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THE POTENTIAL OF IMPLEMENTING SUPERBLOCKS IN NASR CITY

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ABSTRACT

Population pressure in urban areas has been increasing rapidly over the last few decades, overloading and degrading these communities' social and environmental infrastructures and significantly affecting residents' health, daily economic productivity, and quality of life. In order to deal with this issue, some governments adopted a strategic framework that allowed them to introduce Superblocks in the built environment of their neighborhoods. The Superblocks concept solves many issues across the world, as it transforms public spaces from single-purpose to dynamic places with various uses without tearing down buildings or undergoing extensive redevelopment, creating an interconnected pedestrian-centric neighborhood. Therefore, the researcher discusses the potential of superblocks as a retrofitting strategy for Nasr City district as a solution to relieve the pressure from the high population density and motor vehicle-based urban layout, enhancing the urban quality of life for the residents.

KEYWORDS: Urban Quality of Life, Superblocks, Cities under pressure.

إمكانية تطبيق السوبر بلوك في مدينة نصر

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الملخص

سرعة تزايد الضغط السكاني في المناطق الحضرية، على مدى العقود القليلة الماضية، أدى إلى زيادة العبء على البنى التحتية الاجتماعية والبيئية لهذه المجتمعات وإضعافها، كما أثر بشكل كبير على صحة السكان، والإنتاجية الاقتصادية اليومية، و جودة الحياة الحضرية. و من أجل التعامل مع هذه المشكلة ، تبنت بعض الحكومات إطارًا استراتيجيًا بإدخال السوبر بلوك في البيئة المبنية لهذه المناطق. يقوم مفهوم السوبر بلوك على حل العديد من المصاعب في جميع أنحاء العالم ، حيث يحول الأماكن العامة من غرض فردي إلى أماكن ديناميكية ذات استخدامات مختلفة دون هدم المباني أو الخضوع لعملية إعادة تطوير واسعة النطاق ، مما يؤدي إلى إنشاء حي مترابط يركز على المشاة. لذلك ، يناقش الباحث إمكانيات تطبيق السوبر بلوك كإستراتيجية لتطوير منطقة مدينة نصر كحل لتخفيف الضغط من الكثافة السكانية العالية والتخطيط العمراني القائم على السيارات ، مما يعزز جودة الحياة الحضرية لسكان المنطقة.

الكلمات المفتاحية : جودة الحياة الحضرية، السوبر بلوك، مدن تحت الضغط.

1. INTRODUCTION

The strategic vision of Egypt 2030 is the adoption of the Egyptian government to an inclusive sustainable development framework that prioritizes the enhancement of citizens' living standards and welfare [1]. And most recently, Cairo, according to [2] was placed 229th out of 242 nations in the category of the quality of life (QoL) index. Cairo's low traffic and pollution control indexes were also mentioned.

Many nations started adopting sustainable urban design strategies in cities under pressure, such as superblocks, to face challenges like urban heat, air, and noise pollution [3]. In particular, after the outbreak of the COVID-19 pandemic, greater focus has been devoted to making cities more livable, resilient, and sustainable by retrofitting the physical environment and promoting walkability [4]. As there is a lack of research on how to increase the QoL in urban areas and apply the related urban reformation strategies in Nasr City District, the research focuses on exploring the potentiality of applying superblocks as an urban reformation strategy for the grid-like layout of the built environment in cities with limited availability of urban green spaces like Nasr City. This research presents key concepts such as the QoL in urban areas, cities under pressure, and superblocks; additionally, it explores the study area, and uses the case study methodology by reviewing the reformation done in the city of Barcelona in the 2010's as a successful case of grid like layout in a city converted to superblocks; finally, the potentiality of applying a similar approach to Barcelona in Nasr City is discussed and recommendations are drawn.

2. LITERATURE REVIEW

2.1 Quality of Life in Urban Areas

Residents should be able to read the story of their neighborhood from the layout, land uses and orientations throughout the place. The ability to read their surroundings encourages them to communicate, decide what they need, and take action to get it [5]. According to how well their needs are met, this relationship shapes people's behavior and perceptions, which has an impact on urban cities' quality of life [6].

Through the focus on built environment, welfare, education, income, employment, social behaviors, and recreation, the term "QoL" is used to assess the well-being of both people and communities. Indicators of QoL, such as income and wealth, are based on more social aspects than just material standards of living [7]. Apart from income, the definition of QoL in urban areas includes access to public spaces, a variety of retail facilities, transportation, urban green spaces, services for daily activities, the practice of culture and traditions, and a place to stay. Therefore, enhancing QoL in urban areas will require solving common problems like traffic, noise, and pollution [3]. In today's cities, in order to improve urban QoL, health and environmental problems must be addressed together, and balance policies with development activities in existing urban areas to get the people's support [8].

In the field of urban design, spaces are places where residents could enhance their social relations by being an apart of people's daily routes. Therefore, the urban structure and built environment should be inviting and welcoming the public life, not only through the institutions, but also from its public areas [5]. Different aspects should be considered;

- Attention for road Hierarchy to avoid similarity in visual perspective and consider the effect of traffic noise and car emissions on the pedestrians and the residents.
- Clear distribution of land uses and right selection for activity centres and public spaces for their daily needs
- Territorial spaces should be formed through the master plan and building configurations to encourage individuals to landscape these places.

A number of dimensions that define various aspects of life, including economic, environmental, social, and others, are included in the concept of quality of life. While in an urban context, quality of life also refers to aspects of the built environment and neighborhood urbanization [9].

2.2 Cities Under Pressure – Nasr City District

Human activities have caused cities to come under pressure over time, negatively damaging their social and environmental infrastructure [10]. These factors can be summarized as follows:

- Environmental pressure: Increasing greenhouse gas emissions into the earth's atmosphere and increasing the amount of solar heat suspended in the atmosphere have resulted from the extensive use of fossil fuels and changes to land use, resulting in climate change.
- Urban dynamic changes, or the factors that reshape cities through time and can be either natural or controlled by the local government, are affected positively or negatively by the economic and demographic characteristics of every urban region.
- Housing Balance: As a key development strategy to address the fast population expansion, the government is taking measures to enhance housing balance. However, the urban factors of population and building density cannot be used due to the high cost and limited availability of open lands, putting pressure on cities and their infrastructure.
- Modifications in urban land use to fulfill local requirements as demographic and lifestyle changes.

These and other factors put pressure on a city's infrastructure and are directly related to the primary indicators of QoL, as they affect waste management, transportation, public services, energy, and other aspects of society today. Similar to Cairo, the high population density has an effect on the standard of public services like health, education, and cultural services. This is one of the factors causing the decline in sustainable urban living as well as the decline in the quality of transportation and the availability of public green spaces [10].

The Egyptian government reversed the pattern of growing the tram and bus networks in the early 1960s by canceling small sections of the tram network and taking out the trolley bus that ran through the center of Cairo. In Cairo, it has been a fact that tram lines have been reduced in favor of street improvement initiatives and that less money has been spent on bus transportation.

Although three subterranean phases were employed to feed a significant portion of the Greater Cairo Region in the 1990s, many of Cairo's neighborhoods have been waiting for the different subterranean phases to reach them. The number of people using the bus system was too high, leading to a lack of satisfaction with public transportation and encouraging those who could afford to buy and use private vehicles daily. This alternative led to increasing traffic, which harmed the street networks overall [9].

Since the 1980s, in east of Cairo, cities have emerged towards the Suez Canal port, including New Cairo City, Madinaty, Badr City, Elshorouk City, Rehab, and the New Administrative Capital. Traveling to these cities has caused traffic conjunctions in many districts, including Heliopolis and Nasr City, that negatively affected the district's transportation system [9]. In the last few decades, Nasr City has been under pressure [11] due to the following factors:

Table 1: Nasr City under pressure factors [12], (Edited by the researcher)

Factors	Environ-mental Pressure	Social Pressure	Economic Pressure
The reliance of many on Nasr City's main axes for linking Cairo's emerging eastern and western cities	●	●	
Rising Internal immigrants from Delta and other suburbs to Nasr City for better jobs and services		●	●
The global interest in Al-Azhar University as a renowned university in the Islamic world led foreign students to come and stay in Nasr City while studying		●	
Holding regional and international events in the Exhibition Land, Cairo Stadium, and Conference Hall comes with a huge flow of visitors, resulting in huge pressure on the surrounding areas and main streets	●		
Uncontrolled vertical and horizontal urban growth. Vertical urban growth occurred when low-rise structures were replaced with high-rise towers, while horizontal urban growth occurred as cities expanded to meet the increasing population density	●	●	
The intensification of private recreational activities in Nasr City by transforming the ground floor of the buildings on main streets from residential to commercial usage and constructing huge complex buildings that contain stores, restaurants, and cafes	●	●	●
The removal of green spaces from the streets to solve the traffic jam problem, and the lack of public open green spaces in between the residential blocks	●	●	●
The encroachment of pedestrian sidewalks	●	●	

Aside from the previously mentioned pressure factors and the ongoing global economic crisis following the recent pandemic event, the Egyptian government began implementing a rehabilitation project in 2019 to relieve the decades-long congestion and improve traffic flow in Nasr City (Fig. 1 & 2) and Heliopolis districts, which included: First, the neighborhood's street networks are expanding at the expense of metro lines, pedestrian sidewalks, and urban green spaces. Second: Constructing several bridges for automobiles and pillars for the planned monorail that connects east and west of Cairo [18, 19]. These developments reduced travel times for vehicles

passing through these districts by half. However, they have also resulted in many problems, such as a vehicle accident on newly constructed streets and bridges and the rising in air and noise pollution harming the surrounding environment and affecting the living standards and welfare of the residents, putting additional strain on the district [8].

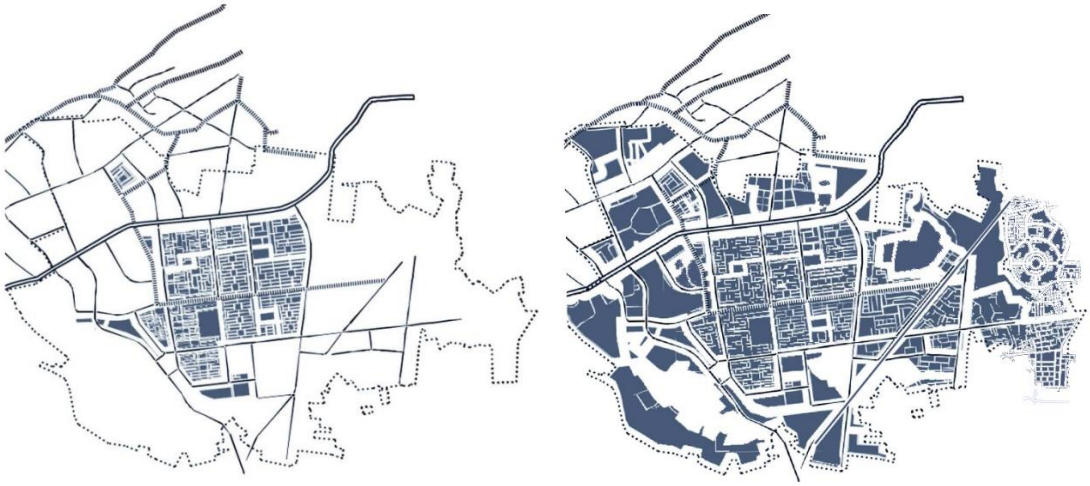


Fig. 1: Left: Nasr city Master plan 1960. Right: Nasr City Built area 2023 [13], (Edited by the researcher)

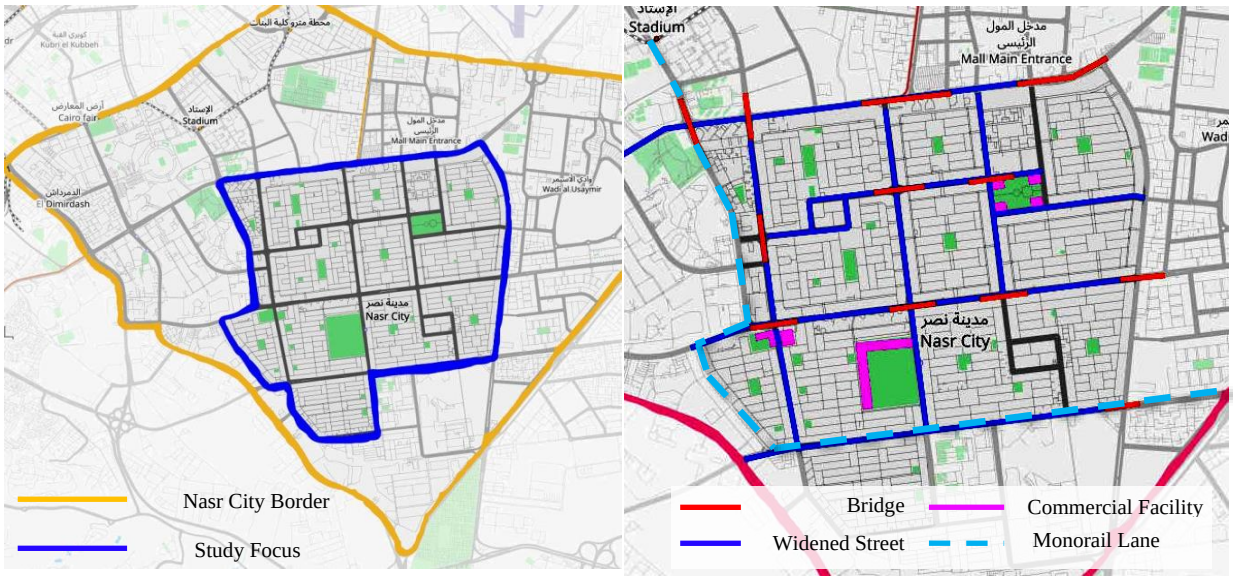


Fig. 2: Left: Nasr City Border and Focus area. Right: Reformation Actions within study area [8]

Going back to the origin of Nasr City District, it was designed as an extension of the Heliopolis district by the architect and urban planner Sayed Karim, in the 1960s. He designed the master plan according to the recent city planning theories at that time. An orthogonal plan consists of residential urban blocks with services and urban green spaces, with several administrative facilities for the ministries and other institutions to be moved from the downtown area to Nasr City. Given the chaos and poor management in Nasr City, a big part of the master plan no longer exists [12].

2.3 Superblocks AS A Retrofitting Approach

Due to the continuous urbanisation, urban green spaces are still vanishing and affecting the Green Infrastructure (GI) which is critical in conserving biodiversity, mitigating urban heat, and reducing air and noise pollution [6]. Superblocks have the potential to salve many urban challenges and improve the QoL of many urban areas' residents through transforming public spaces from single purpose locations to dynamic multifunctional areas without demolishing any existing settlement [14]. Superblocks boost GI and biodiversity while enhancing urban mobility in favour of public transportation, cycling, and encouraging walkability, making the neighbourhood more pedestrian friendly oriented [4].

The terminology of superblocks in urban design field is still un-specified and varies depending on the context. For example, the Chinese superblock theoretically and functionally differs from superblocks in different parts of the world, such as in Barcelona. Also, other approaches related to the superblocks that focus on sustainable neighbourhood transformation have emerged, such as Eco-city and Eco-block [15]. When using superblock design to promote inter-metropolitan transit, it is critical to improve alternative transportation options, and adjustments to the urban street network could require modifying the current public transportation system. Superblock design, on the other hand, goes beyond traffic control measures and attempts to promote urban sustainability at all scales, from the city to the street level [16]. In cities, the urban plans don't always rely of consistent large urban blocks, as they can consist of small or un-harmonized blocks in the layout, which complicates the implementation of superblocks [4]. Therefore, similar strategies to superblocks can be envisioned in these blocks, such as mini blocks (mini superblocks), which are geometrically smaller models of a superblock. mini blocks include exterior and interior streets and consist of 2 x 2 or 2x1 urban blocks, instead of 3 x 3 or 3 x 2 in superblocks (Fig. 3). Therefore, superblock essentially consists of multiple mini blocks to initiate city transformations. Four overlapped mini blocks can make a superblock; also, a single street can be boarded by two blocks [15].

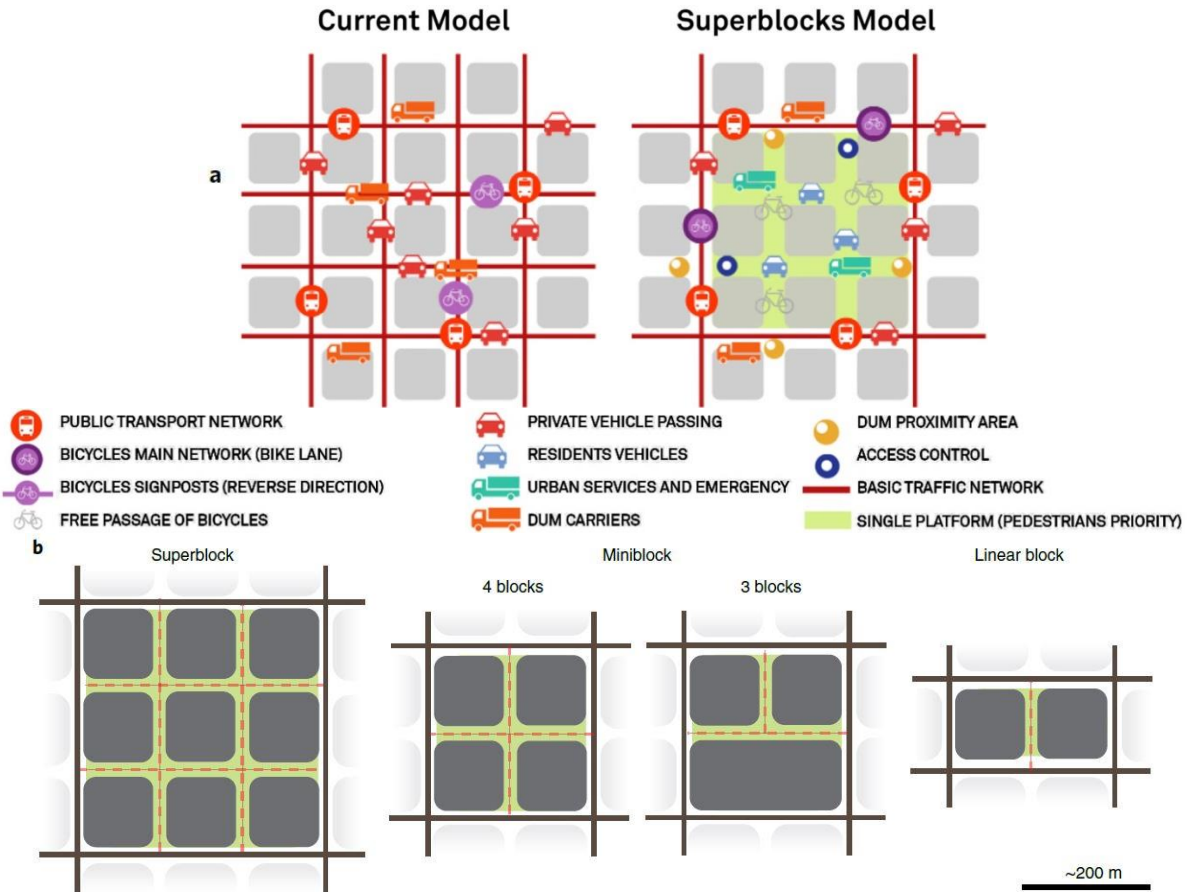


Fig. 3: Schematic of superblock design. a, External streets around urban blocks and the alteration of internal street are characteristics of superblock design. b, A further superblock design development led to linear blocks, or miniblocks, which are similar urban arrangements [15]

2.3.1 Eggimann's approach for identifying the superblock potential locations

Eggimann has developed a geospatial street network-based approach to identify potential locations where the urban structure is grid like (Fig. 4), where the width is at least half or not exceeding twice the size of the Barcelona superblock, in terms of accessibility for pedestrians, streetscape, or reachability for transportation [4]. A graph-based map of the street network analysis is obtained and processed from OpenStreetMap, a widespread source of volunteer geographic information data. The street network is visualised as a graph of nodes and edges in order to identify any intersections that could be part of a superblock or a miniblock, as well as the shortest path between all nodes that are adjacent to a superblock [15]. Despite the fact that a neighbourhood may have a grid-like street network, this does not always mean that it will have a high superblock potential because it may also lack a dense or compact urban form.

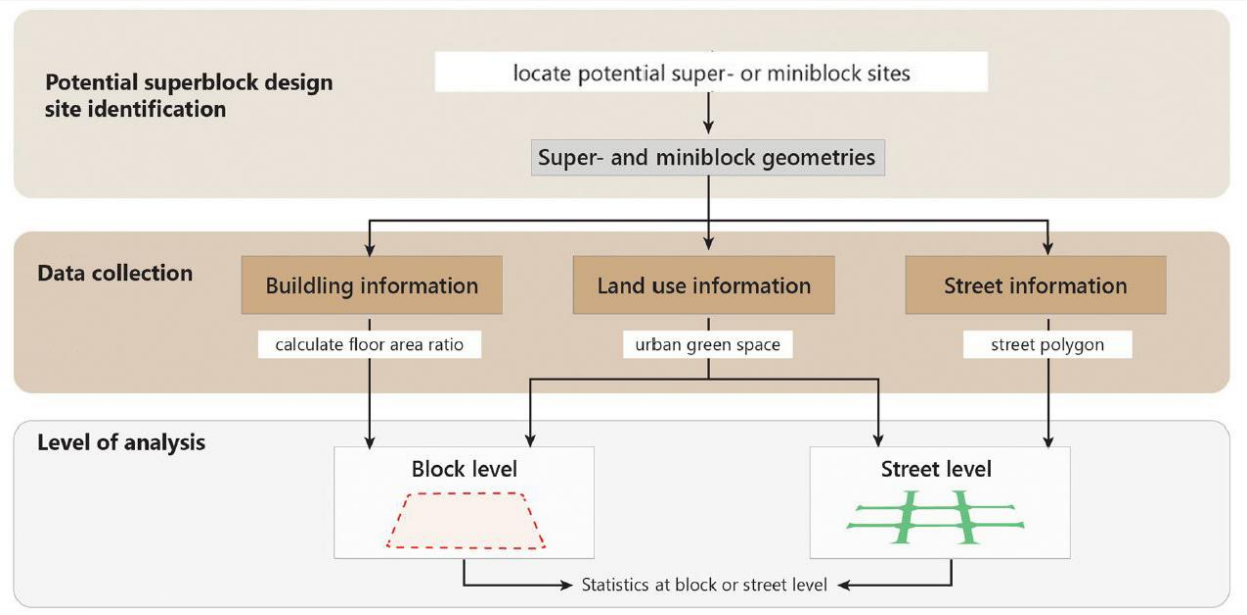


Fig. 4: The three steps of Eggimnann's approach [4] Edited by the Researcher

The length of internal and external streets and the number of blocks are defined as the geometric properties compared to Barcelona Superblock in the first step of Eggimann's methodology. In the second step, if a portion of the street network does not deviate more than 70% from Barcelona Superblock conditions, the geometric properties are used as criteria to compare and analyse. Third, filtering areas with potential for superblocks using criteria related to urban density, such as those where building coverage exceeds more than 30% or where there are over 100 residents per hectare of population. As alternate street usage may be essential in high population density areas, which are more vulnerable to the negative effects of urban densification, streets with low population density values are not included in the research. Alternatives to car-based transportation may also be more feasible and practicable due to the significant urban concentration in high-density locations [15].

Furthermore, whether a street was designated as a highway, principal street, or secondary street by OpenStreetMap, these large streets were left out in the street network since it would be difficult to modify the streetscape without potentially interrupting traffic. Local knowledge is a key necessity to validate the simulated superblock design plan since traffic flow relies on the kind of street, network layout, topography, user behaviour, forecast, and other factors. The street network disruption indicator (NDI) is indicated for all inner streets selected for potential superblock or miniblock locations. Eggimann's analysis found that in cities with a high percentage of streets with low NDI values, such as London & Cairo, there is a great potential for transforming neighbourhoods while having just a minor influence on traffic flow [15].

2.3.2 Data collection and processing

To identify potential superblock sites by assessing urban densities, many sorts of data are necessary, with a priority on streets, buildings, and land use [15].

Streets: Using the information from OpenStreetMap and areal imagery, the street network formations are extracted to identify the potential locations and clip the street polygons with the superblock polygons.

Buildings: OpenStreetMap and high-resolution imagery are used to extract the number of floors and building height, which are then combined with data from official government resources to calculate the floor area ratio (FAR = Floor Area of All Buildings / Total Superblock Area) and population density values (PDV = Population Data / Building Footprint and Height) for potential superblock areas.

Land use: In order to implement superblocks, it is necessary to determine the condition of urban green spaces as well as any areas that have the potential to turn green. Urban green spaces, both public and private, are quantified and analysed using high-resolution areal images since it is not as important to distinguish between the two zones at the neighbourhood level as it is at the block level.

Table 2: Geometric criteria for identifying superblocks and miniblocks [15]

Criteria	Interior Street Length		Exterior Street Length		Minimum number of interior street nodes	Minimum building footprint coverage (%)	Minimum Population density (Residents per ha)
	Minimum (m)	Maximum (m)	Minimum (m)	Maximum (m)			
Superblock	213	1280	640	3840	4	30	100
Miniblock	213	1280	427	2560	1	30	100

3. CASE STUDY

In the nineteenth century, Barcelona was developed using a chamfered square urban block-based strategy, therefore many of its neighbourhoods have a grid street layout, which made them ideal for implementing an urban renewal project based on the superblocks approach in the 2010's [16]. Due to the neighbourhoods' potential to be converted into superblocks, this strategy was suggested to transform Barcelona and increase its biodiversity and urban GI, which would improve the neighbourhoods' liveability and sustainability. A strategy that would redirect motor vehicle traffic away from the inner streets of the proposed superblock and lower the legal maximum speed to 10 or 20 km/h, promoting a more pedestrian-friendly area and reducing carbon emissions, increasing green areas, and revitalising urban street spaces with new shared multifunction [17].

Barcelona's long-term objective was to repeatedly implement superblocks across the city, altering both the district and the city as a whole. A superblock-based urban transformation strategy was projected to lead to an average improvement in life expectancy of nearly 200 days under the scenario of implementing 503 superblocks throughout Barcelona due to decreased levels of urban

land heat, air, and noise pollution. Barcelona's superblock is composed of up to nine (3x3) blocks with both internal and external streets, and mini blocks composed of four (2x2) blocks and suggests a less disruptive approach to initiating neighbourhood transformation, as they solve many complications in implementing superblocks within the urban configuration of the neighbourhood [4, 8]. The strategic goals that characterise this Barcelona superblock transformation strategy [17] are as follows.

A) Improving the habitability of public spaces by boosting the functions for social interactions while reclaiming the streets for the people.
B) Moving towards more sustainable mobility: a low-carbon, sustainable model that prioritises urban QoL and wellbeing through new mobility-management technologies, reducing the pollution and noise created by motor vehicles for years.
C) Increasing and improving urban greenery and biodiversity by improving plant and micro-habitat conditions on streets, creating permeable ground to ensure water access for public space plants, and promoting public participation in greenery maintenance.
D) Promoting public participation and joint responsibility: designing, implementing, and evaluating the superblock strategy.

The superblocks reformation programme was implemented by recognizing and identifying the main road network of the city and dividing the neighbourhoods into superblocks (Fig. 5), secondly, the speed limit was set in the inner streets of the superblocks to 10 km/h and parking spots were provided for the residents of the superblock [18]. On the superblock level as the unit of the reformation project, on the internal streets, road signs were placed to change the traffic directions, bus lanes were removed and car lanes were reduced, and intersections were eliminated to make room for pedestrians and social spaces (Fig. 6 & 7). Later on, street furniture pieces were added to the newly created public spaces to increase its quality [18].

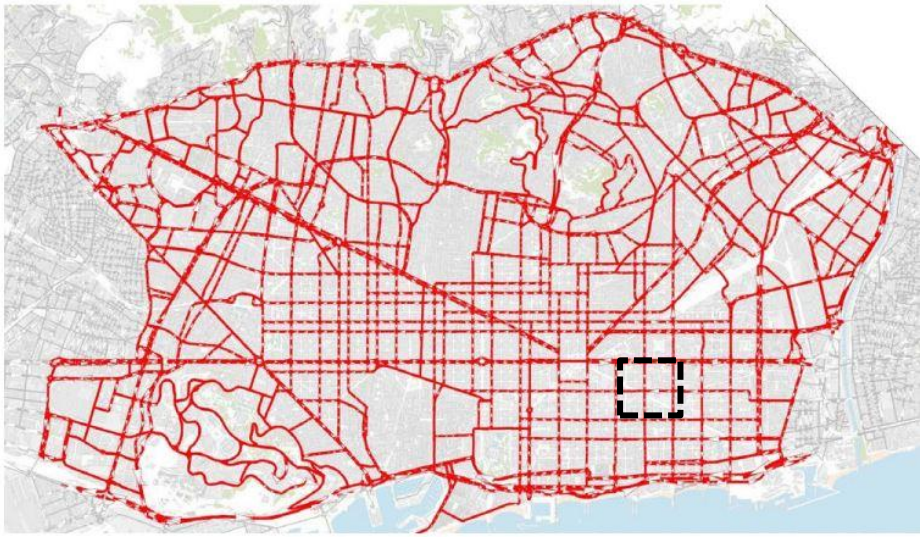


Fig. 5: The main road network and the superblock unit implemented in Barcelona [18]

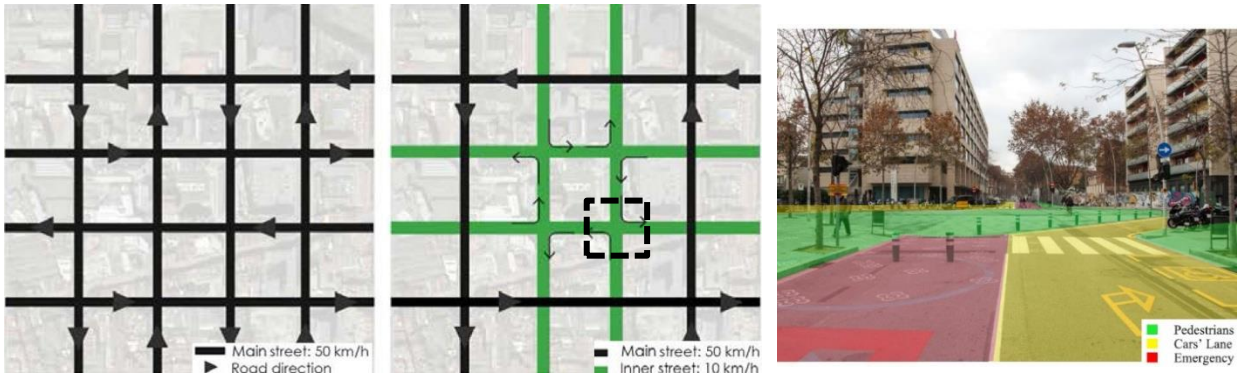


Fig. 6: The superblock unit implemented in Barcelona [18] (Edited by the researcher)

After the implementation of the superblocks, the QoL factors of the residents of these neighborhoods have been greatly improved as a result of the increased livability, walkability, accessibility, and the air quality of the areas [19] as demonstrated in the following figure (Fig. 7).

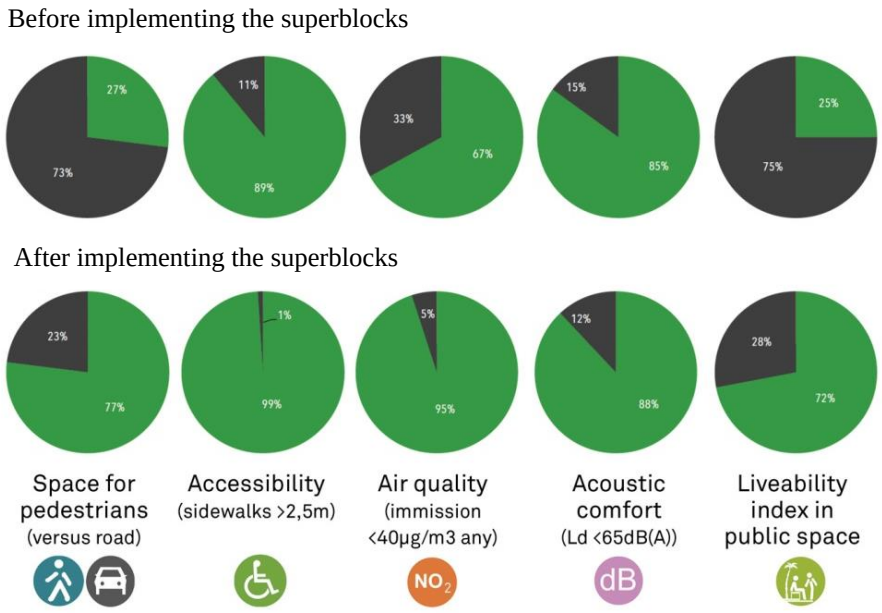


Fig. 7: Urban quality in Barcelona before and after implementing the superblocks [19]

4. RESULTS AND DISCUSSION

The research illustrated a geospatial network-based analysis method to identify the potential superblock and miniblock locations and introduce multifunctional streets through the given data, such as the master plan and demographic data from official resources and OpenStreetMap, high-resolution satellite images from Google Earth, and site visits. This method was deducted from the case of Barcelona Superblock, which focused on regenerating the grid like urban area with high population density, which are similar to the conditions in some Nasr City's neighbourhoods.

Therefore, the grid-like urban layout in Nasr City master plan raises the suitability rate to apply superblocks and successfully enhancing the QoL for the residents.

Some residential regions in Nasr city have reached a level of degradation that impacts their daily quality of life, and the urban configurations of some regions in Nasr city are similar to the Barcelona superblock urban layout; therefore, the researcher focused on the grid-like layout regions, which is the part in which the architect Sayed Karim designed at first in the 1960s.

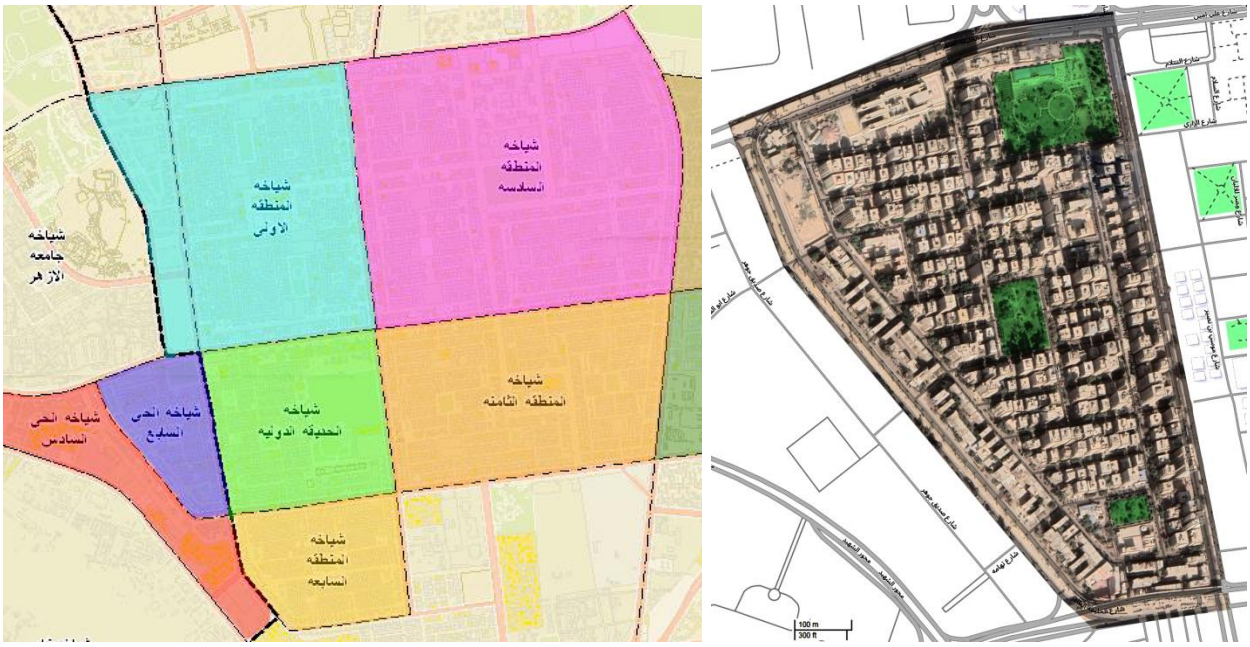


Fig. 8: Left: Nasr City's Regions [20] Edited by Researcher. Right: the 7th region urban layout. Source: OpenStreetMap and Google Maps. Edited by Researcher

Based on the given data and the researcher's local knowledge, the 7th region is chosen, also based on the residents' dissatisfaction with the current built environment for not feeling safe or secure. The 7th region was also chosen because of its high population density, high building footprint coverage, and grid like urban layout. These factors increase the potentiality of applying successful superblocks and Mini blocks in the region.

The researcher followed Eggimann's approach for identifying the suitability of superblocks and miniblock based on the urban characteristics and the street network system. First, the researcher analysed the region's urban configurations, land uses, building heights, and high-resolution satellite images to identify potential superblock or miniblock design locations.

After that, data collection started regarding building information (floor area ratio and building footprint) to check if the building footprint coverage is more than 30% or not, land use information (urban green spaces and service facilities), and street information (the geometric properties of the external and internal streets) to redesign the inner traffic flow without affecting it and make the area a pedestrian-based block instead of motor vehicles.

Finally, apply and evaluate the superblock strategy by redirecting the inner streets with consideration of their disruption effect on the traffic flow, determining the shortest route passing

by the blocks, and choosing the intersection points (the nodes) that will be spots for social interaction between the residents and pedestrians passing through.

Based on Eggimann's approach, the 7th region was split into five superblocks. In each block, the inner nodes are transformed from being a solo purpose to multifunctional social interactive spots for the residents and pedestrians passing through, and the number of spots is considered according to the high population density in these blocks. The suggested measures for transforming the streetscape and the social spots into urban green spaces vary; such as, urban gardens, green walls, small pockets of urban green, bio-retention features like rain gardens, unsealing of soil, and planting individual trees. Trees thereby gain particular interest due to their critical role in mitigating urban heat and regulating ecosystem services. While green space has many positive impacts, potential disservices need to be considered as well.

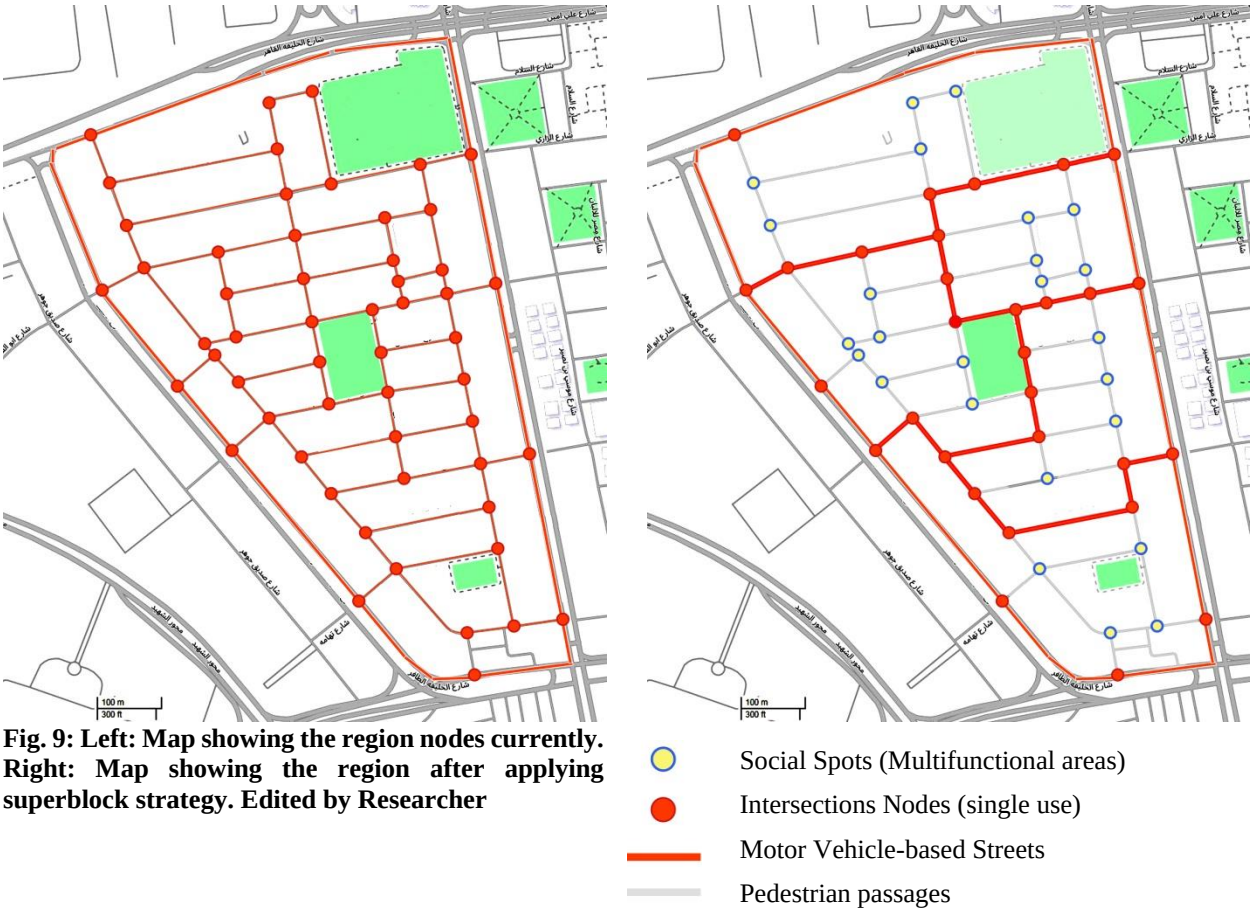
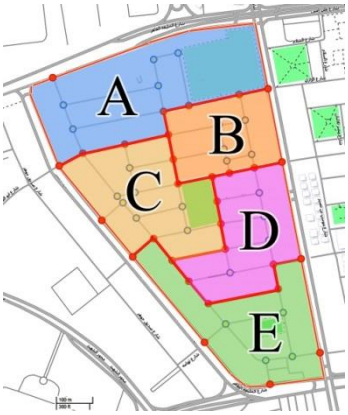


Fig. 9: Left: Map showing the region nodes currently. Right: Map showing the region after applying superblock strategy. Edited by Researcher

Table 3: The geometric properties of the internal and external streets. Edited by Researcher



Criteria	Superblock A	Superblock B	Superblock C	Superblock D	Superblock E
Interior Street loop length (m)	1100	955	1035	940	1475
Exterior street length (m)	1740	1460	1350	1300	1750
Total number of interior street nodes	5	6	5	4	4
Building footprint coverage (%)	45	73	67	85	64
Population density (residents /ha)	115	120	130	118	139

According to the criteria mentioned in the literature review (Table 2), to identify superblocks, the researcher addressed the geometrical properties of each superblock (Table 3). Due to the building height differences in each superblock, the population density is not consistent with the building coverage area percentage difference. Some of the superblocks have urban green spaces, but unfortunately, they are either not accessible, require a fee for entrance, or are poorly maintained. Superblock A is the largest in area, as it hosts a large green space, a private school, and a sports centre for the youth. While superblocks C, B, and E have schools and open spaces, they have smaller areas, resulting in a higher population density. Superblock D is the smallest in area yet the highest in population density due to the high residential buildings, as each building exceeds 10 floors, but due to the size of the superblock, four nodes were concluded to be enough for the residents and the pedestrians. The existence of five schools in this region added pressure to this area, while increasing the importance of having social interaction spots for residents and students to interact and socialise, as well as a controlled vehicle speed for the safety and security of the residents and students.

CONCLUSION

Superblocks are only one of numerous options for increasing urban green space to reduce heat islands or improve livability by reducing air and noise pollution. However, superblocks can provide an opportunity to expand urban green spaces in various Nasr City regions. The proposed model's findings may be used as a basis for urban design in an integrated sustainable urban neighbourhood transformation by superblocks or miniblocks in high-density locations to improve urban livability and minimise environmental stresses. There is no detailed construction and design solutions offered for the identified locations, which require further assessment and evaluation regarding opportunities to improve GI connectivity, reduce pollution, incorporate superblocks into public transport, promote walkability, or achieve the best urban heat mitigation.

The analysis presented is based on a hypothetical setting that can be easily applied to any city; therefore, more detailed analysis and modelling work are required to determine how and under what circumstances potential identified superblock sites could be implemented, as well as how to

overcome potential obstacles such as gentrification, policy design, or re-designing transportation or other infrastructure networks. Follow-up studies to the presented general and data-driven approach for each case study should integrate more thoroughly local constraints, including detailed traffic scenarios that consider the unique properties of streets and local constraints, for a more detailed evaluation of superblocks as a sustainable urban transformation strategy.

Personal vision for cities is not the only factor that the implementation of superblock depends on; also, the political factor applies, especially for transforming urban areas or developing transportation methods that directly impact the urban form of the city. More community-based research should be sponsored by the government in order to improve urban quality of life. To prevent the consequences of current developments in Nasr City, where the government prioritised motor vehicles above pedestrians and residents, diverse age groups and people's needs should be taken into account while developing a sustainable urban neighbourhood. Building and developing sustainable neighbourhoods requires integrating people's subjective perceptions with objective environmental aspects. This combination can improve urban quality of life that focuses on people, as it can change depending on residents' needs and perceptions. Therefore, superblock implementation cannot be done in isolation.

RECOMMENDATIONS

The researcher recommends retrofitting Nasr City's highly populated areas using suitable urban redevelopment methodologies while preserving cultural characteristics and improving people' social lives. Superblocks have demonstrated their potential in grid-like urban areas; therefore, implementing this method could assist in the upgrading of the built environment and raise the rate of success in enhancing residents' QoL. Some general considerations must be made:

- Increasing pedestrian safety and security through improved sidewalks and social public spaces, especially school roads.
- Promoting the establishment of a bike lane network while providing secure bicycle parking.
- Establish bus and taxi stops on the external streets.
- Focus on accident black spots of traffic in the area.

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