JOURNAL OF ENGINEERING AND APPLIED SCIENCE, VOL. 67, NO. 6, DEC. 2020, PP. 1285-1304
FACULTY OF ENGINEERING, CAIRO UNIVERSITY

RESIDENTIAL TYPOLOGIES AS A TOOL TO TRACE THE URBAN TRANSFORMATION OF EZBET EL-HAGGANA

D. E. BOULES[1], L. A. SHERIF[2], AND M. H. KHALIL[3]

ABSTRACT

Ezbet El-Haggana, in Cairo, is an informal settlement on a desert state-owned land. It is currently surrounded by formal lands, making expansion impossible. Maps of Ezbet El-Haggana of 2006 and 2017 show an enormous urban transformation within the informal land. The purpose of this paper is to document and analyze the residential typologies to trace the urban physical transformation in Ezbet El-Haggana. The study relies on informal discussions, resident-led walks, onsite sketches, observation, photographs, and urban mapping. The analysis of the residential typologies clarifies the reasons behind the dramatic change in the urban fabric. This change emerged through a real-estate investment act, which replaces small one family residences with apartment buildings that accommodate more than forty families each. This act caused two changes in the informal settlement: transformation in the urban fabric from fine-grained to coarse-grained, and increase in the number of families per residential typology. Furthermore, mapping the location and dominance of those residential typologies was conducted, highlighting different urban physical transformation patterns within Ezbet El-Haggana. The urban areas, with proximity to the highway and formal neighboring lands, have witnessed a massive physical transformation. However, the heart is currently experiencing a rapid change in the urban fabric.

KEYWORDS: Informal settlement, Ezbet El-Haggana, Residential typologies, Urban fabric, Urban transformation.

1. INTRODUCTION

Informal settlements in Cairo appeared after World War II due to the migration from Upper Egypt and Delta. At that time, migrants were unable to afford houses produced by the state. Therefore, low-income families built their houses on state-owned land leading to the development and expansion of informal settlements [1-4].

[1] M.Sc. Candidate, Department of Architectural Engineering and Environmental Design, Arab Academy for Science, Technology and Maritime Transport, Cairo, Egypt, diana.emad@aast.edu
[2] Professor, Department of Architectural Engineering and Environmental Design, Arab Academy for Science, Technology and Maritime Transport, Cairo, Egypt.
[3] Associate Professor, Department of Architectural Engineering and Environmental Design, Arab Academy for Science, Technology and Maritime Transport, Cairo, Egypt

According to Davis [5], Cairo has four out of the thirty big informal settlements in the world, and Ezbet El-Haggana is one of them.

Ezbet El-Haggana is an informal settlement located on a desert state-owned land. It evolved and developed through “Waḍ’ Yad” (Hand Claim), in which houses are built on a state-owned land without legal paperwork [6]. Previous studies on Ezbet El-Haggana consider its location at the outskirt of Cairo, away from the heart of formal lands. However, it is currently located within formal lands, after the emergence of new settlements as shown in Fig. 1.

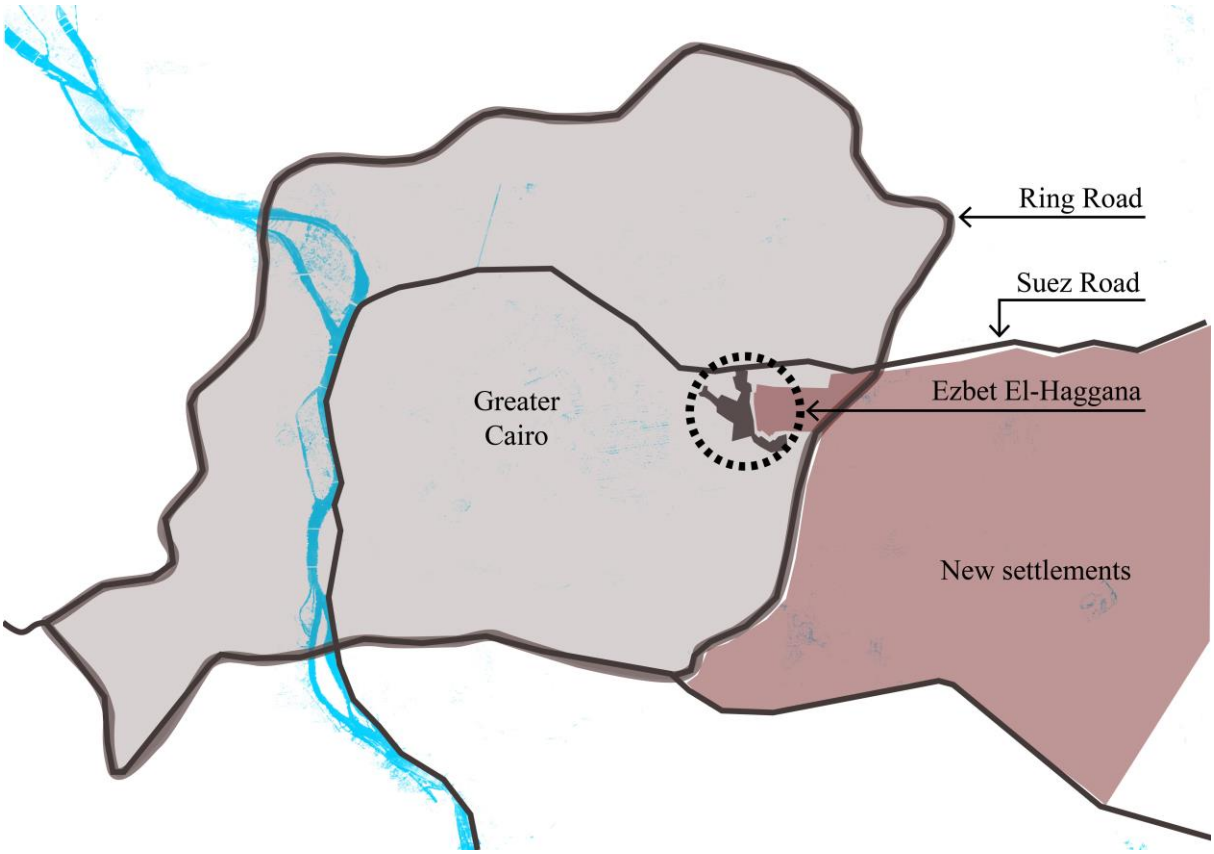

Fig.1. Ezbet El-Haggana's location in Greater Cairo in relation to the location of new settlements.

Ezbet El-Haggana (village of the camel corps), was given this name when it was a small settlement for Sudanese and Nubian soldiers who used to guard the city borders in 1930s. In 1940s, officers of the camel corps granted the families, of their guards and soldiers, this land to occupy. In 1950s, the land was occupied by migrants from Upper Egypt. The migrants built houses on land plots that ranged from 1,000 to

2,000 m^2. In 1970s, brick and concrete buildings started to appear and the population growth was increasing rapidly due to the inception of neighboring formal lands. In 2000s, although the government introduced new public houses as a solution to reduce informal settlements, the boom in the real-estate sector and the work of Non-governmental organizations, NGOs have accelerated the informal urban growth of the settlement [2, 3, 7-10]. In 2007, the Government's urban strategy for Ezbet El-Haggana was to belt its growth [11]. Such a strategy was addressed in previous studies providing a methodology for the upgrading of informal settlements through belting their expansion [12]. Currently, Ezbet El-Haggana is surrounded by either formal lands (some are new settlements) or military camps.

The formal lands, surrounding Ezbet El-Haggana, make the informal urban expansion almost impossible. The population of Ezbet El-Haggana in 2006 was 34,794 and the number of buildings were 3,183. In 2017, the population increased to 175,785 and the number of buildings became 13,227 [13, 14]. The surface area of Ezbet El-Haggana, in both census, is stabilized at 2.9 km^2. From the year 2006 to 2017, the population has increased by 175% and the number of buildings increased by 315%. Figure 2, the CAPMAS maps of years 2006 and 2017 of Ezbet El-Haggana, shows the increase in the number of buildings in addition to the increase in the density and degree of compactness of its urban fabric.

In that sense, to understand the transformation in the urban fabric of Ezbet El-Haggana in the last decade, a historical investigation of the urban physical environment was conducted. Ezbet El-Haggana's built environment is composed of residential units ranging from one story to a multi-story building which evolved with no urban planning [15, 16]. According to Salama et al., the investigation and analysis of informal settlements' residential typologies highlight and clarify the reasons behind the urban physical transformation [17]. Therefore, the objective of this study is to document and analyze the residential typologies and their impact on the urban fabric, to understand the reasons behind the major urban physical transformation of Ezbet El-Haggana in the last decade.

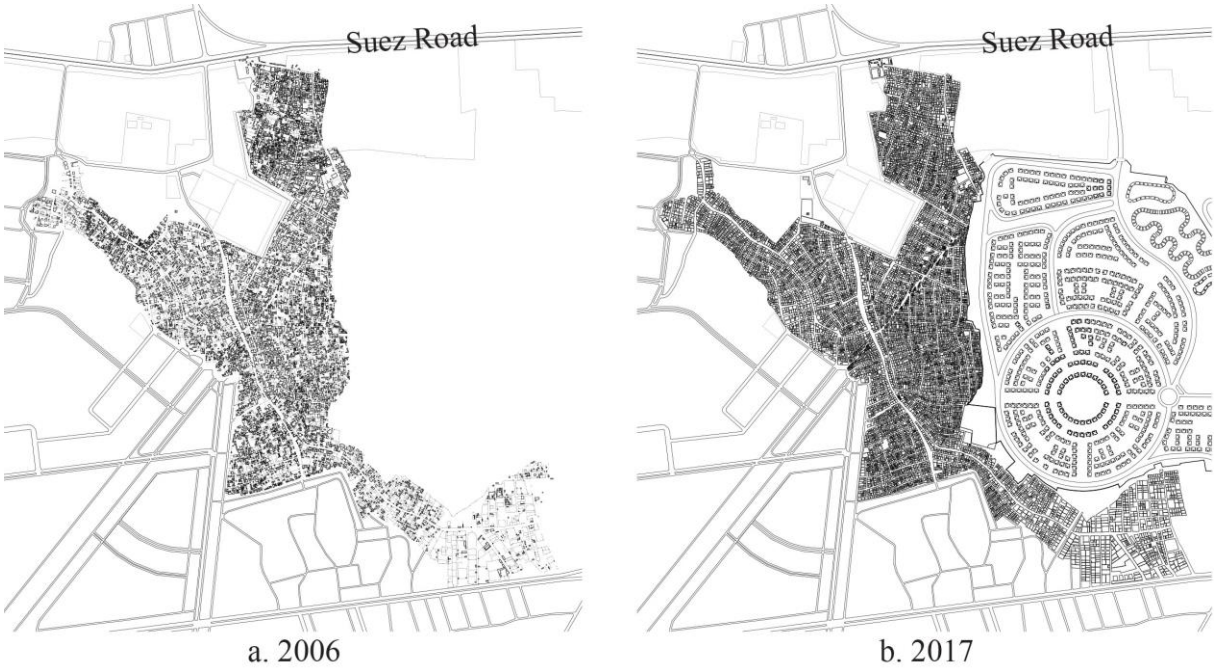

Fig. 2. Ezbet El-Haggana CAPMAS maps: (a) year 2006, (b) year 2017.

2. DATA COLLECTION TACTICS AND PROCEDURES

The study was conducted from February 2019 till June 2019. The data collection relied on: census and maps from CAPMAS of years 2006 and 2017, site visits and resident-led walks in Ezbet El-Haggana. The visits helped in getting acquainted with the context, residents, and built environment. This assisted in identifying and highlighting the various areas of the informal settlement and the different residential typologies.

The duration of the visits lasted between 60 to 90 minutes, which were documented upon residents' approval. To allow for data triangulation, multiple data gathering techniques were employed. These included informal discussions with residents, onsite sketches, observation, photographs, and urban mapping. The study started with identifying the different areas of Ezbet El-Haggana. Then, a profound documentation and analysis of the residential typologies in the informal settlement was carried out. Finally, mapping the location and dominance of the residential prototypes within Ezbet El-Haggana, was conducted.

3. THE DIFFERENT AREAS OF EZBET EL-HAGGANA

Ezbet El-Haggana is located in Cairo 4.5 km from Heliopolis on the Suez Road, a highway that links Cairo with Suez Governorate, East of Nasr City district. It is surrounded by formal lands, some of which are new settlements that are still under development such as Gardenia compound and Taj City compound. Those new settlements gave impetus to the growth of Ezbet El-Haggana.

In 2000, electricity was introduced in Ezbet El-Haggana leading to its division into various areas. The informal settlement is found to be divided into eight areas, as represented in Fig. 3, which are introduced and described through the interviews and resident-led walks. These areas are named by the residents, and its borderlines are formed by existing main streets:

- The oldest area is "Kilo 4.5". It is the most famous area in Ezbet El-Haggana. The name "Kilo 4.5" refers to the distance of the settlement from Heliopolis, the nearest formal settlement at that time [7, 18].
- Jami' El-Ḥaj Sheḥatah area was named after the oldest mosque in this area. Since 2018, buildings in the area are facing a rapid physical change due to the appearance of the adjacent new settlement, Gardenia Compound.
- El-Warshah (Workshop) area was named after the busiest street that abounds in workshops.
- El-Zohoūr (Flowers) area was named after the main arterial street in this area, originally known as Manṭeqet 'Isá.
- El-Tabbah (Hill) area is located on a hill. Streets and alleys have steep slopes and lead to a main street in Nasr city.
- El-Mothalth (Triangle) area, indicates the forking of El-Warshah street, creating a triangular area.
- El-Shoroūk area was named after the neighboring formal area in Nasr City. This area developed during the last decade.
- Although Zerzāra area is part of Ezbet El-Haggana, it is not an informal area. In 2008, the Government began adding regulations and laws over some parts of

Zerzāra, causing the demolishment of any illegal building in this area. Currently, most of the buildings in this area have legal land ownership.

The area under the high voltage towers and cables is unsafe [19]. Due to the lack of vacant lands and the increase of population in Ezbet El-Haggana, residents could not avoid building under this high voltage area. These buildings range from one to two stories high.

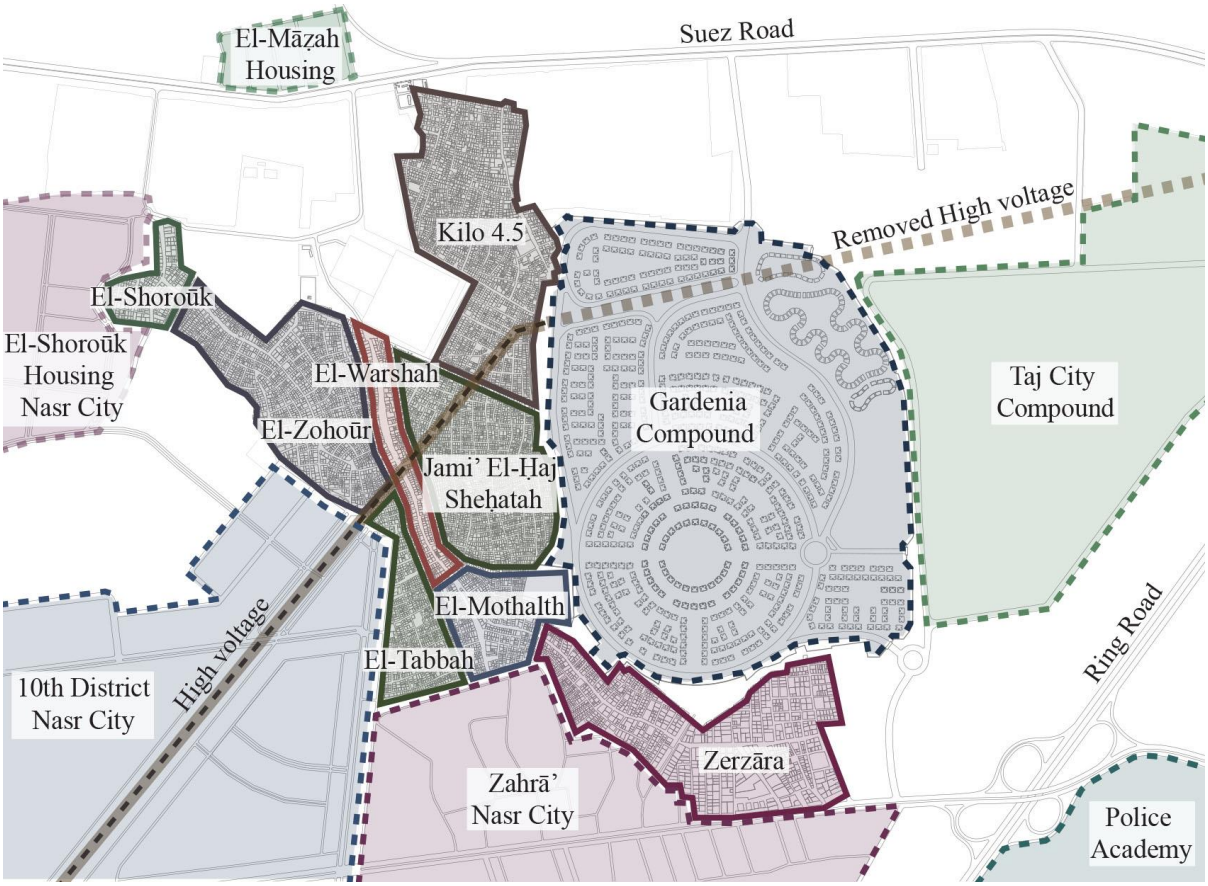

Fig. 3. Ezbet El-Haggana CAPMAS map: Adapted to present the different areas, according to informants, and its surrounding formal lands in 2017.

4. RESIDENTIAL TYPOLOGIES IN EZBET EL-HAGGANA

The growth of the residential environment in Ezbet El-Haggana occured with no compliance with regulations and laws, and with no formal planning. Streets are narrow and unpaved, in a random network forming a cracking urban pattern, with aligned commercial activities. Buildings range from simple shacks to multi-story column and beam structures, and are attached to each other [1, 15, 20].

Based on observation and discussions, the heart of Ezbet El-Haggana is currently witnessing the highest rate of physical transformation. The documented and analyzed residential typologies are located within the boundaries of the heart of the informal settlement as highlighted in Fig. 4. There are three residential types: Suessi house, family house, and apartment building.

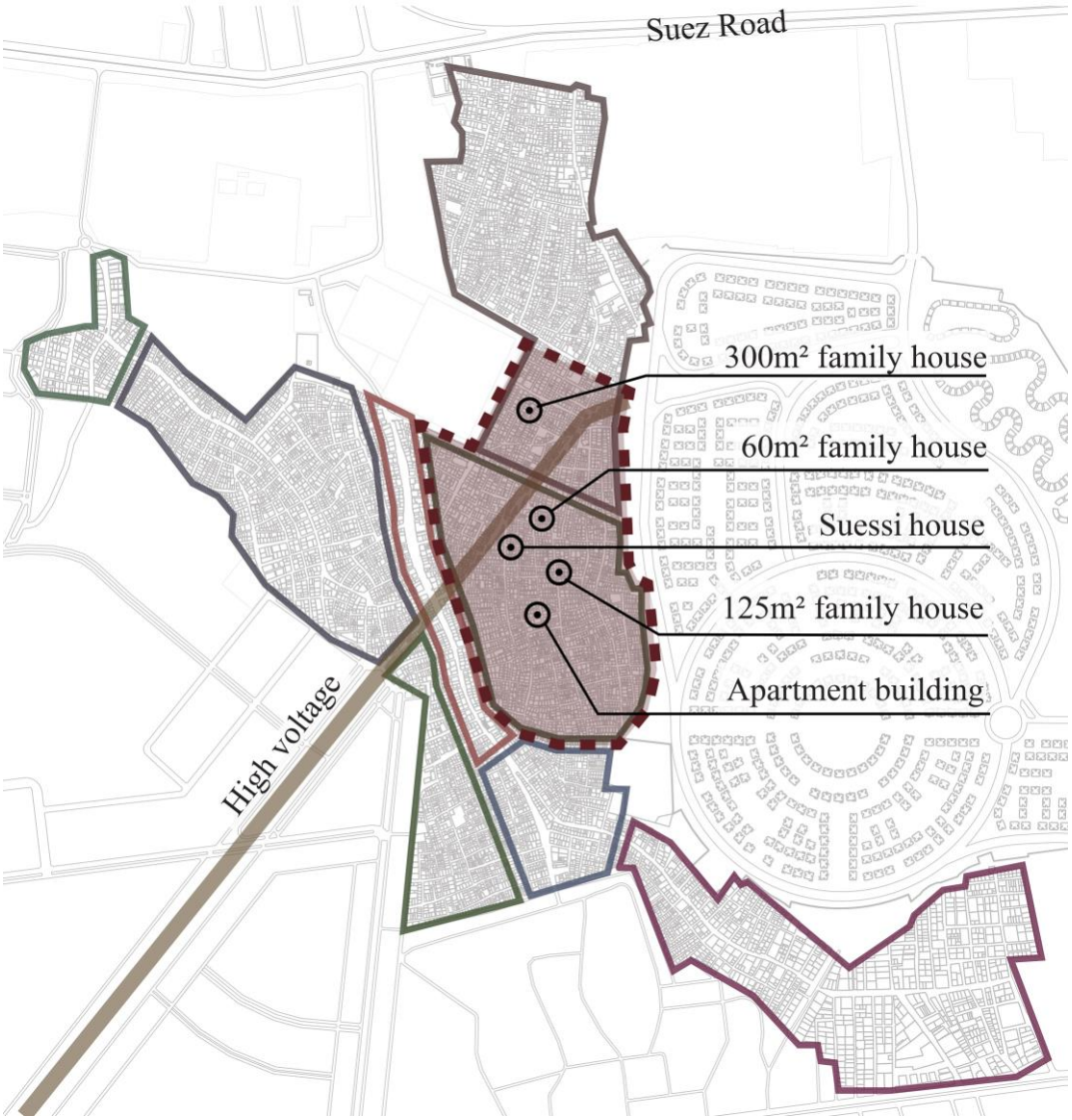

Fig. 4. The heart of Ezbet El-Haggana highlighted, with the location of the studied residential typologies.

4.1 Suessi Houses

Suessi house, also known as ‘Ishah (shack), is occupied by a single family. It is the first residential typology that appeared in Ezbet El-Haggana. The name “Suessi” refers to Suez city, the origin of the settlers. During 1967 war, families were forced to

evacuate Suez city and move to different districts in Cairo. Those who settled on this land (Ezbet El-Haggana) built a one story building constructed of red-bricks or mud-bricks. The floor is either sand, cement cast or ceramic tiles, and the roof is constructed of wood beams covered with plastic sheets. Usually the house is divided into two to three rooms, a toilet or a bathroom and a Ḥūsh (Courtyard). The Ḥūsh is considered the heart of the house, its living area, and light well. There is no kitchen area, a cooking area can be located anywhere in the house; a stove and a refrigerator might be placed in a room, and a sink in the Ḥūsh or in the corridor.

A 72 m² Suessi house located in Jami' El-Ḥaj Sheḥatah area, near the high voltage area, is occupied by three family members as shown in Fig. 5. The house is built in red-bricks and the roof is built of wood beams covered with fabric. It is divided into two bedrooms, a living area, a bathroom, a corridor and a Ḥūsh. The living area is furnished with three wooden benches that occasionally serve as beds. The Ḥūsh is a multi-functional space that houses cooking, eating, living and napping. The rooms are lit and ventilated through the Ḥūsh and the corridor, which has small openings in the roof to allow direct sunlight. A stove is placed in the Ḥūsh, a refrigerator is placed in a room and a sink is placed in the corridor, as shown in Fig. 6.

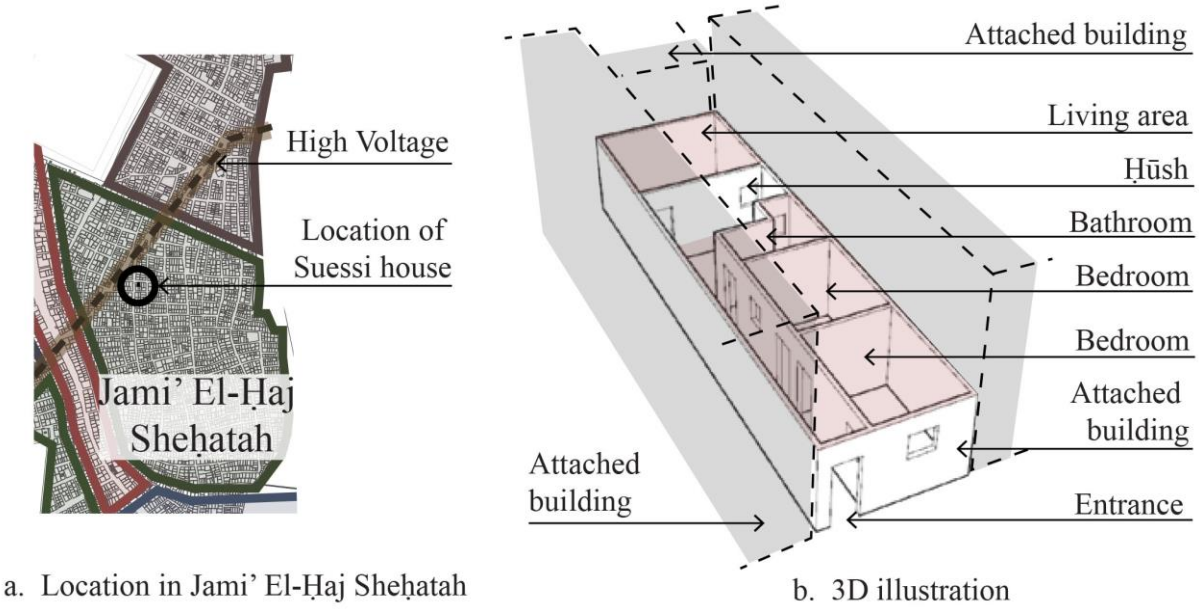

Fig. 5. Suessi house: (a) Location in Jami' El-Ḥaj Sheḥatah area, (b) 3D illustration.

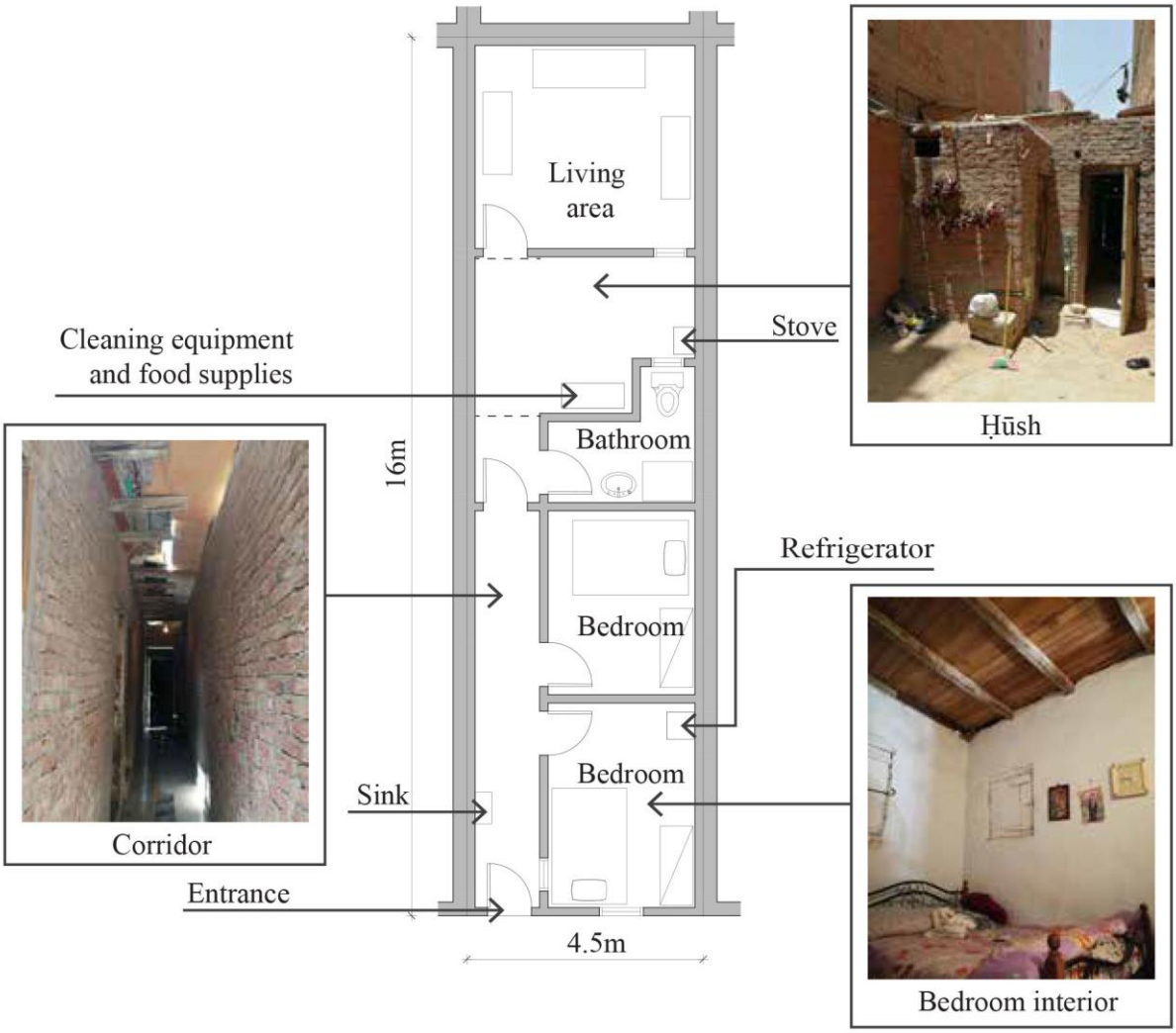

Fig. 6. Suessi house: Furnished plan and pictures of different spaces in the house.

4.2 Family Houses

Residents name this residential typology “Bayt ’Iella” (Family house); each is occupied by one extended family. On land area that range between 60 m² to 300 m², families built houses that are three to five stories high. Some were built on vacant lands a decade ago and others replaced old houses. These houses use column and beam structure system and red-bricks. The interior of the building is either with cement cast floors and red-brick walls, or with ceramics floors and painted walls. As highlighted in Fig. 7, the columns on the last floor are unfinished for future extensions. The houses rely on 0.5 m to 1 m width light wells, which are the source of light and ventilation for the internal rooms. The ground floor is usually 4 m high and accommodates shops or

workshops. The typical floors are 2.7 m to 3 m high, and are extended onto the street by a cantilever to provide more space.

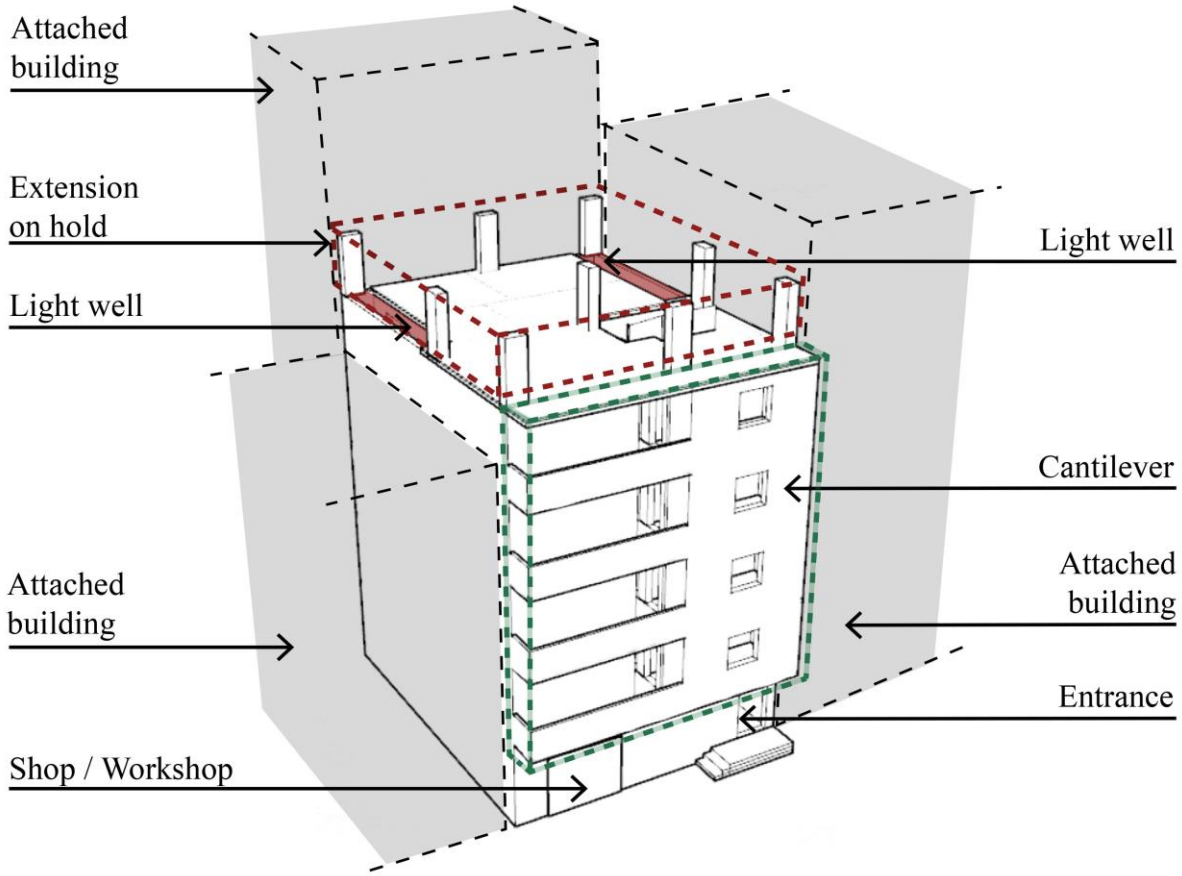

Fig. 7. Family house: 3D illustration.

The following section documents three family houses; the first family house is on a 60 m² land plot. It is a three story building, located in Jami' El-Ḥaj Sheḥatah area near the high voltage area. Each story consists of one apartment. Each apartment consists of two bedrooms, a living area that also functions as a cooking and an eating area, a kitchen and a bathroom as shown in Fig. 8. In 2000, the ground floor plan was constructed with the help of an NGO that supports different areas in Ezbet El-Haggana. As annotated in Fig. 9 the NGO planned the house with two light wells that the residents later adjusted to one small light well to provide more space. In 2010, the family built two floors to house their sons.

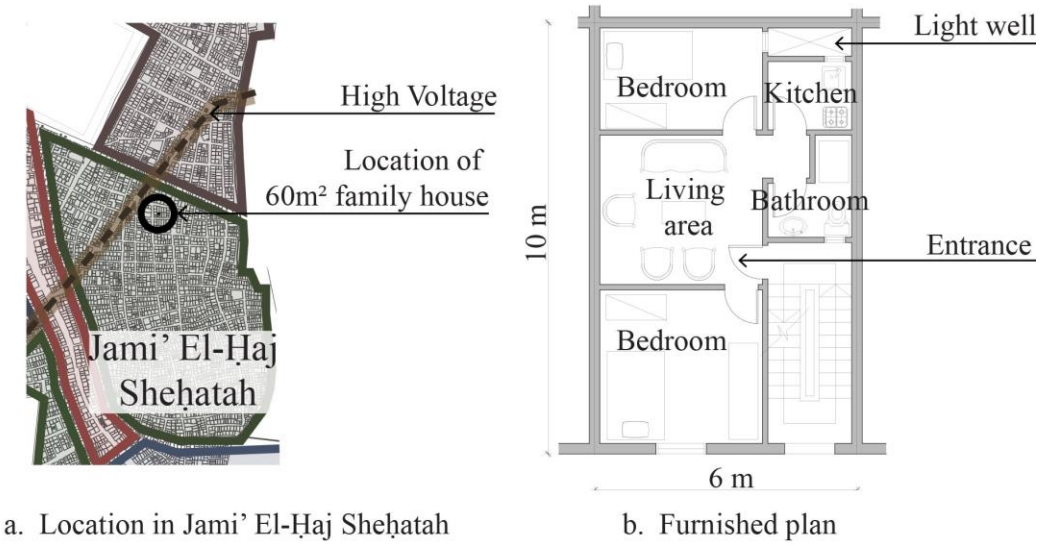

Fig. 8. The 60 m² family house: (a) Location in Jami' El-Ḥaj Sheḥatah area, (b) furnished plan.

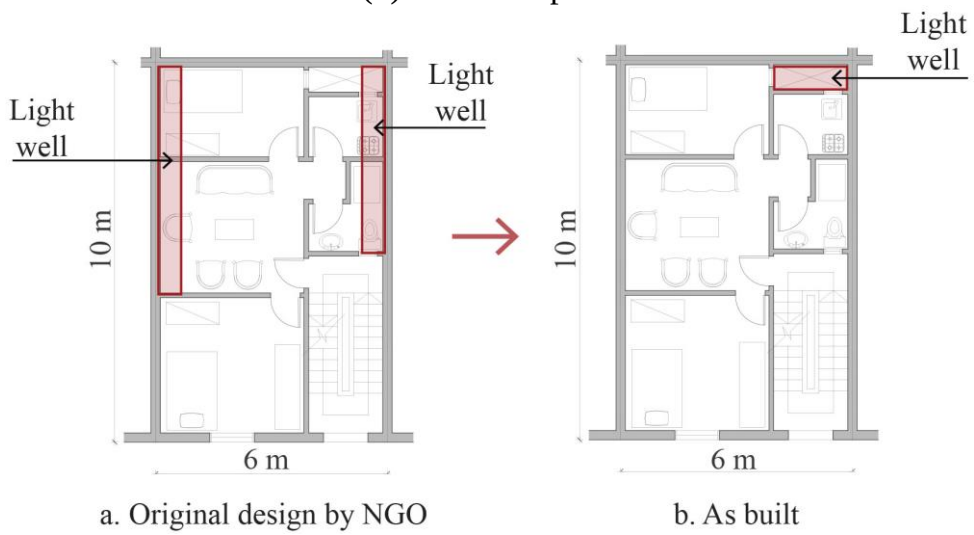

Fig. 9. The location of light well/s in the 60 m² family house: (a) NGO light well location, (b) resident's adjustment of the light well to provide more living space.

The second family house is on a 125 m² land plot, five story high and is located in Jami' El-Ḥaj Sheḥatah area. The ground floor was constructed in 2008, replacing a Suessi house. In 2012, the family built four floors to house their sons. To provide more space, the four floors are extended onto the street by a cantilever. The house has two light wells located on the sides. Each story consists of one apartment. Each apartment consists of two bedrooms, a living area that also functions as a dining area, a room used either for storage or an extra bedroom for visiting relatives, a narrow balcony

used for domestic purposes, a bathroom, and a kitchen space with only a stove and a sink as shown in Fig. 10.

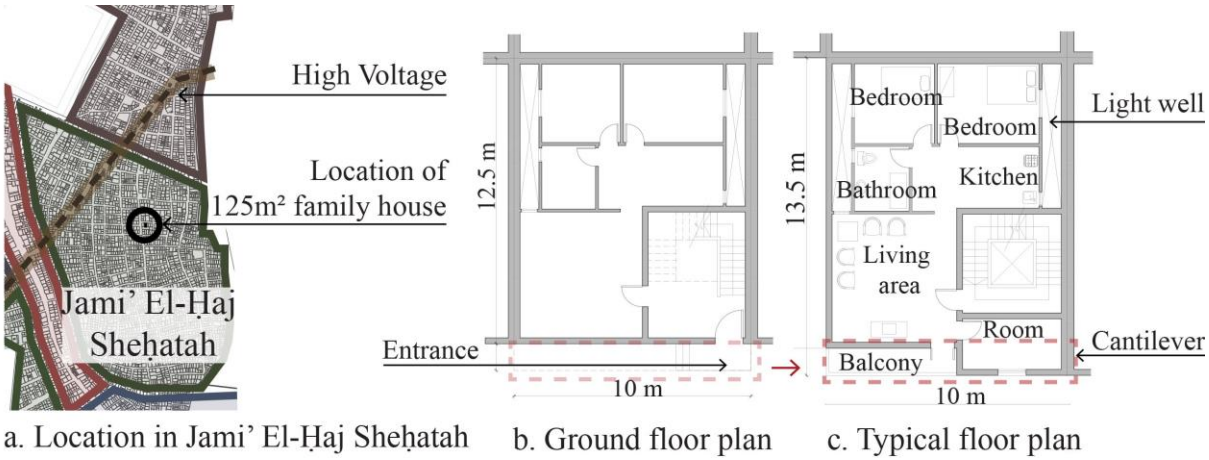

Fig. 10. The 125 m² family house: (a) Location in Jami' El-Ḥaj Sheḥatah area, (b) ground floor plan, (c) furnished typical floor plan with a cantilever.

The third family house is on a 300 m² land plot, three story high and is located in the south of Kilo 4.5 area. In 2004, the house was built by migrants from Upper Egypt. The building is surrounded by a one meter setback to provide ventilation and natural light for the rooms and each story is divided into three apartments. The setback is planted and used as a storage area. Each apartment consists of two bedrooms, a living area that functions occasionally as a sleeping area for visiting relatives, a dining area, a kitchen, and a bathroom as shown in Fig. 11.

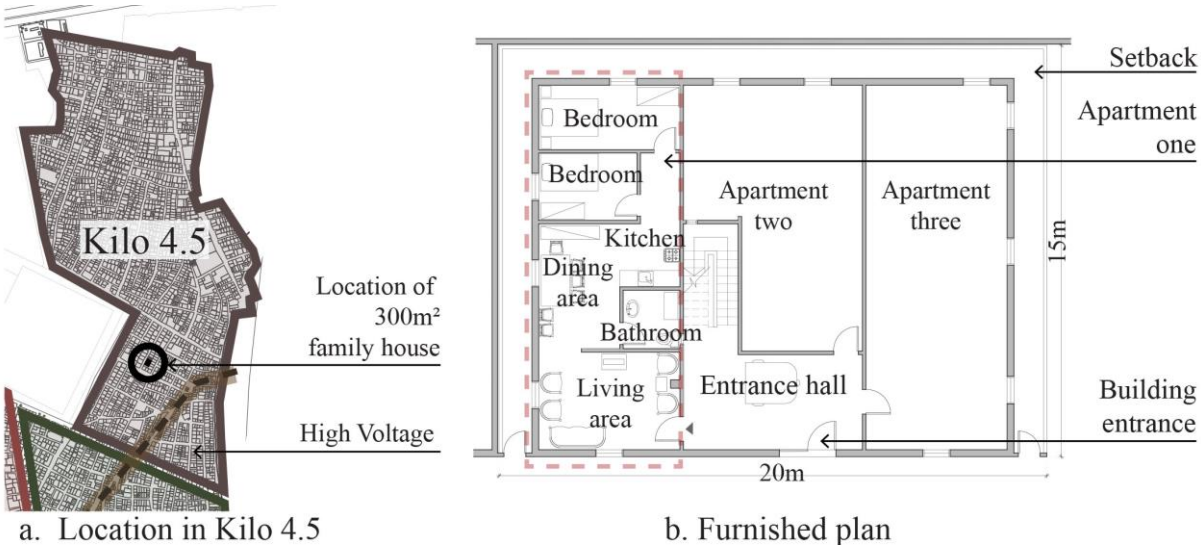

Fig. 11. The 300m² family house: (a) Location in Kilo 4.5 area, (b) ground floor plan with one furnished apartment.

4.3 Apartment Buildings

Apartment buildings are the most developed buildings in Ezbet El-Haggana, with painted exterior, marble entrances and an elevator. Generally, an apartment building is more than ten stories high and each story has four apartments. Each apartment is occupied by a single family, but is not necessarily family related to any neighboring apartments in the building. The ground floor is usually 5 m high to accommodate shops and workshops, while the rest of the floors are 3 m high.

An apartment building located in Jami' El-Ḥaj Sheḥatah area, fully constructed and finished in 2018, is shown in Fig. 12. It is a thirteen story building on a 400 m² land plot with four apartments per floor. Each apartment consists of three bedrooms, a living and dining area, a kitchen, and a bathroom. The ground floor consists of four shops; two are rented and the other two shops are not yet occupied. Since the building is located on a corner and is attached from two sides, it has several light wells that are from 0.7 m to 1 m width for ventilation and natural light.

The story behind the 400 m² land plot apartment building began in 2010. It was originally two Suessi houses and a family house, on different land plots, attached to each other as shown in Fig. 13. The three houses were bought by a resident in Ezbet El-Haggana to build the thirteen story apartment building as an investment in the real-estate sector. Each of the Suessi houses and the family house owners took an apartment in the thirteen story building as a replacement for their original houses. Residents of Ezbet El-Haggana call this act of real-estate investment a "Moshārkah" (sharing).

According to residents, the concept of "Moshārkah" began in 2004 by migrants from Upper Egypt who want to invest in the real-estate market. This initiated not only a real-estate investment, but also resulted in two changes in Ezbet El-Haggana. First, a change in the plot pattern from small plots to large plots. Previous accounts and studies concluded that forms of urban informality adapt through time as residents subdivide or amalgamate their land plots [21, 22]. In Ezbet El-Haggana, the land plots were amalgamated, causing a change in the plot pattern and accordingly the granularity of the urban fabric justifying the major physical transformation in the last

decade as shown in Fig. 2. Second, a change in the number of occupants and families per residential typology. Before the act of "Moshārkah", each Suessi house and family house consisted of one family, either a single family or an extended one. After the act of "Moshārkah", apartment buildings are constructed, each consist of more than forty families, which explains the rapid increase of population in the informal settlement.

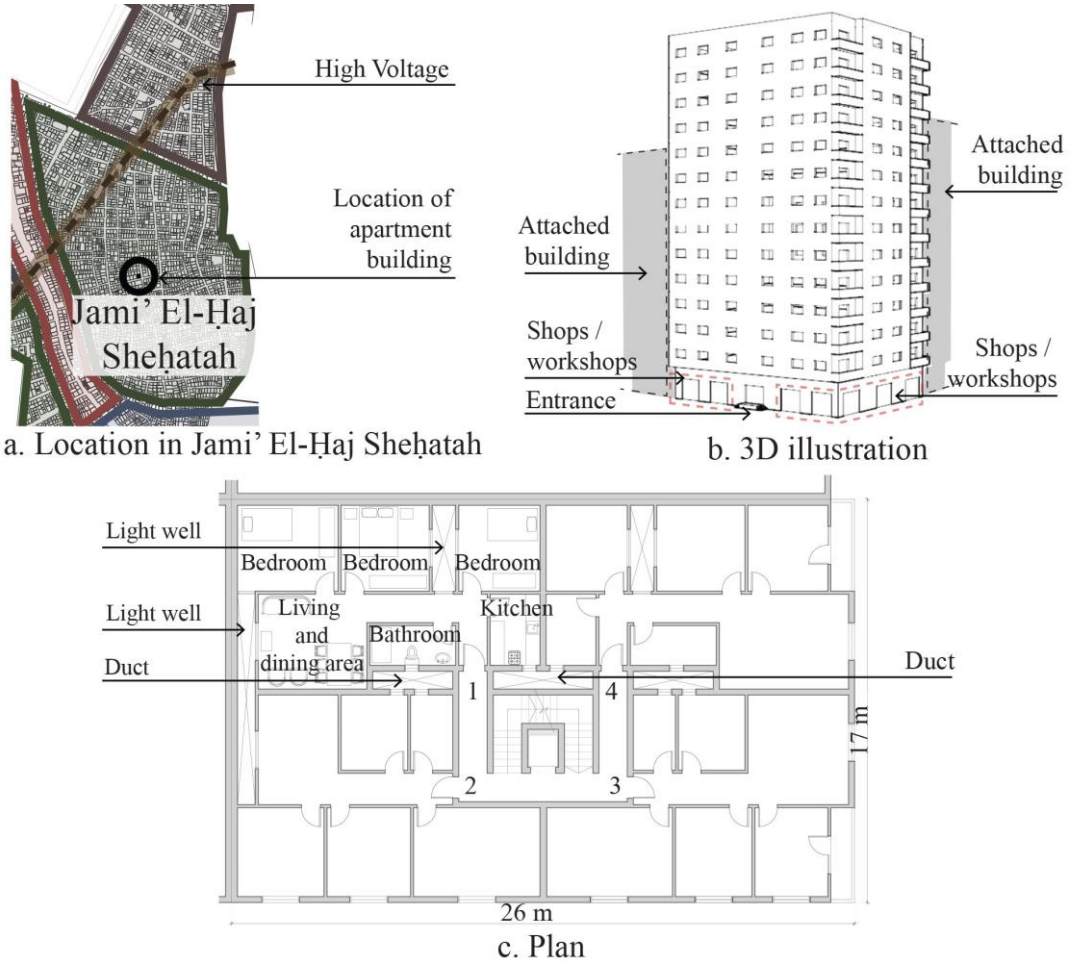

Fig. 12. Apartment building: (a) Location in Jami' El-Ḥaj Sheḥatah area, (b) 3D illustration, (c) typical plan with one furnished residence.

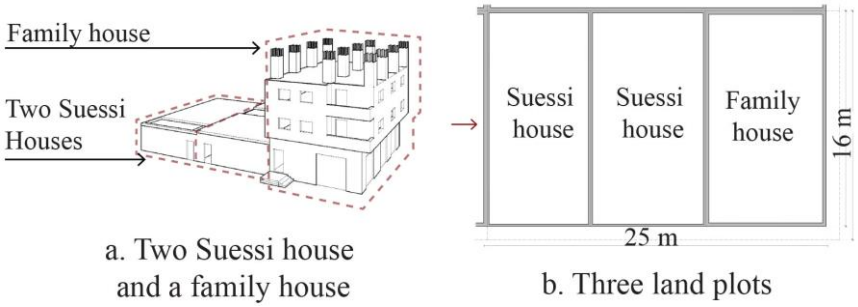

Fig. 13. The original state of the apartment building before its transformation through the "Moshārkah" act.

5. LOCATION AND DOMINANCE OF RESIDENTIAL TYPOLOGIES IN EZBET EL-HAGGANA

Following the documentation and analysis of the residential typologies, mapping and identifying the location and dominance of those residential typologies was conducted. This mapping process as shown in Fig. 14, assisted in highlighting different urban physical transformation patterns within Ezbet El-Haggana. Those patterns of transformation and their impact on the granularity of the urban fabric in Ezbet El-Haggana can be summarized as follows:

- A fine-grained urban fabric characterizes the heart of Ezbet El-Haggana and the area under the high voltage towers and cables. The heart of the informal settlement consists mainly of Suessi houses and family houses, on small land plots, while few apartment buildings, on large land plots, exist. However, the area under the high voltage towers and cables has a very fine-grained urban fabric consisting only of Suessi houses. Currently, the heart of Ezbet El-Haggana is witnessing the highest rate of urban physical transformation.
- A shift towards a more coarse-grained urban fabric can be witnessed in areas with high proximity to Nasr City and Suez road. Such areas consist mainly of apartment buildings and family houses while few Suessi houses, on small land plots, still exist. At present, the urban physical transformation rate in these areas is quite slow.
- A coarse-grained urban fabric exists in the south of Zerzāra area and El-Shoroūk area. Since they were developed after the inception of the "Moshārkah*"* act, they consist only of apartment buildings on large land plots. Furthermore, El-Warshah street, which is the busiest commercial street in Ezbet El-Haggana, is totally aligned with apartment buildings. Currently, no remarkable urban physical transformations can be detected in these areas.

In that sense, a certain pattern of urban physical transformation can be deduced. The areas on the edge of the informal settlement consist mainly of apartment buildings and family houses. On the other hand, the heart of the informal settlement consists mainly of Suessi houses and family houses. This pattern of urban physical

transformation in Ezbet El-Haggana might be due to the change of its geographical location in Cairo from being at the outskirt of formal lands to being in a strategic location between formal lands and new settlements, as shown in Fig.1. This has led to an increase in the demand on residential units in the informal settlement, and accordingly it became an attractive spot to real-estate investors.

Fig. 14. Location and dominance of the residential typologies within Ezbet El-Haggana, adapted from CAPMAS map 2017.

6. CONCLUSION

This study provides a documentation of residential typologies in Ezbet El-Haggana to understand the reasons behind the urban physical transformation of this informal settlement. During the last decade, maps of Ezbet El-Haggana showed an increase in the density and degree of compactness of the urban fabric. The maps and different areas of Ezbet El-Haggana were analyzed to help identify and locate the

residential typologies. Based on the multiple data gathering techniques employed, there are three residential typologies: a Suessi house, a family house, and an apartment building.

The analysis of the residential typologies revealed that the transformation in the urban fabric was mainly due to an act of real-estate investment, called "Moshārkah". This act, through the replacement of Suessi houses and family houses with large apartment buildings, caused two changes in Ezbet El-Haggana. First, a change in granularity of its urban fabric, from a fine-grained urban fabric to a coarse-grained one. This was due to merging several small land plots to create a larger land plot, upon which an apartment building was constructed. Second, a change in the number of families per residential typology occurred. This was due to the construction of a new residential typology, which is the apartment buildings. In contrast to old residential typologies where one family or an extended family occupied the building, such a new residential typology is occupied by more than forty families.

In addition, the study mapped the location and dominance of the residential typologies within the boundaries of Ezbet El-Haggana. Accordingly, three different patterns of transformation can be deduced. First, a fine-grained urban fabric characterizing the heart of the informal settlement, consists mainly of Suessi houses and family houses while few apartment buildings started to appear in the area. In addition, a very fine-grained fabric can be found in the area under the high voltage towers and cables as it consists only of Suessi houses. Second, a shift towards a more coarse-grained urban fabric in the areas close to the Suez Road highway and the formal old settlement, Nasr city, can be detected. Those areas consist mainly of apartment buildings and family houses, while few Suessi houses still exist. Third, a coarse-grained urban fabric can describe the environment of the main arterial street, El-Warshah Street and the two areas that were developed within the last decade in Ezbet El-Haggana. Such areas consist only of apartment buildings.

The findings highlight that the areas found at the edges of the informal settlement encountered a major physical transformation through the act of "Moshārkah", while the heart is currently witnessing a rapid process of physical

transformation. Such a pattern of urban physical transformation is mainly due to the existence and development of new settlements adjacent to Ezbet El-Haggana. Those new settlements changed the location of Ezbet El-Haggana from originally being at the outskirts of Cairo to being in a strategic location between formal lands and new settlements.

The documentation and analysis of the different residential typologies assisted in tracing the urban physical transformation of Ezbet El-Haggana. The analysis shed the light on the reasons behind the change in the granularity of its urban fabric justifying the enormous urban transformation of the informal settlement in the last decade.

In conclusion, those findings might significantly influence the government's strategic vision for the development of Ezbet El-Haggana and other similar informal settlements. This may include issuing strict building legislations and regulations such as height restriction laws, introduction of setbacks and reduction of the footprint of buildings. In order to minimize violations, different strategies and policies for implementation and law enforcement should be formulated. This is expected to greatly assist in minimizing the massive increase in density and degree of compactness of the urban fabric in the informal settlement. Finally, this study could generally provide guidance for the future development and upgrading efforts of informal areas especially those with high proximity to new communities and settlements.

DECLARATION OF CONFLICT OF INTERESTS

The authors have declared no conflict of interests.

REFERENCES

1. UN-HABITAT, "The Challenge of Slums: Global Report on Human Settlements", Earthscan Publications, London and Sterling, 2003.
2. Soliman, A., and De Soto, H., "A Possible Way Out: Formalizing Housing Informality in Egyptian Cities", University Press of America, Lanham, 2004.

3. Séjourné, M., “The History of Informal Settlements,” in “Cairo’s Informal Areas between Urban Challenges and Hidden Potentials”, GTZ, Egypt, pp. 16–19, 2009.
4. Khalifa, M. A., “Redefining Slums in Egypt: Unplanned Versus Unsafe Areas,” Habitat International, Vol. 35, No. 1, pp. 40–49, 2011.
5. Davis, M., “Planet of Slums”, Verso, London, New York, 2006.
6. El-Batran, M., and Arandel, C., “A Shelter of Their Own: Informal Settlement Expansion in Greater Cairo and Government Responses”, Environment and Urbanization, Vol. 10, No. 1, pp. 217–232, 1998.
7. Shehayeb, D., “Advantages of Living in Informal Areas”, in “Cairo’s Informal Areas between Urban Challenges and Hidden Potentials”, GTZ, Egypt, pp. 35–43, 2009.
8. Sims, D., “Understanding Cairo: The Logic of a City Out of Control”, the American University in Cairo Press, Cairo, 2012.
9. El-Mouelhi, H., “Culture and Informal Urban Development: The Case of Cairo’s ‘Ashwa’eyat (Informal Settlements)”, Verlag Dr. Köster, Berlin, 2014.
10. Amer, N. A., “Urban Transformation of Informal Settlements in Turkey and Egypt”, Journal of Engineering and Applied Science, Vol. 62, No. 3, pp. 207-229, 2015
11. GOPP, “Tackling the Shelter Challenge of Cities. Thinking It Through Together”, Ministry of Housing, Utilities and Urban Development, World Bank, Cairo, Egypt, 2007.
12. Nabil, N. A., “Studying the Use of Geo-Processing Tools in Upgrading Informal Settlements in Egypt”, Journal of Engineering and Applied Science, Vol. 60, No. 4, pp. 377-397, 2013.
13. CAPMAS, “General Statistics for Population and Housing: Population Census, Central Agency for Public Mobilization and Statistics,” Cairo, Egypt, 2006.
14. CAPMAS, “General Statistics for Population and Housing: Population Census, Central Agency for Public Mobilization and Statistics,” Cairo, Egypt, 2017.
15. El-Kadi, A., “Cairo’s Slums: A Ticking Time Bomb”, Journal of Civil Engineering and Architecture, Vol. 8, No. 8, pp. 989–1008, 2014.
16. Khalifa, M. A., “Evolution of Informal Settlements Upgrading Strategies in Egypt: From Negligence to Participatory Development”, Ain Shams Engineering Journal, Vol. 6, No. 4, pp. 1151–1159, 2015.
17. Salama, A. M., Wiedmann, F., and Ibrahim, H. G., “Lifestyle Trends and Housing Typologies in Emerging Multicultural Cities”, Journal of Architecture and Urbanism, Vol. 41, No. 4, pp. 316–327, 2017.
18. Bremer, J., and Bhuiyan, S. H., “Community-Led Infrastructure Development in Informal Areas in Urban Egypt: A Case Study”, Habitat International, Vol. 44, pp. 258–267, 2014.
19. GOPP, “The National Urban Development Framework: in the Arab Republic of Egypt”, The Arab Republic of Egypt, Ministry of Housing, Utilities and Urban Communities, General Organization for Physical Planning, 2014.

20. Zappulla, C., Suau, C., and Fikfak, A., "The Pattern Making of Mega-Slums on Semantics in Slums Urban Cultures", Journal of Architecture and Urbanism, Vol. 38, No. 4, pp. 247–264, 2014.
21. Carmona, M., "Public Places, Urban Spaces: The Dimensions of Urban Design", Architectural Press, Oxford, Boston, 2003.
22. Kamalipour, H., "Forms of Informality and Adaptations in Informal Settlements", International Journal of Architectural Research: ArchNet-IJAR, Vol. 10, No. 3, pp. 60–75, 2016.

الأنماط السكنية كأداة لتتبع التحول العمراني بعزبة الهجانة

عزبة الهجانة منطقة عشوائية بالقاهرة بأرض صحراوية مملوكة للدولة محاطة بمجتمعات عمرانية رسمية مما يجعل التوسع العمراني مستحيلاً، وتُظهر خرائط ٢٠٠٦ و ٢٠٠٧ تحولاً عمرانياً كبيراً، ويهدف ابحث إلي توثيق وتحليل الأنماط السكنية كأداة لتتبع ذلك التحول باستخدام عدة وسائل لجمع المعلومات مثل المناقشات غير الرسمية مع السكان والسير معهم حسب توجيههم والرسومات التوضيحية أثناء الزيارات و تدوين الملاحظات و التصوير والخرائط ، وبتحليل الأنماط السكنية ظهر أن التحول يرجع إلى الاستثمار العقاري وتحويل المباني الصغيرة التي تقطنها أسرة واحدة إلي مباني ضخمة يقطنها على الأقل ٤٠ أسرة مما أدى إلى تغيرات مثل التحول في مكونات النسيج العمراني من قطع أرض صغيرة إلي كبيرة وتغير عدد الأسر بالنمط السكني الواحد، كما حدد البحث أماكن وتوزيع الأنماط السكنية لاستخلاص أنماط التحولات العمرانية بالمنطقة، وظهر أن المناطق على الحدود الخارجية للعزبة والقريبة من الطرق السريعة والمناطق العمرانية الرسمية المجاورة شهدت تحولاً كبيراً خلال العقد الماضي أما قلب العزبة فهو في طور التحول العمراني المستمر.