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## Urban Form Rehabilitation of the Informal Settlements in Egypt

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Slums is a big problem facing Egypt. This paper is focusing on the investigation of illegal constructions by individuals on legally-owned or state-owned lands, which in turn has led to the creation of informal settlements in Egypt. It analyzes the land use distribution (land use budget), the tissue, and the form; these three components reform the urban fabric and the visual form. Two approaches were adopted in response to this problem, demolishing or enhancement. The first was very coast and the second concerned only the individuals without take in consideration the built environment. This paper gives unconventional solutions to address the problem of slums in Egypt. It depends on capacity development approach. The main objective aims to improve image and legibility of informal areas and integrate it in the formal urban context. We try to identify new tools, mechanisms, policy, legislation, and visual studies in the informal settlements in Egypt.

**Keywords:** Informal settlements, Rehabilitation, Building capacity, Urban form, Egypt.

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## Introduction

Informal development has been, and continues to be, the dominant mode of urbanization in many developing countries, including Egypt. 'In Greater Cairo, these phenomena began just after the Second World War (and later in the following decade for the rest of the country), when migration from Upper Egypt and the Delta caused housing pressures to become critical' (Sims & Sejourne, 2000 cited in Séjourné, M. 2008: 016, Shahayeb D. 2010: 28).

This phenomenon was result of increase migration of individuals from rural to urban areas seeking Job opportunities. It was of greater extent during the decade 1956-1973, and continued more rapidly following 1980. It is estimated that during the period 1956-1973 about 800 informal settlements were created in Egypt. Until 1986, statistics show that approximately 40% of the urban population lives in informal settlements. The informal settlements occupy 62% of Greater Cairo area.

The government withdrew from the housing market in the mid seventieths. The private sector provided only new luxury housing. Families with limited incomes have no choice except to build their houses as available possibilities. 'Figures about the number of informal settlements in Egypt and their populations differ significantly among different government authorities, as well as within the individual offices and ministries. Accurate and consistent data and information about informal areas in Egypt does not exist' (Sabry, S. 2010: 29).

"The latest figures include 1171 areas with 15 million people in 2007 by the Information and Decision Support Center (IDSC); 16-21 million people in 2008 by the World Bank; and 1 210 areas in 2006, up from 1174 areas in 2004, by the United Nations Development Program (UNDP) and the Ministry of Economic Development. These considerable figures seem to finally acknowledge the large-scale of informal areas" (Sabry, S. 2008: 29).

According to the final statistics of the Central Agency for Public Mobilization and Statistics in 2006, the total number of slum areas in Egypt is about 1221 areas. 'The total urban population in Egypt is about 31 million people. Slums' population is around 12 million people, about 38% out of total urban population' (census, 2008: 28-29). But in fact there are large numbers of random areas that were not included within the previous classification. Many of the Egyptian cities at all categories has huge areas grew up outside the urban formal framework. Informal settlements in some cities reached 77% of city's urban growth (Bani Mazar – El Minya). They have even reached 87% of Giza city urban expansion. Informal settlement population in cities to total city population is around 25% in Assyout and 62% in Giza.

There are several types of informal settlements in Egypt, the most common is construction on small, legally-owned land parcels or state-owned land, in areas having no formal urban plan, which is often accomplished simply by proceeding without building licenses. This type of informality has two types, Informality within or outside the formal settlements and informality within the city influence zone.

The existing informalities in Egypt resulted from various causes, among them insufficient spatial planning, old and complex legislation, lack of housing policy, bureaucracy, significant rise in property prices, and outdated public administration structure. 'We could define informal settlement as building in an area where housing is prohibited for legal reasons because it is agricultural land, State-owned land, unplanned land, land not subject to road plans, etc.' (Afify, A., 2000). The "first generation of informal settlements" grew mainly in the periphery of major cities, or close to industrial areas.

This paper is focusing on the analysis of the morphology of the informal settlements. It concentrates on the land use distribution (land use budget), the tissue, and the form; these three components reform the urban fabric and the visual form.



## **Main characters of informal settlements in Egypt**

The most common informal settlements in Egypt are the housings which were accomplished simply by proceeding without building licenses from the local authorities. Buildings were conducted in areas having no formal urban plan. 'They lack basic infrastructure, which in many cases means no electricity or water supply, no schools, nursery schools, parks, sport installations, transportation' (Central Agency for Public Mobilization and Statistics, 2008: 9). The main steps of this process are: purchase of agricultural land, its subdivision into smaller parcels, and illegal conversion of the land use from agricultural into housing. There are architectural and urban features characterized these areas.

### *Urban morphology*

Most of the informal settlements have begun by substandard commercial subdivision with small dimensional plots, construction on the whole plot without leaving any outer open space, Narrow streets do not achieve traffic functions or proper ventilation, Buildings are constructed with solid materials (Concrete structures and walls bearers). Some of the land owners and land entrepreneurs illegally convert their land-use from agricultural into residential simply by constructing orthogonal road networks within their territories. The small land parcels are approximately the size of 100-150 m<sup>2</sup> at the periphery of the cities, outside the formal urban plans. Those informal cities were built according to the customs and the collective thinking. All these informal settlement were built under the pressure of need without any prior plan or conception.

These informal settlements have some weakness points that affect the urban environment as: The streets are very narrow and not straight, most of the roads network are inaccessible by vehicles and don't provide a healthy conditions for the habitant, open space areas are rarely found, plots areas are very small, there aren't grids for areas distribution or roads network, and the land use budget is unbalanced.

There isn't any urban hierarchy at the urban or administrative level (cluster, neighborhood, and district). There is no coordinating system for the streets and no baseline information. This leads to the hard access for health services, such as fire fighting, ambulances and law enforcement personals.

In these areas, there is a great disruption of the land use budget. Residential areas are the dominant use. Proportion of the road network and open areas are extremely low. There are not areas of services, but there are some few scattered buildings. There are no areas of trade services, but there are some marginal commercial activities. The urban fabric is very compact. Most of infrastructure services are very sub-standard in terms of performance and efficiency, and some of them are not available, as sanitary drainage. These areas are deprived of all sorts of public services, schools, hospitals and social institutions. Informal settlements rely on its services at the surrounding formal areas.

The small spaces of plots made it difficult to provide basic living spaces in the houses. Room sizes and numbers do not often fit with the numbers of family members. Services spaces such as bathrooms and kitchens areas are very small and often not found. Buildings are attached on three sides by neighbouring houses and often no skylights. Very bad ventilation threatens public health and result in many diseases that spread in those areas.

### *Social morphology*

In this underdeveloped urban environment juxtapose very different social classes. 'In these areas live segments of middle classes of government employees, doctors, engineers and lawyers who could not afford to rent apartments in planned areas since rental rates exceed their earning ability along with segments of the lower classes of street vendors, artisans and seasonal employees' (Shehayeb, D. 2010: 35).



'Hence the informal settlements start with the involved political, environmental and mostly social problems by which the administrations are confronted' (Malusardi, F. and Occhipinti, G. 2003:1).

In the most Egyptian cities there was no centralized concept to guide the development process from the top down. Urban historian Lewis Mumford describes this process in his 1961 book; the informal settlement is a growth sector. But it's more than that, it offers choice, it gives people what they want, it enables individual creativity and it is affordable. It is also simple to build and easy to use. But the problem is a decrease of housing and planning quality leads to a decrease in land and social values.

Most of buildings in these areas are private homes. Parents and their sons who marry live in separate apartments in the same house. Each area is characterized by a population almost had come from the same geographical area. Often families came successively from Upper Egypt and Delta. Their customs and traditions are often ones, but the problem is that they remain isolated from the external communities. These people still remain with their negative habits such as high school dropout rates and early marriage rates for females.

Compared to other urban areas informal settlements are highly populated and have high density and growth percentage. 'Residents of informal settlements are likely to experience poverty, ignorance, disease, negative customs and traditions, early marriages, and the effects of quickly deteriorating housing and lack of infrastructure' (Afify, M. 2000: 3).

### **Previous experiences in the development of slums**

In the past years, the state developed some slums by a new approach in collaboration with foreign donors such as United State Aid (USAID) and German Technical Cooperative (GTZ). 'This approach relied on new concepts such as, dialogue, partnership and sustainability of urban development. This approach has been applied on several areas nationwide' (Claudio, Jr., 2002: 16). It usually focused on two issues, the individual and providing a package of basic services: clean water supply and adequate sewage disposal to improve the well-being of the community. Those experiences have succeeded, but their impact has been limited. It was difficult to apply the model based on the same mechanisms in all slums; each area has its characteristics and its own circumstances. 'Those experiences focused only on providing some services, but the urban environment remained bad and highly dense. The streets remained narrow, making it difficult to implement sewage and water supply'(Alkady J. 2009: 56).

The government, represented by the Ministry of Housing has prepared master plans for the development of some areas in Cairo such as Manshiet Nasser and Duwaiqa, two of the largest slums in Cairo, with total area of about 357 hectares. The concept of development based on two axes: the first, removing random buildings and establishing new residential communities, as well as establishing other communities in the desert next to the back area. The second axe is the upgrading areas that will not be demolished through connecting the public utilities of water, sewage, electricity and roads. 'Areas that have been removed and re-planned are very few due to the high cost. The rehabilitated areas were abundant, but the result was weak' (Saleh, M. 2008: 138).

"Many developing countries pursued the repressive 'bulldozer' eviction policy approach until researches and the international experience started to give evidences about the failures of the eradication policies, its shortcoming and the perverse effects it had on the urban poor" (Claudio, Jr. 2002: 9).

These two approaches (demolition and rehabilitation) are the main tendencies, which the Egyptian government and the international community have adopted in the development of slums.



The first was very costly and difficult to apply to many areas, and the result of the second was weak and only related to improving some of the life conditions.

What was done by the donor international organizations in addressing slums is to provide some of the life necessities. They focused on, providing a source of drinking water, paving a road, removing rubbish dumps, establishing a social services building, sports arena or establishing places to teach crafts. These aides supported the slums' communities to continue surviving, but they did not change the bad circumstance. The bad condition of urban environment is still under human acceptable level.

Slums development projects carried out by the government through demolition and rebuilding still very limited. The physical environment of these projects is acceptable, but there is a shortage in the social and economic building capacity.

### **Toward a new approach for capacity development of informal settlements**

The creation of equitable towns and cities that provide dignity and quality of life for all inhabitants is not an option it is a necessity. It may be very difficult to improve the area after an anarchic development, then, how could we make the habitant enjoy better environmental conditions. How could we decrease the early death of dwellers in informal settlements areas due to unhealthy housing? We must detain non-conventional planning skills and participatory tools which will assist to launch meaningful actions and result oriented processes at the settlement level.

'Since the 1960s, there has been ongoing debate regarding the role that the design disciplines may play in addressing the development issues facing informal settlements of the developing world' (Lindsay, M. 2008: 12). There was a problem existing between those who see architecture and urbanism could promote development and shape social relations and who think that administering financial aid to individuals in need, development problems would resolve themselves.

"The modernists viewed the informal city as a set of disordered urban elements whose problems could be solved through application of modernist order. These schemes saw the process as black and white, problem and solution. They relied on bringing change through formal overlay of a set of spatial rules rather than any attempt to understand the existing condition" (Lindsay, M. 2008: 12).

'Studies of Christopher Alexander and Team X gave value to the systems that appeared unplanned, yet had their own order. This process began to see the 'informal' as having its own values and rules' (Lindsay, M. 2008: 4). Some commentators have argued that formal planning may actually exacerbate the problems of informal developments by imposing requirements that cannot be met.

In this part we suggest proposals for interventions that can become part of an open discussion and design process involving community. Our main goal is to put a new physical design vision for informal settlements in Egypt, The possibilities of what could be; and the idea of producing a design framework. Informal settlements were established only to provide a shelter. What we are looking for through this paper is to provide a better environment for life. 'Informal settlements could be our cities of the future' (Milles, G. (2012: 2).

The main objective aims to improve image and legibility of informal areas and integrate it in the urban context. How could we find the best way for applying the norms and standard of urban planning and urban design on the informal settlements to create a distinctive image? We need to identify new tools, mechanisms, policy, legislation, and visual studies in the informal settlements in Egypt.

It must be stressed that each informal settlement has its own special case. How to deal at the level of details varies from one region to another.



Perhaps some modification in the methodology could be made through the pilot projects. But there are some public policies that may serve as the basic foundations of capacity-building program. Each area must be divided into sub areas of intervention as the degree of diversity or consistency.

The demolishing process and changing the physical urban pattern should be kept at a minimum. Forced evictions must be avoided as much as possible and the person should have the right to choose between various alternatives for resettlement.

In a case study for reform the informal settlements Mark Lindsay define 'the practice of capacity development as a broad development framework within which pilot projects take place' (Lindsay, M. 2008: 4). We seek out a working method for urban design as a capacity building tool. Capacity-building method depends on some Progressive steps.

*Promote integration with adjacent communities (Albonico, M. 2011:3).*

Although the spatial proximity, there is a break in communication between slums and the planned surrounding areas. These areas are isolated islands inside and on the outskirts of cities. The first step toward rehabilitation is the integration. The isolation makes the economy of those communities fragile, because it depends at the locality only. At the beginning of reform we need a fort connection and penetration. There are physical and moral impacts of this linking. The physical impacts are, continuity of the movement system, overlapping of trading activities, and proximity of physical appearance. The moral impacts depend on soft moving process, which mean that the passenger do not feel the great gap between the urban morphology of planned and informal areas.

"In 1994, the Favela-Bairro programme emerged in Brazil. It is one of the most interesting recent examples of the designer's possible role in the capacity development process. To date it is the largest and most comprehensive squatter settlement upgrading programme in Latin America" (Lindsay, M. 2008: 16).

The first step in developing a strong network of community infrastructure will be increasing connectivity and permeability. One of the important stages of Favela Bairro programme was looking at improving connectivity with the city both physically and with its organisations and institutions. The aim is to connect informal to formal and builds community cohesion. The dweller of informal settlements have to encouraged to build as a community, a place to dwell rather than simply take shelter and survive.

*Building capacity of urban form*

The informal settlements have its characters and urban fabric. Our goal is not to completely remove this pattern and re-planning the areas in accordance with the principles and rules of design and ignoring existent conditions.

As stated by Fiori and Brandao, Good design and urbanism can help create 'platforms' for other social and political developments in the city. Good design for informal settlements will depend on the rebalance of land uses, creating corridors of development and anchor projects, reshaping outer spaces, and adoption of new legislation. 'In 1994, the Favela Bairro programme emerged in Brazil. The basic informal structure of the housing layout of Favela Bairro remained intact, while the focus was on collective space and infrastructure' (Lindsay, M. 2008: 8). Rebalance of land use budget: The existing land use of informal settlement is very disturbed. The recreation uses, services, and green spaces completely non-existent. Commercial activities are still in primitive like. Proportion of the road network and open spaces are much less than the standard rates, which threatens the public health. We have to change the existing uses budget through the defining of the most degraded areas and converted it into service areas or open spaces.



Such as we can decrease the residential land use and density and improve the legibility of the visual image of the urban environment. 'There are times that upgrading also means the decrease in building and population densities' (Claudio, Jr. 2002: 8)

Movement system and main corridors for recreation, movement and trade: one of the most important problems of informal settlements is the compacted fabric. Road network of informal settlements does not have a clear grading. Axes of penetration are one of the important means of rarefaction within the urban environment and improve the level of movement. More formal commercial activities should be generated within these corridors.

Most of informal settlements are not penetrated by the public transportation lines, which makes entry and exit very difficult. The lack of connection with public transport lines reduces the efficiency of these areas due to the low incomes of the population. We could create a network of transportation main axis and relying heavily at pedestrian system. The resolution of accessibility through the improvement of main roads is often sufficient to launch regularisation processes and stimulate private investments. 'The total plan addressing the entire physical/spatial restructuring of the settlement is usually ambitious, costly and not reliable due to problems in topographic accuracy' (Claudio, Jr., 2002: 17).

The roadside market has the potential to fulfil such a landmark/gateway role, but needs to feel safer and more accessible to traffic passing by. The main spines will also have the potential to introduce public buildings such as police stations, market buildings, schools, childcare facilities and transport nodes near the main road.

Reshaping of the public spaces: Open spaces are an important functional and formal part in the built environment. As it mentioned before, the public spaces non-existent in the informal settlements. The provision of public space and community infrastructure impacts upon many people and offers the possibility for broad scale community capacity development. 'Residents should be proud of their public spaces, which contribute to their feeling of collective belonging' (Tiwari cited in Lindsay, M. 2008: 28). As Fiori and Brandao state 'It is understood that if the residents have a positive image of the public spaces they use daily, a sense of pride would arise which is crucial for the community to develop' (Cited in Lindsay, M. 2008: 28). Can you imagine that an area in the south-east of Cairo called Manshiet Nasser inhabited by 500,000 people is devoid from any public open space. Open spaces are the community's collective power and encourage social integration among the residents.

In the early stages of rehabilitation, the open spaces could be provided through small plots of areas to give the people the opportunity to meet and to children to practice recreational activities. The State can buy small tracts of dilapidated buildings and turn them into open areas.

'Penalosa says: Pavements, bicycle lanes, plazas, parks, promenades, waterfronts and public sports facilities (that) show respect for human dignity and begin at least to compensate for inequality in other realms' (Penalosa 2007 cited in Lindsay, M. 2008: 28).

Anchor projects: The improvements in the urban environment by opening new axes of movement, formation of the open space and rebalance of land use is leading to attract new segments of the population and activities. 'In the case of Dikmen Valley to the south of Ankara in the Cankaya Municipality, Developers and builders have been attracted by increasing density and opportunities' (Malusardi, F. and Occhipinti, G. 2003:2).

New legislation: In situations that the land parcels of minimal size only co-ownership is allowed. The residents will take care of the individual housing improvement. Principals and standards urban planning must be applied with flexibly.



### *Social capacity building*

'Upgrading is the start to becoming a recognized citizen' (Afify M. 2000: 5). Providing clinics and health education programs, school facilities and teacher training are needed to attack the lack of basic education, and lastly programs are needed to increase income earning opportunities and the general economic health of the community. The challenge is to move gradually forward by teaching local leaders a step-by-step approach to enhance the urban environment and building capacity.

Informal settlements must be addressed as a problem of people as addressed as a problem of housing. 'Neglecting urban problems leads to socio-economic issues of great seriousness, especially when more than half the poor population living in informal settlements' (Afify, M. 2000: 1).

In order to turn informal cities to formal areas, steps taken would provide a set of formal community attributes that qualifies a settlement as "formalized" starting with land tenure and the complement of urban infrastructure and health and education services. Social capacity building depends on provision of social services and gives attention to people through innovative attempts. Slum dwellers have to get the same level of services as in the formal areas. We need to design new programs for societal improvement, such as teaching children that their families cannot afford them the education not only for financial reasons, but for intellectual reasons also.

### *Economical capacity building*

The main projects conducted by the government agencies to improve the urban environment such as movement axis, open spaces areas, public's amenities, etc. will attract the entrepreneurs. Governments would not be able to intervene in the slum development processes at the plots level, but they can lead transformation processes. The land value is a key factor that will make landowners able to hold individual or communal partnerships with developers.

"The registered property with an official title allows owners to make an economic use these assets. Some argue that these properties can be used as collateral when applying for a mortgage or in any other real estate transaction. This means, they are now capable to participate and be an integral part of the market" (Claudio, Jr. 2002: 5).

Programs are needed to increase income earning opportunities and the general economic health of the community. Any development process of the slums areas will remain without value if it doesn't lead to improve the economic level of population. Urban areas are mainly economical environments. Residents must have the ability to fulfill the obligations of that environment. Therefore, one of the objectives of development of the slums is to make the resident able to. Shifting from informals to formals areas will charge the habitants additional expenses for maintenance, taxes, and services that the resident must be ready for.

## **Results**

Conventional approaches of informal settlements development demonstrated its inability to deal with the problem.

Improving physical connectivity with the city is the first step toward upgrading the informal settlements.

The provision of public space and community infrastructure impacts upon many people and offers the possibility for broad scale community capacity development.





Create a distinctive public space in the informal settlements leads to a collective belonging (Pavements, bicycle lanes, plazas, parks, promenades, and public sports facilities (that) show respect for human dignity and begin at least to compensate for inequality in other realms).

Capacity building development at the public space level will raise the land value in informal settlements and attract entrepreneurs to invest in the development process.

The reforming of the individual plots needs a long term strategy and regulation to be made, this step could be accomplished through the people themselves.

Rapid interventions to manage development in areas that convert to slum settlements through urban plans legislation and impose fees help control the growth of slums.

Avoiding excessive fragmentation of agricultural land, legalizing the informal settlements together with the creation of alternative mechanisms for housing can control the problem.

The government should shift its vision of upgrading of informal settlements from the scale of individual and plots into community infrastructure supply.

The most important element for success of the rehabilitation of informal settlements is commitment by all: the city, the community, and the families.

The way of dealing with slums through removal rebuilding is very expensive and difficult to be applied, and the number of applied cases is very few.

Urban slums have its own character that cannot be ignored and has helped in finding a solution to the housing problem, but it needs an urban and a socio-economic approach to improve the quality of life.

The upgrading and regularization of informal settlements become strategically important and are now part of the urban restructuring menu in several cities.

The total plan addressing the entire physical/spatial restructuring of the settlement is usually ambitious, costly and not reliable due to problems in topographic accuracy.

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