقد تم تطبيق هذه المنهجية على المناطق العشوائية فى مدينة الفيوم لاختيار أيها الأولى بالتدخل ثم تطبيق منهجية التطوير عليها.

وقد طبقت منهجية التطوير على المنطقة الاكثر احتياجا والاشد تهديدا للاراضى الزراعية المحيطة وهي " علاوى " . وتتخلص هذه المنهجية فى تقسيم العشوائيات الى اربع حالات مختلفة تبعا لاختلاف طبيعة المحيط العمرانى مع تقديم سياسات تدخل متنوعة تتماشى الاربع الحالات المختلفة.

وقد تم اختبار فاعلية منهجية التطوير على منطقة الدراسة والحل المقترح عن طريق قياس قيم التكامل لشبكة الطرق قبل وبعد التدخل . وتبين فاعلية هذا المدخل فى دمج المناطق العشوائية وتحديد محاور النمو فى الاتجاهات المرغوبة بعيدا عن الاراضى الزراعية.

ويمكن الاستفادة من نتائج هذه الدراسة فى عدة جوانب منها: تصميم نموذج لدعم اتخاذ القرار فى المحافظات والمحليات مبني على قواعد بيانات جغرافية حقيقية ومحدثة ولحظية، استكمال وحدات تطوير العشوائيات بالمحافظات وتدريب العاملين بها على مفاهيم عمران التعايش، إعادة تصنيف المناطق العشوائية على اسس غير تلك المتعلقة فقط بالسلامة ودعمها بالخصائص المهنية والاجتماعية المميزة لقاطنيها، وأخيرا تفعيل دور مؤسسات المجتمع المدني والمبادرات المجتمعية القائمة على دمج المواطنين فى الحياة العمرانية لمدينهم.