

An analytical study of the different methods of handling informal areas on state property "Case study of the informal unsafe areas near the railway on Sudan street, Giza"

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Abstract: -

The problem of informal areas in Egypt, despite the difference in these informal areas in terms of location, area, population and the quality of services, they share their suffering from rising population density, insufficiency of basic facilities and services, the spread of environmental pollution and low standard of living.

The importance of this research lies in a new problem that hinders planning and executive authorities in the development of informal areas, which is land ownership.

This comes in different entities such as private property whither for residents or companies, and central authorities such as the Ministry of Endowments, Railway Authority, State Property, or the Antiquities Authority. the research exposes all of this to reach results and solutions that help the planning and executive authorities in providing services to these areas, and in the implementation of vital projects and development projects.

Introduction: -

A rang of problems arise in the areas where informal area dwellers cannot play the role of government in helping themselves. They restrict these areas and sprawl their location on agricultural land or on unsafe geographical areas which has all led to several major problems in the quality of life for those who live there. We can summarize the problem as a lack of support from the government towards people, and a failure to fulfill their rights to be different citizens. (1)

Informal areas are considered illegally occupied houses and create a source of nuisance and environmental pollution, as well deteriorating urban living conditions.

(1) Source: Informal settlements in Egypt 2011, Al Duweika case)

The existence of informal areas as a part of urban habitats indicates a condition of spoiled physical, social and economic environment. Over the last two decades, the migration from villages and small towns to urban areas has increased. That leads to deterioration in the quality of the urban environment and sustainable development, especially in urban cities. The problems that people living in informal settlements faced have become a major concern of the government. Informal areas are the main issue in many urban areas, particularly problems related to transportation, population, health and safety. (1)

Key words: - informal areas - informal area development - unsafe areas - informal area classification.

Study problem: -

- The existence of informal areas on lands of private ownership such as endowments, Antiquities and railways authorities, or state property, which causes hindrance to the planning and implementation authorities in providing services to the planned areas of the city in the implementation of vital and development projects.

The main objective of the study: -

- This study aims to explore and analyze the project of developing informal areas on state property, central authorities and private property in Egypt.

Methodology: -

- analyze the causes of the emergence of informal areas in Egypt, their various classifications, and methods of managing them, in order to identify the most important problems that hinder development process in order to avoid them in the future.

Monitoring the informal settlements that built on state and private property (Giza Governorate).

- Study the ownership and land tenure of informal areas and their effect on development projects for these areas.

- Conducting a field study for one of the informal areas of the Greater Cairo province cities, where a develop project has been established in an attempt to extract the most important results of the study.

(1) Land for Poor: Towards Sustainable Master Plan for Sensitive Redevelopment of Slums 2016

As this study represents an essential approach of designing future policies and methods in dealing with informal areas.

Causes of the emergence of informal areas in Egypt: -

The first informal area was monitored in Egypt in 1905, in Al-Materia neighborhood in Cairo, and then in the '30s, another area was spotted in Ezbet Al-Gomhoria in Alexandria.

the problem of informal areas has begun to take shape around the early '60s, as per some of planning experts.

there was a laxity in state land planning, as they are exist in vast areas. While we only use 7.8% of it. (1)

The following is a summary of the reasons for the emergence of informal areas in Egypt.

The problem of the emergence of informal housing dates back to the early 20th century which aligned with the rapid urbanization of cities and reconstruction after World War II.

The concentration of government services and authorities were in major cities as well the emergence of many modern industries led to the following: (1)

1- The political conditions: which are reflected in forced migrations as what happened in Palestine after the catastrophe (Nakba) of 1948

2- Investment motives as the squatters on government lands are dividing the land into small plots and selling them as housing for those people with difficult financial conditions.

3- The rapid growth of cities, which forced the population to displace and move towards the outskirts of cities in informal way.

4- Migration from the countryside to the urban areas for work as well searching for places of residence near work and the city.

5- Increasing of housing density with decreasing of income.

6- Lack of planning against this growth, such as a change in land use, non-observance of planning rules, and drastic rise in the building density of constructed area and the subsequent of lacking of basic facilities and services.

7- High construction cost, lack of financial source of funding, reliance on external loans, high inflation, lack of private sector involvement, and high land prices.

(1) Dr. Namat Mohammed Nazmi Dr.shr Suleiman Abdullah Dr. mha Sami Kamel - the development of slum areas as a model for corresponding housing in Egypt

8. The multiplicity of laws and regulations have an obvious effect on The inhabitants desire in building in the city center where the high cost and large number of restrictions, such as the laws of land zoning , environmental protection, etc., and the absence of civil authority or inability to cope with these large rates as well the existence of these clusters on unapproved subdivisions and without permits, which makes it out of the city authorities control and also from official statistics.

9- The Shortage of housing units comparing with the increase in demand for them as a result of rapid migration from the countryside to the city.

Classification of informal areas: -

In fact, it is Difficult to categorize informal areas or informal housing areas in Egypt, due to the multiplicity of reasons that resulted in its various forms.

The significance of these classifications in being one of the main determinants of the method of handling with these areas which is vary according to each category.

The most important classifications as follows:



Different classifications of informal areas (1)

(1) Walaa Abu Al-Hajjaj Muhanna. "A strategic methodology for dealing with informal residential areas" Ph.D. thesis, Tanta University, 2015

Classification of informal areas according to the location and its position:**1- Classification according to the nature of the land: -**

This classification is divided into three types:

Informal areas on agricultural land: -

Although these areas are considered private properties, but their owners did not obtain a permit to build on them, as their division is often carried out without getting back to the official urban planning mechanisms, so they have become illegal. (1)

Informal areas on desert lands:

They are usually built on the outskirts of cities and owned by the state; therefore, the lack of ownership is due to the lack of ownership of the land, and construction on these lands is done only by squatting the land. (2)

Urban enclave housing: -

It includes informal areas on both sides of highways, canals, and next to railways.

informal areas within the urban space of the city: -

The internal random growth that exists within the city center, its commercial and administrative areas and sometimes the existing residential areas is transforming these areas into informal areas. They may be built on squatting lands or private properties. (3)

informal areas outside the urban space:

These areas are located on the outskirts of cities as a result of continuous migration in searching of job opportunities, which encourage people to squat these areas that away from urbanization as a place of residence, regardless laws and planning principles.

2- Classification according to housing type and condition:

This classification can be divided into three types and they can be summed up as follows: -

6-"The challenge of slum, Global Report on Human settlements 2002" United Nations human settlements program.

7- Heba Allah Essam El Din Khalil. Community Development in Informal Areas - Foundations for Defining Effective Development and Evaluation Methods by Participation "PhD Thesis" Cairo University 2007

8- Iman Abd al-Hakim Ibrahim al-Maddah, "The Role of Non-Governmental Organizations in the Development of Slums", MA Thesis, Helwan University, 2006

A- Formerly formal housing:

Housing that was built by government and official authorities as shelters for those whose homes are collapsed or demolished to establish some projects. public housing is built by the state to solve the housing problem of middle class and low-income people. (1)

B- Informal housing: -

Housing that was built outside the scope of urban planning and includes unplanned housing, which are areas that are built by people without planning, and without government approval, as the streets are usually unpaved and narrow.

C- Inadequate housing: -

This type of housing includes figurative housing and marginal housing. figurative housing includes shanty housing, one room housing, and shared housing.

Marginal housing includes housing in mosques, cemetery, boats and stairs vault.

Classification according to the type of extension: -

Classification includes both horizontal extension as a result of the increase of population and many other factors that forced citizens to settle in these areas, and the vertical extension due to over population in some areas that led to increase the number of buildings floors without a permit, to ease this problem. (1)

Classification according to the land tenure and the nature of the area: -

This classification can be divided into three main types of informal housing. The first type is known as semi-informal settlements and includes illegal divisions on private agricultural land. The second type is known as squatters' settlements on state-owned desert lands. The third type includes housing on Public or private lands, which were originally formal housing, then changed over time and became an informal housing. This type may be known as previous formal housing.

The three previous types include up to 12 subtypes types that can be summarized in the following table: -

(1) Abd Al-Rahim Qassim "Analysis of informal housing phenomenon (concepts - negatives - positives) The Seventh International Architectural Conference of Faculty of Engineering, Assiut University, 23-25 October 2007

The main classification	Semi-informal settlements (on agricultural land)	Squatters' settlements (on desert lands)	Former formal housing (public or private land)
Sub Categories	Privately owned land	Local unit's lands	Local unit's lands
	Lands in the core of the village (the old core)	Reclamation lands	Cooperative housing
	State-owned agricultural land	Land under uncertainty of ownership	Public sector companies housing
			Corporate development lands
			Land of the armed forces
			Houses subject to rental value laws
			Addition to existing buildings without a permit
			Residential areas in the city center

Classification According to the land tenure and the nature of the area (1)

Classification according to severity: -

After the issuance of the Unified Building Law No. 119 of 2008, Informal Settlements Development Fund in Egypt began classifying these areas based on this law, as they were classified as follows:

-First degree: Areas exposed to life-threatening conditions as follows: -

- Areas prone to sliding stone blocks from the mountains.
- Flood-prone areas.
- Areas prone to railway accidents.

-Second degree: The areas that consist of dwellings with: -

- Structural elements such as walls, floors or roofs that were built by waste of building materials.
- Dilapidated or cracked structures.
- Established on lands with unsuitable soil for construction.

Third degree: the areas that threaten public health: -

- lack of clean water or improved sanitation.
- Under affection of industrial pollution.
- originated under high voltage networks.

(1) Soliman a hammed M. "urban informality in Egyptian cities: coping with diversity." Forth urban research symposium, 2007.

Fourth degree: the areas in which the inhabitants lack stable tenure, and the lands are divided into: -

- a. Built-up areas on state lands.
- b. Built-up areas on sovereign lands.
- c. Built-up areas on endowment lands.

Methods of developing informal areas: -

There are many reasons that led to the emergence of informal areas, as well the problems of these areas are difficult to define a typical method of handling them. Likewise, the criteria of dealing with existing areas are vary from one country to another due to the different environmental, social, political, economic and urban conditions. (1)

The development of informal areas is a process that interferes with the economic, social, environmental and legal Structure within the scope of any random assembly for preserving the economic and housing opportunities that exist in this community and act on social, housing, human and environmental development of the residents of these communities. (2)

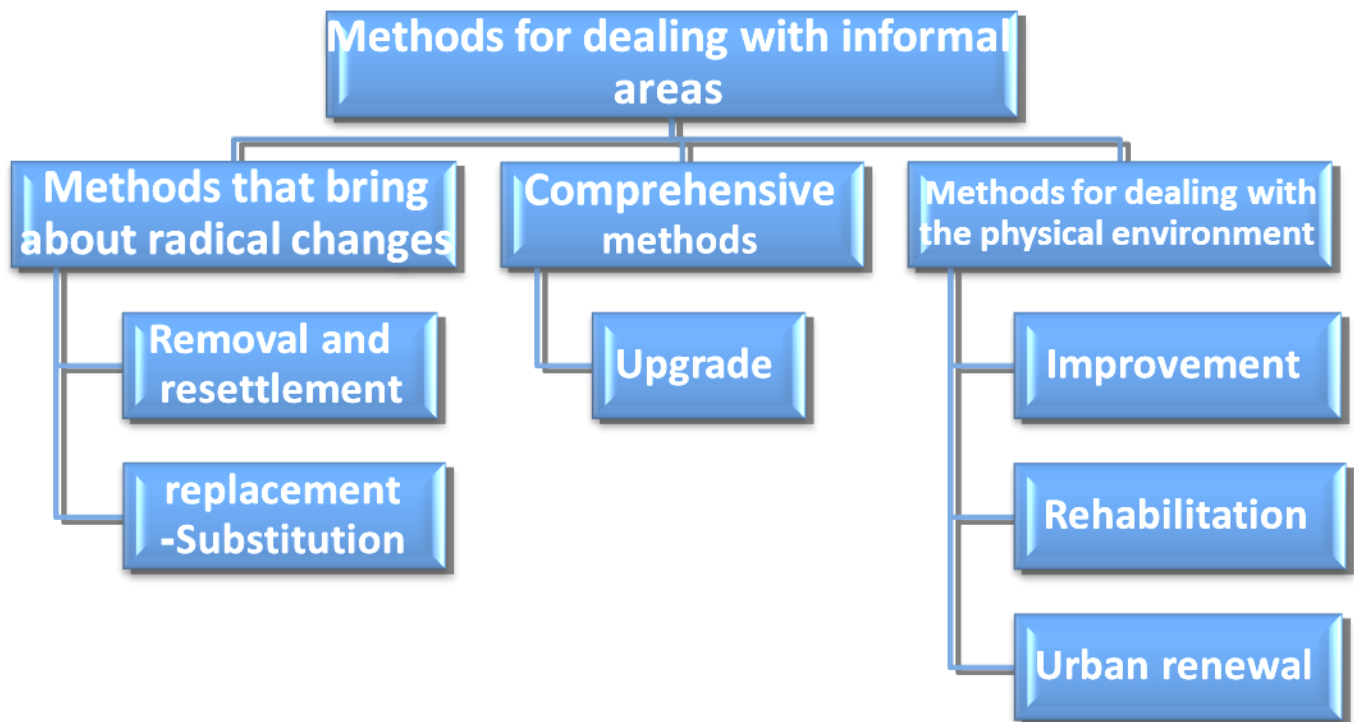
As the problems of informal area are complex and saturated issues, the policies for dealing with them must be based on the contrast in the characteristics of this type of housing, and its causes and motives. to determine the optimal method for dealing with a given area, the degree of deterioration of this area must be determined through studies and indicators, as well to set priorities of work on it based on existing possibilities. (3)

The following is a presentation of some of the different methods of dealing with informal areas: -

12 - Fahima al-Shahid, "Removal and Resettlement - Theory and Application Problems", MA Thesis, Cairo University.

13- A study of informal areas in Egypt, Central Agency for Mobilization and Statistics, April 2008.

14- Jamila Muhammad Sameh: Defining the role of urban indicators in the process of developing informal areas and following up on their implementation in Egypt. Master Thesis, Cairo University. 2007



Different methods of dealing with informal areas. (1)

Method of demolition and resettlement: -

It is one of the methods of dealing with informal areas. It is used when it is impossible to develop the area in its current form, as it is dilapidated areas that are useless to improve as the improvement cost is surpassing the social return of improvement.

The removal purpose is to achieve urban, environmental or social reform through the establishment of projects that help in the development of these areas, taking into account to provide of alternative housing for the residents of removed buildings. This method requires large financing and huge funds. Therefore, when adopting this method, estimating the cost and providing the necessary funding must be considered to compensate the residents in case of no alternative housing is provided to them in other location, whether inside or outside the city. (2)

(1) Walaa Abu Al-Hajjaj Muhanna. "A strategic methodology for dealing with informal residential areas" Ph.D. thesis, Tanta University, 2015

(2) Wissam Abu Al-Hajjaj Muhanna. "Maintenance and reuse of heritage urban spaces." Master's thesis, Tanta University, 2006.

Replacement method: -

It is based on developing radical solutions to the problems; this method is characterized by durability, sustainability and provision of a healthy environment because it provides adequate housing, infrastructure and public services.

It is considered an investment policy that has a long-term return. This policy is not abrupt, as it takes into account the non-urban dimensions, therefore it does not create conflict with public opinion. (1)

The method of upgrading informal areas: -

The upgrading policy is one of the few effective methods that seek to help the poor in informal areas through social and economic empowerment. (2)

The upgrading method is considered a suitable method for countries with limited economic resources, whose budget does not bear large expenses, whereas linking it to urban development with social and economic development is vital to obtain fund. This method varies from one neighborhood to another according to general conditions and political, social and economic environment. (3)

Urban improvement method: -

- This method aims to remove all the influences that lowering the level of the area, and it is a temporary treatment of the current conditions within the framework of a plan aimed to renovation. This method includes raising the level of existing services in the area and adding aesthetic touches, depending on the proper utilization of available capabilities, whether governmental or individual, through planned coordination. (4)

This method is used to preserve historical and residential buildings that are considered a national wealth and to raise their value. (5)

(1) Wissam Abu Al-Hajjaj Muhanna. "Maintenance and reuse of heritage urban spaces." Master's thesis, Tanta University, 2006.

(2)-wekesa, B. W. Steyn. G. S. Otieno, F.A.O.(Fred)."a review of physical and socio-economic characteristics and intervention approaches of informal settlements ", habitat international ,35,2011

(3) Ghada Muhammad Raihan, "The Process of Upgrading the Slums in the Effectiveness of Implementing the Plans - With a Special Mention for Al Mounira District," Helwan University, 2008.

(4) Essam Muhammad Hussein, "Study and evaluation of the current reality and future plans for the developmental perspective of slum areas in the Suez region," the seventh conference of the Faculty of Engineering, Assiut University, 23-25 October 2007

(5) Osama Abd alaziz: "theories of the development of slums and their applications", PhD thesis, Urban Planning Department, Faculty of Engineering, Al-Azhar University, 2007

Rehabilitation: -

Rehabilitation process is carried out by restoring living standards and appropriate normal lifestyle of work and housing. Therefore, these buildings meet the needs of the current society. (1)

The rehabilitation policy is based on either providing loans and subsidies to the owners of these buildings to meet the burdens and costs of renewing dwellings and housing units in urban renewal areas, or government authorities to purchase and rehabilitate degraded housing, then sold it by the local authority for urban renewal as part of urban renewal projects. (2)

Urban renewal: -

This method aims at preserving real estate wealth, raising its value, and designing a new urban environment through applying of several integrated individual policies such as removal, restoration and repair, in addition to coordinate surrounding sites and acting on renewing utility networks, roads and services. Urban renewal, as a comprehensive concept, includes several policies such as demolition of degraded buildings, restoring the good condition buildings preserving buildings of a distinctive architectural character, protecting buildings and areas of good and stable condition, and exploiting available lands for planning purposes. (3)

considerations to be taken into account when developing informal areas: -

- 1- Preserving the existing urban mass as a national wealth.
- 2- Paying attention to developing informal areas economically and socially.
- 3- Providing these areas with basic infrastructure and social services.
- 4- Improving the housing structure through replacement and renewal processes and improving the conditions of existing buildings.
- 5- Investing human resources by providing training and employment opportunities for young people who drop out of education.
- 6- Getting rid of the places of audio and visual pollution and taking health considerations.

(1) Ghada Muhammad Raihan, "The Process of Upgrading the Slums in the Effectiveness of Implementing the Plans - With a Special Mention for Al Mounira District," Helwan University, 2008.

(2) Essam Muhammad Hussein, "Study and evaluation of the current reality and future plans for the developmental perspective of slum areas in the Suez region," the seventh conference of the Faculty of Engineering, Assiut University, 23-25 October 2007

(3) Wissam Abu Al-Hajjaj Muhanna. "Maintenance and reuse of heritage urban spaces." Master's thesis, Tanta University, 2006

7 - Involving people and relying on their human resources and sometimes their financial resources, exploiting women power in those areas, and constantly getting acquainted with the desires and priorities of the residents for that through direct contact.

8- Good use of local resources to achieve the maximum possible benefit. (1)

Criteria on which a decision is made for removal or development: -

Criteria for the possibility of removal or development can be determined through the following table:

Handling Method	Criteria				
	The site	Region area	Population density	Condition of buildings	Other
Removal	An area with investment potential and economic return	Small	Low	mostly degraded and dilapidated	State-owned land with possibility of transferring population
Development	Adjacent area to old fabric or with marginal effect	large	High	Buildings mostly in good or medium condition	Conditions of buildings, streets and facilities enable development
Removal and development		large	High	buildings with deteriorating and poor structural condition	There is a vacant land for the Khalkhal

Criteria that determine the possibility of removal or development. (2)

(1) A study of informal areas in Egypt, Central Bureau of Statistics, April 2008.

(2) Walaa Abu Al-Hajjaj Muhanna. "A strategic methodology for dealing with informal residential areas" Ph.D. thesis, Tanta University, 2015

Monitoring informal areas built on state property, central entities, and private property in Giza Governorate: -

	City / neighborhood	Severity Grade	Severity Criterion	Region	possession	Subordination	Area in acres	number of units	current situation
1	Haram neighborhood	2	Cracked /dilapidated	Sin El ajuz	Central authorities	The property of the Antiquities Authority	10.9	735	The project is under implementation
2	Agouza	2	Cracked /dilapidated	AL hutia areas	Central authorities	Ministry of Endowment	1.1	91	The project is under implementation
3	South Giza district	2	Cracked /dilapidated	Giza-Bahary	Private property		2.7	260	The project is under implementation through enabling development strategy
4	South Giza district	2	Cracked /dilapidated	Roqaa	Private property		0.6	30	The project is under implementation
5	Dokki	2	shanties/illegal building	Ezbet Awlad Alaam	Central authorities	Ministry of Endowment	2.5	448	The project is under implementation
6	Dokki	2	Cracked /dilapidated	Bin El Sarayat	Private property		0.6	80	The project is under implementation
7	Dokki	2	Cracked /dilapidated	dayr alnnahia	Private property		2.6	297	The project is under implementation
8	North Giza district	2	shanties/illegal building	Mitt Krdek	Private property		1.2	101	The project is under implementation
9	North Giza district	2	shanties/illegal building	Hiker Tawakkol Asran	Private property		4.2	450	The project is under implementation
10	Ayyat	2	Cracked /dilapidated	Downtown areas	Private property		10.7	150	The project is under implementation through enabling development strategy
11	Hawamdia	2	rural	East of the city areas	Private property		1.6	60	The project is under implementation through enabling development strategy
12	Oseem	2	shanties/illegal building	Downtown areas	Private property		7.8	200	The project is under implementation through enabling development strategy
13	Abu Nomros	2	Cracked /dilapidated	Downtown areas	Private property		0.8	20	The project is under implementation through enabling development strategy

Source: Presidency of the Council of Ministers (Informal Settlements Development Fund), inventory of 2019. ⁽¹⁾

(1) Presidency of the Council of Ministers (Informal Settlements Development Fund), inventory of 2019.

General description of Sudan street informal areas and surrounding areas, 2012: -

The informal area of Sudan Street is located on the outskirts of Dokki neighborhood on the west, by the railway, where only the railway fence separates the area from Dokki neighborhood, and its area is 2.74 feddans. It is bordered on the West by Bulaq al-Dakrour district and the railway fence and on the South by youth Centre, and is separated from Sudan street by a linear strip of residential towers on the East, and on the north by bus stop. (1)



The site of the informal area of Sudan Street in Giza Source (2)

The area before development in 2012: -

The urban mass of the area was characterized by narrow streets. the use of construction materials waste, tin, and wooden ceilings in constructing the buildings is wide spread in the area, which made it falls under the second severity degree as inadequate housing according to the national map of unsafe areas. Figure (2) illustrates the aspect of the severity of the buildings. The area is generally characterized by low heights, as most of the buildings are one floor high, and the number of unsafe units has reached 210 housing units and 10 commercial units. Figure (3) shows the distribution of unsafe buildings in the region. (1)

(1) Giza Governorate (a plan to prepare a project for developing slums area, Sudan Street, in Giza, 2012)

(2) the researcher



Figure No. (2) The aspect of the severity of the buildings in the area before the 2012 development

The common economic activities and their relationship with the region: -

There are 10 commercial units in informal area of Sudan street, and about 42.3% of the working-age population work within the area, while about 57.7% of them work outside. Land prices in the area are low compared to the surrounding areas due to its location adjacent to the railway line, as the price per square meter is 1500 EGP, while the price per square meter of land in the surrounding areas reaches around 8000 EGP.

Social services before development: -

Informal area of Sudan street lacks of any social services as well there are no active civil associations, but the location is distinguished by its adjacency to the surrounding urban area and services, in addition to commercial and craft services.



(Figure 4 area before development)



Area after development (second phase)

Population Studies:

population of the area is about 859 people, representing 212 families, the inventory indicates that the age group is from 16 to 40 years old represents 39.60% of the total population.

Land ownership and tenure:

The entire lands of the area are state property.

cadastral survey of Location: -

The total area of Sudan Street informal area is about 2.74 acres, and according to the data received from The Central Agency for Public Mobilization and Statistics, the base map for the development area was prepared after being audited and reviewed by cadastral survey and satellite images.

Planning and construction requirements:

The planning requirements represent a part of the comprehensive urban development policy. According to the approved general of Giza, the development area falls within the scope of the existing residential areas. According to the Unified Building Law No. 119 of 2008, the permissible heights are equal to one and a half times of the width of the street. (22)

Urban survey of the development area:-**Land use:-**

It is illustrated from the urban survey that the residential use is predominant, as it represents 47% of the total land use in the development area, while mixed residential use represents 3.2% (commercial, artisanal and warehouse housing). the remaining uses represent about 8.5% and the services in the area represent 0.4% . the Space land is 4.9%, while roads and spaces represent 36%. (22)

Building construction method: -

It is illustrated from the urban survey of building construction methods that it predominantly uses red brick or its alternatives and concrete roofs or others at a rate of 52.7%, and the percentage of using mud bricks or mud is 41.1%.

buildings constructed by building materials or other materials represent 5.9%, while buildings of reinforced concrete are not exceeds 0.3% of total buildings in the area. (22)

Building heights before development: -

It is illustrated from the urban survey that the prevailing heights in the development area are single floor heights of 88.1%, while buildings with two floor height represent 11.9%. (22)

Development strategy: -

The development strategy of informal area of Sudan Street relied on handling it within the framework of the master plan of Giza city in terms of being a privileged area due to its adjacency to service and commercial centers. The development plan also depended on re-establishment of the railway fence for the northern side of the region by the governorate, in agreement and coordination with the Ministry of Transport. The land adjacent to the area to the south of Bulaq Dakroul bus stop, and which belongs to the governorate, will be used to build (3) residential blocks as a first stage, then evacuating the northern part of the area and transferring its occupants to the said constructed blocks. after removing the evacuated shanties, another

(10) blocks will be built as a second stage consecutively with partial evacuation of the area and transferring its residents to the new blocks gradually. as a third stage, another (8) blocks will be constructed consecutively, as well as the second stage, then putting up the surplus commercial units for sale to recover part of the development cost.

Objectives of developing Sudan street informal area: -

- 1- Ensuring safe and adequate housing for residents in the same area and eliminating its risk.
- 2- implementing of socio-economic programs that aimed at increasing the standard of living of population.

The development plan of Sudan street informal area (implemented method of handling the area): -

The development plan depended on the governorate undertaking a survey of the site, including amending the railway fence and removing the adjacent area. Accordingly, (21) apartment blocks will be constructed as follows: -

The first stage: -

Establishment of (3) residential blocks. Each block consists of a ground floor and five upper floors, and the floor area is 147 m^2 and the area of each unit is 73.5 m^2 . each floor consists of two residential units, as well the use of the ground floor to provide (10) small shops. The first stage provides 30 housing units and 30 Commercial units, the entire buildings are being built on the state property land adjacent to the development area after amending the railway fence adjacent to the area that about $1,538 \text{ m}^2$. (22)

The second stage: -

Establishment of (10) residential blocks consecutively with staged evacuation of residents, which provide 100 housing units and 100 small commercial units. (22)

The third stage:

Establishment of (8) residential blocks, which provides (80) housing units and (80) small commercial units. Therefore, allocating (21) buildings to provide (210) housing units and (210) small commercial units to accommodate the transferred

residents of Sudan street informal area, and putting up the surplus commercial units for sale to recover part of the project cost.

A field study of Sudan's informal area 2021: -

The opinion of the residents regarding the existence of urban problems after the development: -

- 1- Weak infrastructure networks.
- 2- Poor sanitation.
- 3- High population density due to lack of space.
- 4- Poor road conditions.
- 5- The establishment of buildings is not according to engineering standard in terms of safety and the areas in the second and third stage are not the same as the first stage.



Area after development: (Source: Researcher)

The opinion of the residents regarding the existence of environmental problems after the development: -

- 1- Lack of health awareness due to sewage water in the streets.
- 2- Diseases are produced in the region as a result of lack in providing sanitation services and Clean drinking water.



Area after development: (Source: Researcher)

The opinion of the residents regarding the existence of economic and social problems after the development: -

- 1- Increase the percentage of family disintegration.
- 2- The high crime rate in the region.
- 3- The low economic level of the residents.
4. The lack of education awareness.
- 5- Increasing the divorce rate.
- 6- Increase of the dropout rate.
7. some residents turn to sell potatoes and collect plastic bottles and cartons for living and earning money due to lake of job opportunities,



Area after development: (Source: Researcher)

The results and existing problems in residents' perception after implementing the three stages of developing Sudan street informal area: -

- 1- small residential units in the second and third stages in comparing with the first stage, as the area of the apartment in the first stage is 73 m^2 and in the second stage is 50 m^2 while in the third stage is 46 m^2 .
- 2- Some believe that compensation would be better than getting new units.
- 3- Due to lack of job opportunities, some residents turn to sell potatoes and collect plastic bottles and cartons for living and earning money.
- 4- problems in hygiene and Sanitation.
5. There are no meters for water and electricity and most of the residents have been sentenced for Non-payment of the estimated consumption fine amount due to the high value, in favor of Electricity and water Companies.

(Source: Researcher).

Conclusions: -

- 1- The study showed that each informal area required a different method of handling. the best methods for dealing with these areas are determined based on a comprehensive study of the area that includes social, economic, environmental and urban aspects, that done through making questionnaires for the residents of these areas and determining the priorities of each area according to the vision of its residents and their social status.
- 2- The causes for the emergence of these areas are (social, economic, urban, legislative). the major social reason is the increase in migration rates from the countryside to the city. The main economic reason is the low-income level and searching for job opportunities, while the most important urban reason is the lack of the development awareness and increasing demand for dwelling. regarding Legislative aspect, the most important reason is increasing the duration of the legal procedures as well There are some gaps in legislation that lead to disproportionate the sentence with the offense.
3. among the most important success factors of the development plan of slums is to consider the social and economic aspects, and the community participation of the population.

4- Ministerial changes and the political situation may lead to the issuance of decisions that hindered the development projects of informal areas.

Recommendations: -

From the above, the research suggests a set of recommendations that can contribute in reaching the best methods to decrease the expansion of these areas and to develop them, as follows: -

1- Selecting The appropriate environmental and urban improvement program for each slum area according to its conditions.

2- exposing the project to the inhabitants and making questionnaires after each development stage, to avoid the problems that appear after each stage (such as the Sudan Street area project in Giza), which leads to consolidating the relationship between the government and the residents and enhancing the role of Community participation in the area.

3- Spreading environmental awareness, providing social services, and setting awareness and human development programs.

4. Establishing development plans for informal areas that built on state property, private property and central authorities property based on a scientific basis in reality and Commensurate with each of these areas individually.

5 - Paying attention to ideal coordination between the participating parties in the development of these areas and adding amendments to the agreed project program, which affect the implementation of the project.

6- Accelerating the implementation process of development projects and minimizing routine to avoid issuing new decisions in light of circumstances and ministerial changes that may hindered the implementation of the projects (such as Balat Al Islamia project in New Valley Governorate) and other projects.

7- All available lands of informal settlements that built on state property should be optimally utilized in order to avoid the expansion and growth of these areas.

8- for sustainability of the development process, the economic development of slum areas should be considered, as well the use of the available economic potentials of the residents to contribute to the continuation of development processes.

9- the estimated cost studies of informal areas development projects should be considered, to avoid having financing problems during implementation that may hinder the implementation process.

10- the importance of implementing agency (the contractor) Follow up for informal areas development projects and other projects, and not tolerating any irregularities in construction or internal and external finishes.

References: -

- 1- Source: Informal settlements in Egypt 2011, Ad Duweika case)
- 2-Land for Poor: Towards Sustainable Master Plan for Sensitive Redevelopment of Slums 2016
- 3- <https://ar.wikipedia.org/wiki/egypt>.
4. Dr. Namat Mohammed Nazmi Dr.shr Suleiman Abdullah Dr. mha Sami Kamel - the development of slum areas as a model for corresponding housing in Egypt
the case study of Mnshaet Nasser area in Cairo - Housing and Building National Research Center.2005
- 5- Walaa Abu Al-Hajjaj Muhanna. "A strategic methodology for dealing with informal residential areas" Ph.D. thesis, Tanta University, 2015
- 6-"The challenge of slum, Global Report on Human settlements 2002" United Nations human settlements program.
- 7- Heba Allah Essam El Din Khalil. Community Development in Informal Areas - Foundations for Defining Effective Development and Evaluation Methods by Participation "PhD Thesis" Cairo University 2007
- 8- Iman Abd al-Hakim Ibrahim al-Maddah, "The Role of Non-Governmental Organizations in the Development of Slums", MA Thesis, Helwan University, 2006
- 9- Abd Al-Rahim Qassim "Analysis of informal housing phenomenon (concepts - negatives - positives) The Seventh International Architectural Conference of Faculty of Engineering, Assiut University, 23-25 October 2007
- 10-Soliman a hammed M. "urban informality in Egyptian cities: coping with diversity." Forth urban research symposium,2007.
- 11- Abd el Rahim Qassim "slums - Problems and Solutions" Egyptian Anglo Library Cairo.2013
- 12 - Fahima al-Shahid, "Removal and Resettlement - Theory and Application Problems", MA Thesis, Cairo University.

- 13- A study of informal areas in Egypt, Central Agency for Mobilization and Statistics, April 2008.
- 14- Jamila Muhammad Sameh: Defining the role of urban indicators in the process of developing informal areas and following up on their implementation in Egypt. Master Thesis, Cairo University. 2007
- 15- Wissam Abu Al-Hajjaj Muhanna. "Maintenance and reuse of heritage urban spaces." Master's thesis, Tanta University, 2006.
- 16-wekesa ,B.W .Steyn .G.S .Otieno ,F.A.O.(Fred)."a review of physical and socio-economic characteristics and intervention approaches of informal settlements ", habitat international ,35,2011
- 17- Ghada Muhammad Raihan, "The Process of Upgrading the Slums in the Effectiveness of Implementing the Plans - With a Special Mention for Al Mounira District," Helwan University, 2008.
- 18- Essam Muhammad Hussein, "Study and evaluation of the current reality and future plans for the developmental perspective of slum areas in the Suez region," the seventh conference of the Faculty of Engineering, Assiut University, 23-25 October 2007
19. Osama Abd alaziz: "theories of the development of slums and their applications", PhD thesis, Urban Planning Department, Faculty of Engineering, Al-Azhar University, 2007
- 20- A study of informal areas in Egypt, Central Bureau of Statistics, April 2008.
- 21- Presidency of the Council of Ministers (Informal Settlements Development Fund), inventory of 2019.
- 22- Giza Governorate (a plan to prepare a project for developing slums area, Sudan Street, in Giza, 2012)