3 Formal-informal interface

Comparative analysis between three Egyptian cities

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Introduction

Research on informality tends to treat informal and formal zones as discrete, and often homogenous entities, thus reproducing the segregation, marginalization, and exclusion of informal neighbourhoods. Seeking to challenge the perception of the dualistic city, we examine the formal-informal interface as a place with links to both spaces, and from which we can ultimately formulate appropriate integrated policies.

Current policy in Egypt around urban informality is based on a characterization of informality as an abnormal and inherently negative phenomenon that can only be solved by its removal from the city, or, at best, through upgrade and reform. This characterization, bolstered by the lack of economic profit extracted from informal settlements in the form of property taxes, continues to influence the two current policy approaches to engaging with urban informality: preventative and interventionist. The former, which includes ‘belting’ measures that build formal districts around informal areas, seeks to limit expansion of the informal. Meanwhile, interventionist approaches endeavour to remove, displace, or upgrade informal areas through measures like the resettlement process, whereby unsafe areas are cleared and residents are relocated to newly built areas in the outskirts of the city (Hasan, 1989).

Despite the general trend towards the integration of informality in the urban fabric, urban policies continue to uphold a formal-informal dichotomy. This dualistic view of the city continues to engender challenges, controversies, and contradictions around how informality is perceived and handled.

Problem statement: current policy

In the Greater Cairo Region (GCR), current policy dictates that district boundaries are delineated based on the informal or formal nature of the built environment. This key policy contradiction – effectively institutionalizing the separation of formal and informal neighbourhoods – may be said to represent Egyptian government policies for urban areas more generally. Such urban policies further perpetuate existing imbalances between formal and informal areas through budget allocations.

Comparing the local development budget allocation per capita in the GCR districts with a map of Cairo's formal and informal areas, we see that informal areas receive far less funding for development than do formal districts (Tadamun, 2015). For example, the informal areas of Bulaq al-Dakrur and Shubra, which have the highest concentrations of urban poor and thus require more services, receive a comparatively lower percentage of the local development budget per capita than formal areas such as Madinat Nasr, Ma'adi, and Misr al-Jadida, which already enjoy many services and established infrastructure. Such examples show a clear funding discrepancy, resulting in continued unequal access to basic services, including education and health care (Tadamun, 2015). Meanwhile, the GCR's policies around upgrading informal areas continue to be grounded in the assumption that informal areas do not fit the norm, and as such must be demolished and reconstructed according to national norms, rather than adapting infrastructures and services to the needs of informal areas.

Given these challenges in the ways in which formality and informality are understood and treated, this research has three aims:

- Challenge the status quo bifurcation of the city into formal and informal areas.
- Deliver a series of policy recommendations based on the aim of integrating informal practices into the city.
- Provide a comparative framework that facilitates knowledge-sharing between African cities, allowing further insight into the nature of the formal-informal interface across the continent, while also promoting a nuanced understanding of their local contexts.

Context: introduction to informality

Over the last few decades, urban informality has emerged as a critical issue impacting large metropolises today (Soliman, 2004; Simone, 2002; AlSayyad, 2004). A literature review reveals that research on informal areas tends to examine their historic, socioeconomic, and geographic aspects independently from those of the formal sector.² While both informal and formal areas are marked by spatial and social segregation, previous literature has at times deepened the divide between informal and formal areas, enhancing existing social and physical boundaries with theoretical constructs that reinforce a story of two separate cities (Viquez Abarca & Hernandez Garcia, 2017; UN-Habitat, 2010).

What is informality?

Our research hinges on an analysis of urban informality as a spatially produced urban condition that takes place outside formal regulations in response to the withdrawal of the state. In Egypt, informality emerged in the early 1960s, and proliferated in response to state deregulation in the 1970s (Sims, 2010). Thus,

informality is understood to refer to actions undertaken by individuals and communities to meet their own needs, outside of legal means recognized by the state.

Formal-informal interface in Egypt

In Egypt, as elsewhere, informality is influenced by responses to governmental policies, but also triggers new governmental responses. Egyptian central authorities' response to informality has evolved over the decades in relation to perceptions and definitions of informal areas. By examining the evolution of urban informality in Egypt, we see how cities' morphologies have changed alongside gradual policy shifts.

Evolution of urban informality in Egypt: 1950–2018

Informal housing development has existed in Egypt since the 1950s, when new rent control laws reduced rental market profitability, prompting the mainstream real estate market to become predominantly owner-occupied. A housing shortage resulted, as demand for housing outweighed supply (Khadr & Bulbul, 2011). The earliest manifestations of informality in Egypt responded to this housing demand, with informal construction developed on agricultural lands at urban fringes. The

Figure 3.1 Izbat Awlad al-'Alamin Duqqi: Informal Enclave within the Formal City

Source: Authors

government presented no official resistance to these first informal settlements, and while officials granted permission to some dwellers to remain in their locations, they also abdicated responsibility to provide basic amenities for informal settlers (Center for Sustainable Development, 2013). During the 1960s, informal settlements expanded due to rural-urban migration, spurred by employment opportunities in industrial zones adjacent to large cities.

During the Arab-Israeli conflict (1967 to 1973), financial resources mobilized for military needs led to decreases in public housing project investment. Meanwhile, 1.5 million people evacuated from the Suez Canal zone fled to other cities. With formal housing development stalled due to war efforts, informal development grew considerably (Soliman, 2007). Again, authorities overlooked this growth, partly because it largely took the form of village expansions in the rural peripheries, where building permits were not required (Hassan, 2012).

Post-war, the government intensified efforts to rebuild the country's economy, directing resources to modernize formal area infrastructure and to develop new cities (e.g., Sadat, Sixth of October, and Tenth of Ramadan), as dictated by new town policies, which aimed to redistribute the urban population and build alternatives to informal development (Sims, 2010). New town development was undertaken in the context of Sadat's Open Door Economic Policy (*Infitah*), which marked the first wave of the liberalization of Egypt's economy (Mkandawire & Soludo, 1999). Significant capital investments in housing increased land values to unprecedented levels, leading to high inflation, a real estate bubble, and a lack of affordable housing (Evin, 1985). As a result, low-income and middle-class residents, and Egyptian workers returning from the Gulf countries, turned to the informal sector and peri-urban suburbs to address their housing needs (Sims, 2010).

By the 1980s, the prominence of urban informal areas prompted measures limiting 'illegal' urbanization, such as Egyptian Military Decrees 1 and 7, which forbid encroachment on agricultural land (Séjourné, 2009). However, informal settlements continued to grow. With the state declining to provide basic services for these settlements, civil society networks funded by religious charitable groups stepped in to provide services, infrastructure, hospitals, education, security, and more. During this time, political discourse began demonizing informal areas as breeding grounds for Islamic fundamentalism. By the close of the 1980s, the growth rate of informal settlements had surpassed that of formal areas in Egypt. Between 1986 and 1996, the growth of informal construction in Egypt was estimated at 3.2% per year, compared to 1.1% in formal districts, while the population growth rate in informal settlements reached 3.4% per year, compared to 0.3% in legal areas (Payne, 2005).

In the early 1990s, another policy shift occurred. Attempting to capitalize on existing housing stock in informal areas, the government undertook to upgrade informal settlements. The 1992 National Program of Urban Upgrading classified informal areas based on their potential for upgrade (1,201 areas) or for eviction (20 areas). It also began to provide basic infrastructure and municipal services in almost all informal settlements in the GCR. Meanwhile, the presidential decree for the 'Citizen's Right to Appropriate Infrastructure' focused on providing

a combination of infrastructural improvements, social services, and physical restructuring in 'safely built' settlements (Hassan, 2012).

In 1996, the al-Shura Council (the upper house of representatives) produced a report arguing for an integrated approach to the problem of informal settlements (Khalifa, 2011). Governmental policies consequently shifted from a singular focus on physical upgrading, to plans that integrated informal neighbourhoods within the formal city. During the early 2000s, this notion of 'integration' came to replace the concept of 'upgrading'. Integration included three basic aspects. Firstly, physical integration involved opening roads, connecting infrastructure networks and public services, and integrating informal areas in the city's official maps. Secondly, social integration sought to promote social development. Thirdly, juridical integration involved property regularization, land titling, and the resolution of land tenure issues, as a means to complement citywide cadastral needs to enable property tax collection (Hassan, 2012).

In the mid-2000s, policy shifted again. With the Ministry of Local Development counting 1,171 informal areas with a total population of 15 million in 2007 (Payne, 2005), a new approach was undertaken to control informal growth by planning the fringes of the city before they could be occupied by informal construction. From 2004 to 2008 the government implemented an informal settlement belting programme (*Tahzim al-'Ashwa'iyat*) intended to restrict the growth of informal settlements through the construction of formal housing in strategic regions (Tadamun, 2016).

In 2008, the Informal Settlement Development Facility (ISDF) was established to coordinate efforts and finance the development of informal areas. The ISDF initiated a significant ideological shift in the government's approach to informal urbanization, notably by modifying the vocabulary used to describe informality. Common terms such as 'Slums', 'Informal Settlements', or '*Ashwa'iyat*' were replaced by two distinctive terms: 'Unsafe Areas' and 'Unplanned areas'. Unsafe areas are characterized as subjecting people to life-threatening conditions, such as inappropriate housing, exposure to health threats, or tenure risks, while unplanned areas are usually noncompliant with planning and building laws and regulations (Nassar & Elsayed, 2018). Thus, informality could be defined on the basis of either legal status and/or physical conditions (Piffero, 2009). The ISDF's approach to unsafe areas was either to remove and rebuild in situ, or to relocate residents (Hassan, 2012). In high land-value areas, informal settlements were removed and people relocated, in many cases to unsuitable areas.

The current period (since the 25 January 2011 revolution), is marked by large-scale national construction of new housing projects using public funds, and alternative approaches to informality undertaken by new urban practices. While international organizations (e.g., Deutsche Gesellschaft für Internationale Zusammenarbeit GIZ, Agence Française de Développement [AFD], and United Nations Women) are funding research and implementation of projects promoting in situ upgrading grounded in participatory engagement of neighbourhood residents, new urban practices (e.g., CLUSTER, Takween, Madd, and 10Tooba) are attempting to address informality as part of the solution, rather than the essential

problem, facing large metropolises today. Collectively, this research on the interaction between formal and informal zones is contributing to a redefinition of informality.

Methodology and framework

The core of this project took the form of fieldwork conducted in three cities, which were selected based on their relative size, location, and specific socioeconomic characteristics: Cairo, the capital; Alexandria, Egypt's second largest city; and Minya, a regional centre.

Informing our fieldwork process was a literature review on informality in Egypt and globally, utilizing academic sources, and government and international reports to extract statistical information, data, district boundaries, and more. In each city, the team identified and collaborated with local individuals and groups to compile literature, maps, and additional background material. The team identified practitioners, academics, community leaders, and experts in relevant fields of study in each city, utilizing local contacts to facilitate analyses on the ground, and to review findings.

CLUSTER utilized Cairo as a pilot for further field encounters, building on our experience undertaking urban research and design interventions in the city since 2011. CLUSTER's urban research methodologies aim to engage stakeholders in all stages of research. Such an approach seeks to promote an alternative mode of participatory planning and urban governance, which is particularly pertinent in Egypt, where elected city or district councils do not exist. Since 2011, CLUSTER has been documenting rapid political and urban change in Cairo, raising questions concerning informal economies and the right to the city, while focusing on the spatial manifestation of these practices.

CLUSTER's research team conducted its first fieldwork stage in Cairo in August and September of 2017; Alexandria in October; and Minya in November of the same year.

The team's proximity to and familiarity with Cairo enabled it to use the city as a pilot for the development of a set of four variables, which were used to examine the specificities of the formal-informal interface within each case study, and developed as an analytic framework for the comparative analysis. These four variables are:

- **Borders:** elements that separate the formal from the informal urban fabric. Borders can refer to infrastructural elements such as walls, railway lines, or artificial waterways (canals), or can result from topographical features. In the context of this research, borders are critical elements that impact the flow, or lack thereof, between formal and informal areas.
- **Crossings:** physical means to overcome borders, including features like railway crossings, bridges, and tunnels. Whether built formally by the state, or informally by the community, crossings address a need for accessibility or flow, and often act as magnets for both informal and formal activities.

- **Activities:** develop along the borders separating the informal and formal sectors of the city. Some activities mainly serve the needs of residents in the informal sector – such as tuktuk networks connecting residents to planned components of the traffic network. Other activities serve both the formal and informal sectors, such as markets (formal or informal), often found around transportation hubs.
- **Flows:** the movement of goods, labour, or capital between or across both formal and informal sectors.

In each city, we examined earlier four variables at three different scales, from the macro to the micro-level. Each scale focused on different aspects of the formal-informal interface.

- **City scale:** providing a macro overview of the relationship between the formal and informal, this scale generally looks at urban corridors, transportation axes, infrastructural lines, topographical changes, urban fabrics, patterns of expansion, and overall density.
- **District scale:** focusing on select neighbourhoods where the symbiotic relationship between the informal and formal is relevant, this scale casts an eye to border lines, linkages, patterns, and footprints in terms of density, services, and flows across areas.
- **Node scale:** utilized to study the intersection between multiple axes where the informal and formal connect, this micro-scale examines the people traversing the formal-informal interface, and the activities arising around crossings and transfer points.

Based on a preliminary cycle of fieldwork in Cairo, and using the four variables and three scales of analysis as a coherent framework, the team was then deployed to Alexandria and Minya to examine the formal-informal interface in both cities.

In undertaking a comparative analysis of the three cities across the four variables (borders, crossings, activities, and flows), we sought to investigate two key questions:

- Despite existing physical borders, do the experiential flows and nodes at crossings challenge the formal-informal separation?
- What alternative planning policies could be adopted to foster integration and build on the complementarity between formal-informal modes of development?

Pictograms representing interface typologies were utilized throughout the research as a means to abstract a complex web of relations and facilitate a comparative analysis, such as the ones used in Figures 3.4 and 3.8.

Following fieldwork, we processed research materials, maps, images, and interviews, and employed visualization strategies to give shape to the patterns

Figure 3.2 Comparative Framework

Source: CLUSTER, 2018

analysed in the three cities. In this final stage, we also examined the opportunities interfaces provide to challenge formal-informal divisions.

Case studies: findings

Cairo

Located along the Nile Valley, Egypt's capital city is the country's cultural, political, and economic centre. The GCR is comprised of three Governorates: Cairo, Giza, and Qalyubiya (which includes the district of Shubra al-Khayma). The GCR is the 16th largest metropolitan area in the world, with a 2017 population

Figure 3.3 Map of Cairo

Source: CLUSTER, 2018

of over 19,846,000, and an annual growth rate of around 2.2% since 2000 (World Population Review, 2018). The presence of industrial zones in the cities of Sixth of October and Tenth of Ramadan (both part of the GCR), have contributed to the capital's role as a key manufacturing centre (Euromonitor, 2017; UCL, 2003). In 2016, Cairo accounted for 33% of Egypt's total gross domestic product (Euromonitor, 2017).

For centuries Cairo has expanded through successive waves of development and ever-increasing urbanization. Today, informality is one of Cairo's defining features, and its dominant mode of urbanization. With the informal economy estimated to incorporate over half of Cairo's labour force, and informal neighbourhoods constituting 52.7% of Greater Cairo's residential areas (World Population Review, 2018), distinctions between formal systems and informal practices have blurred.

Formal-informal interface: three scales

Our analysis of Cairo, based on case studies conducted at three scales (city, district, node), identifies ways in which informality has contributed to the capital's urbanization process, and how informality manifests within Cairo's multilayered fabric.

City scale

Despite Cairo's size and complexity, broad trends in the organization of the formal and informal sectors emerge at the city scale:

- Cairo is characterized by an historic core, around which a ring of informality has progressively developed since the 1960s. Through expansion, formerly rural enclaves became part of its formal urban agglomeration (e.g., Mit 'Uqba within Muhandisin). Informal construction also occurred along urban corridors (e.g., along Hilwan Road to the south, and Pyramids Road to the southwest).
- Cairo is a mega-city, with infrastructural systems such as highways, railways, and major roads forming its dominant borders (e.g., al-Isma'iliya Canal in the north and al-Autostrad to the east). In some cases, these infrastructural lines produce a sharp divide between formal and informal areas (e.g., between Ard al-Liwa and al-Muhandisin in the west, and Nasr City and 'Izbat al-Hajjana in the east). In other cases, the formal-informal border is blurred, such as at the intersection of infrastructural lines, as is the case at Ghamra Station (a complex transport hub examined in this study; see Figure 3.4).
- Formal road infrastructures at the periphery of informal neighbourhoods are largely not connected to the road networks within informal areas, limiting access for residents of informal neighbourhoods to main transportation services, and by extension, access to education, employment opportunities, and health services.

Figure 3.4 Ghamra Station Activities and Flows Around a Major Transportation Hub
Source: CLUSTER, 2018

District scale

Through fieldwork, four district-scale areas were analysed: Ard al-Liwa, Hilwan, Ghamra Station, and 'Izbat al-Hajjana. In Ard al-Liwa, the strict division of formal and informal areas that can occur along infrastructural borders is evident where the railway line separates this informal area from the formal area of al-Muhandisin (Figure 3.5). Crossings, including pedestrian stairs and vehicle bridges, are distributed along this boundary to enhance the connection between the areas. Multiple public services, transportation hubs, commercial and entertainment activities can be found in the spaces adjacent to these crossings.

Node scale

At the node scale, the critical relationship between people's needs and government response can be seen through the evolution of physical infrastructure, as in the case of the railway crossing in Ard al-Liwa. Isolated from adjacent areas due to the presence of the railway tracks, Ard al-Liwa was linked to al-Muhandisin via an informal crossing. However, due to frequent train accidents, the government closed this crossing, replacing it with formal bridges for cars and pedestrians. This evolution from informal to formal exemplifies how local demand and community-built solutions can be capitalized on by the government to improve mobility and accessibility across the network.

Analytical tools

BORDERS AND CROSSINGS

In Cairo, infrastructural lines form some of the main borders. In some cases, these boundaries mark a deliberate state effort to delineate formal and informal zones, as with the construction of the Ring Road in the late-twentieth century. However, over time, informal development around these 'borders' transformed them into mixed formal-informal urban corridors.

Isma'iliya Canal in northern Cairo constitutes an important fixed border, as it separates not only the formal and informal areas, but also demarcates the Cairo and al-Qalyubiya Governorates. Other canals in Cairo have either been infilled and developed or are in the process of being urbanized. As such, peri-urban irrigation canals are often rendered irrelevant once agricultural land is lost through urbanization, thereby increasing the likelihood these canals will be incorporated into the urban fabric, as in the case of al-Zumur Canal.

Topographical borders define some informal areas in Cairo. In such cases, local, incremental community efforts, such as the building of staircases, serve to mount otherwise impassable geographical barriers. Government upgrading efforts of informal areas often involve the reconstruction of such informal stairways, using more durable materials, and adding handrails. As excluded communities reclaim their rights to the city through makeshift solutions, the interfaces between

Figure 3.5 Railway Border between Ard al-Liwa and al-Muhandisin

Source: Authors

formal and informal areas develop beyond spatial barriers symbolic of structural division, to present opportunities for connection and reclaimed agency.

Cairo's complex traffic and transit network has given rise to compound crossings that include pedestrian, overpass, and flyover crossings, and in some cases informal street-level crossings. Frequently, these formal and informal crossings act as hyper-junctures, where layers of public transit, including metro and regional train lines, intersect with informal transit networks, such as microbuses and tuktuks.

ACTIVITIES AND FLOWS

Cairo's dynamic transport hubs and crossings function as nodes concentrating activities and flows of capital, labour, and goods between the informal and formal sectors. Formal and informal modes of transport generate significant pedestrian traffic in these areas, accounting for the correlation between street vendors and transport hubs.

Alexandria

Alexandria is Egypt's second largest city, with a population of about 4.9 million, increasing at an average annual rate of 2.3% since 1999 (Population of Alexandria, 2017). Alexandria accounts for 40% of Egypt's industry, and approximately 80% of the country's imports and exports move through its large seaport (Shoup, 2017). Situated on the Mediterranean Sea, and in close proximity to numerous lakes, Alexandria attracts over 3 million visitors per year (Al Masalla, 2010).

Urban informality in Alexandria mainly emerged in the 1960s, when formal construction declined nationally, while migration to major cities like Alexandria increased. The majority of informal urban construction took place on agricultural land, without adequate urban infrastructure, as can be observed in Burj al-‘Arab al-Jadida and around Lake Maryut.

Today, 50% of Alexandria's residential areas are informal. Occupying a net surface area of 34.2 km² (Soliman, 2002) and housing an estimated 1.5 million people, informal areas are high-density with poor road conditions, and lack community services and utilities (e.g., paved streets, adequate access to healthcare, education, and community facilities [Barthel et al., n.d.]). As such, informal areas in Alexandria are largely dependent on services from the formal areas, with residents in informal areas often relying on neighbouring areas to access services like secondary education. Urban sprawl and the densification of informal areas have exacerbated the inequality in access to services. Meanwhile, the continued influx of migrants from neighbouring areas to Alexandria has also increased land speculation, leading to the demolition of numerous historical buildings to make way for new developments.

Formal-informal interface: three scales

CITY SCALE

Successive periods of development over the twentieth century have reshaped Alexandria's urban development, expanding urban areas from the old central districts (Wasat, Jumruk, and Gharb) towards the northeastern (al-Muntazah, Sharq) and southwestern (al-Amiriya) districts that today comprise modern Alexandria. Several patterns delineating the formal-informal interface in Alexandria are evident:

- The city's linear urban development has resulted in the creation of multiple urban layers: from older to newer housing, higher- to lower-income neighbourhoods, and formal to informal modes of development.
- Socioeconomic inequalities are spatially inscribed in the city: upper-class residential areas have developed along the coast, south of which are the middle-class districts, with low-income areas typically constructed informally, behind the railway track and south of al-Mahmudiya Canal.
- Urban informality expanded the city mainly to the south of the Mahmudiya Canal and the railroad, and is characterized by the construction of urban blocks following the pattern of agricultural subdivisions.

Figure 3.6 Map of Alexandria
Source: CLUSTER, 2018

DISTRICT SCALE

Case studies were conducted on three districts: al-‘Asafra, al-Hadra, and Mina al-Basal.

The district of al-Hadra exemplifies the postindustrial transition that is changing the face of Alexandria through the conversion of old factories and warehouses, thus altering the area’s development from industrial to mixed-use.

Meanwhile, the Mahmudiya Canal is set to be filled and turned into a road in the context of the ‘Artery of Hope’ national project. Despite this transformation, the canal remains both a separator and a connector of the formal and informal. It connects by linking the formal industrial areas north of the canal with the more informal, mixed-used development, craftsman shops, and small workshops in the south, through symbiotic flows in terms of production lines and distribution.

NODE SCALE

Alexandria’s linear development has created a sequence of nodes at crossings along the railway tracks and canal. In al-‘Asafra, a sequence of railway crossings along the tracks are formed by staircases and pedestrian bridges. In addition to these formal crossings, several informal crossings over the railway illustrate the permeability of this border. Near these crossings, activities such as commercial kiosks and tuktuk and microbus stops have been established.

Analytical tools

BORDERS AND CROSSINGS

In Alexandria, infrastructural borders between the formal and informal include roads, tramway lines, and the railway parallel to the coast. Other borders are created by waterways, such as al-Mahmudiya Canal in the southwest. These borders are crossed by bridges, overpasses, and a few tunnels, which together form a complex of nodes.

Informal crossings, such as the informal railway crossings in al-‘Asafra, have evolved in response to local demand. In some cases, the government has formalized such crossings to address safety concerns, in response to accidents that have occurred. For example, in Mina al-Basal, a pedestrian bridge was constructed in 2016 by the Alexandria Governorate, to link Kafr ‘Ashri to the main road, following several accidents involving students seeking passage by informal ferry to schools on the other side.³

ACTIVITIES AND FLOWS

In Alexandria, crossings are the dominant exchange points of activities and flows between the formal and informal sectors. Street vendors, often located at crossings, serve those waiting for tuktuks, buses, and taxis. Further, the location of

industrial zones to the south and west of the formal districts of Alexandria marks them as areas in transition. This transition can be seen both in geographical terms, as the formal districts transition to informal sprawl to the south, as well as temporal terms, as many of the old factories and warehouses are being demolished or converted, giving way to new mixed-use developments, contributing to a further blurring of the formal-informal interface.

Minya

The City of Minya is located in Upper Egypt, on the western bank of the Nile, 241 km south of Cairo. It is the capital of the Minya Governorate, a rural governorate which represents approximately 6.5% of Egypt's total agricultural land. According to the 2012 residential census, 256,732 people reside in the city's total area of about 11km² (Populationcity.com, n.d.).

Throughout the nineteenth century, investment in large urban infrastructures (e.g., al-Ibrahimiya Canal and the railway line) contributed to the city's urban expansion towards the Nile, as well as to the south and west. In the twentieth century, the city expanded largely to the north, where administrative offices and economic activities were located.

In 1960, Minya became the capital of the governorate, and some neighbouring regions were included within the formal city borders. Areas adjacent to the historic city centre were upgraded, and residents relocated. During the period from 1977 to 1995, urban expansion continued towards the western region, where both formal and informal buildings were developed on the numerous agricultural plots available.

A population increase followed Minya's physical urban expansion, particularly after the founding of the Minya University, which prompted the relocation of many services to the northern part of the city, and led to an increase in immigration from surrounding villages.

Formal-informal interface: three scales

CITY SCALE

The interface between formal and informal urban development in Minya is delineated by the Ibrahimiya Canal, which divides the old planned district from recent informal development on agricultural land, marking a sharp distinction between the two conditions. Other characteristics of the formal-informal interface in Minya include:

- Northern expansion from the city centre has been driven by new district and investment plans, while southern expansion has been driven by private and informal development.
- Except for a few industrial installations and associated public housing, development west of the canal is mostly informal, with persistent links to agricultural land and a rural economy.

Figure 3.7 Map of Minya
Source: CLUSTER, 2018

- The area between the old core in the city centre and informal development to the south includes public housing projects encroached upon by informal areas, making it impossible to delineate clear boundaries between the formal and informal urban conditions, even on the block scale. Informal areas continue to expand to the southwest of the city, immediately adjacent to formal areas.
- Formal housing has been built surrounding rural villages, creating a belt of formal infrastructure that converts rural villages into informal enclaves.

DISTRICT SCALE

Formal and informal urbanization patterns were explored at the district scale in four informal districts: Abu Flu, Damaris, Maqusa, and 'Ishash Mahfuz.

At this scale, the stark juxtaposition of formal-informal areas is evident. The district of Abu Flu features institutional and civic development (museum, parks, etc.) and private high-end housing along planned roads, as well as informal developments built around the former hamlet of Abu Flu. The close proximity of the different types of development creates stark juxtapositions: the tourist attraction of Akhenaten Museum sits less than 100 metres from the informal village of Abu Flu.

NODE SCALE

Minya has different types of crossings over the al-Ibrahimiya Canal and railway (Figure 3.8), some for vehicles and pedestrians, and others in the form of fuel infrastructure and pipes. The crossings not only connect the two banks of the waterway barrier, but also serve as conduits for flows of people, goods, services, and capital.

A wide range of activities is concentrated around each crossing, ranging from transportation hubs to informal markets and local services.

This study illustrates how all of these nodes tend to specialize according to context; for example, the Minya University pedestrian bridge was established to connect the Faculty of Dentistry on the western side with the areas of al-Akhsas, Ard al-Sultan, and Damaris. On both sides of the bridge there are Minya Youth Houses for students, as well as services such as print shops and stationary stores targeting university students.

Analytical tools

BORDERS AND CROSSINGS

Minya expanded linearly along the Nile and is bordered by the Eastern Desert Road and the Western Desert Road. The city has three compound urban separators: the Agricultural Road, which cuts through the city from north to south, the railway, and Ibrahimiya Canal, all of which run parallel to one another. The canal

Figure 3.8 Crossings Along the al-Ibrahimiya Canal in Minya

Source: CLUSTER, 2018

circumscribes the expanding city, demarcating the formally built city on one side from the largely informal development on the other.

ACTIVITIES AND FLOWS

Like Alexandria, Minya's formal-informal interface is most visible at crossings throughout the city, where flows of goods, people, and capital contribute to flourishing markets. The flow of people to formal areas is driven by the presence of job opportunities and services, and is facilitated by the availability of public and private transportation. The flow of people to informal areas is driven by the low prices of goods and raw materials.

The complex layering of crossings can, in cases, limit the diversity of activities and flows. For example, staircases leading to pedestrian bridges are inconvenient for the elderly and people with disabilities. Street vendors posted along and underneath the staircases sometimes impede the dense flow of people.

Table 3.1 General profile comparing the three cities under study

	<i>Cairo, capital city</i>	<i>Alexandria, second largest city</i>	<i>Minya, city in upper Egypt</i>
Population	19,846,000 ⁴	4,930,000 ⁵	287,723 ⁶
Density (inhabitants/km²)	45,000 ⁷	30,000 ⁸	26,157 ⁹
Informal residential areas	52.7% ¹⁰	50% ¹¹	32% ¹²
Dwellers of informal areas	60% ¹³	40% ¹⁴	56% ¹⁵

Source: Multiple (see endnotes)

Comparative analysis

City overview

Conducting a comparative analysis of the formal-informal interfaces in Cairo, Alexandria, and Minya, our methodology sought to arrive at a comprehensive understanding of the relationships between informal and formal areas in different urban contexts. To do this we analysed four variables (borders, crossings, activities, and flows) at three scales (city, district, node).

Adjusting the lens of analysis from macro to micro, we surfaced various dynamics that are essential to understanding the interaction between informal and formal areas, and which challenge a dualistic vision of the city. While the macro view presents what appears to be a fragmented urban fabric that is starkly divided between formally organized neighbourhoods and ostensibly spontaneously and haphazardly constructed areas, a closer micro-examination reveals a range of urban orders with different organizing principles and levels of ‘planning’.

At the micro-scale, we see how ‘crossings’ facilitate a wide array of activities and flows (of people, labour, and capital) between the informal and formal, and how these crossings help to overcome formal urban borders and resultant spatial segregation.

We now return to the two key questions driving this comparative analysis of three cities across the four variables of borders, crossings, activities, and flows:

- Despite existing physical borders, do the experiential flows and nodes at crossings challenge the formal-informal separation?
- What alternative planning policies could be adopted to foster integration and build on the complementarity between formal-informal modes of development?

On borders

Borders are defining boundaries that demarcate one area from another. Borders can also be compounded by additional barriers: for example, a railway may run parallel to a highway or a waterway. These compound borders often create less permeable interfaces, as people must bypass multiple obstacles to cross

them. We divide border conditions into the following three types: infrastructure, topography, and waterways.

Infrastructure

These include physically constructed borders such as a railway, or highway, some of which were constructed with the intent of marking the edge of the city limits. Unlike topography, these borders are dynamic, marked by temporal traffic and intermittent crossings. Infrastructure like railways and highways usually have a buffer zone, resulting in a wider barrier, while also accommodating informal activities along those edges. Borders such as these usually pose safety issues and risks to cross, unless formally bridged by over- or underpasses.

Comparing the three cities, we found that railways and highways consistently acted as critical separators between formal and informal areas. In Cairo and Alexandria, the railways were constructed at the cities' outer limits in the late nineteenth and early twentieth centuries. As the cities expanded, these former borders became urban corridors traversing and reinforcing the formal-informal divide. In Cairo, infrastructure borders are generally compounded, combining layers of railways, highways, and in some cases, metro lines. In Minya, these infrastructure borders are distinct, and continue to clearly separate the formal city from the largely agricultural hinterland. In the industrial port of Alexandria, multiple infrastructural lines (tram and train) have been built parallel to the sea, thus reinforcing the segregation between the northern and southern strips of the city.

Topography

Natural borders created by changes in elevation, topographical borders may be dangerous, as informal development along hilltops can lead to hazards and risks of rockslides.¹⁶ Topographical borders bar the movement of people, since crossings require vertical circulation systems, such as stairs, ramps, escalators, or elevators. As such, they often pose exclusionary barriers to elderly citizens or those with special needs.

In both Cairo and Minya, we found topographical borders located in the eastern parts of the city. In Cairo, the Muqattam Hills act as a powerful urban separator, while in Minya, the hilly topography of the Eastern Plateau creates a natural edge to incremental expansion eastwards. Minya's topographical border is not considered as restrictive a barrier as the Muqattam Hills, in the sense that informal development leapfrogs the Eastern Plateau, extending further east to New Minya. There is no topographical change in Alexandria that affects the border condition of the city.

Waterways

Borders created by waterways (e.g., rivers, canals) cannot be traversed without an artificial crossing, which requires both capital and technical resources to

build. The banks of waterways, which are in the public domain, are often occupied by informal activities, including small ferries, storage areas, and leisure activities.

In Cairo, Alexandria, and Minya, rural to urban transformation is linked to the presence of canals originally built for irrigation purposes. In Minya, where rural activities remain dominant, waterways continue to be functional and well-maintained. By contrast, in Cairo and Alexandria, canals are being filled or tunnelled (e.g., al-Zumur Canal in western Cairo, and the potential redevelopment of al-Mahmudiya Canal in Alexandria). These border transformations influence the relationship between formal and informal areas, changing the nature of crossings and the activities taking place around them.

POLICY-ORIENTED LESSONS LEARNED CONCERNING BORDERS

Opportunities Infrastructural lines such as railways and roadways tend to be more stable as borders than waterways, which can be filled or tunnelled and rendered obsolete. In many cases, waterways are converted into infrastructural lines, thus transforming from one type of border to another, rather than being utilized for service or green corridors. Topography has proven to be the most uncompromising type of border, only bypassed by the construction of stairways and ramps. Topographic edges can nonetheless offer rare opportunities for city views and potential recreational sites above the city smog.

Risks and challenges Some borders pose a security risk when crossing (e.g., accidents have been caused by the train passing through the border to Ard al-Liwa in Cairo, or at crossings on the al-Mahmudiya Canal in Alexandria). Topographic borders often pose the biggest risks; for example, in the case of a rock collapse in al-Duwayqa in 2008, the result of informal development built along the cliff's edge without a proper drainage network or infrastructure.

Towards a successful policy Policies need to take into consideration the physical aspects and environment of each border, and identify the best and safest ways to create crossings. Successful strategies may entail turning borders into zones of exchange and interface, by either increasing crossing points (and thus rendering borders more permeable), and/or turning urban corridors along these borders into development zones, including parks and greenways in highly dense districts, which would be accessible to both sides of the (former) borders.

On crossings

Crossings connect informal and formal zones, and themselves may have formal or informal origins. Informally built crossings may sometimes be upgraded by the government, utilizing more durable materials. Conversely, formal crossings are often followed by informal adaptations. Formally built pedestrian overpasses

bridging railways, for example, are generally encroached upon by informal marketplaces on both ends, and sometimes along the crossings themselves.

The sheer size and complexity of infrastructures in Cairo and Alexandria contribute to the presence in both places of multi-junction crossings, which in turn structure the relationship between formal and informal areas. Comparatively, Minya's connections are simpler, due to the city's relative size and infrastructure network.

Infrastructure

Unlike the multi-nodal urban pattern of Cairo, Alexandria and Minya are characterized by linear urban developments, parallel to the sea and the Nile respectively. Crossings in both Alexandria and Minya tend to follow established traffic corridors built perpendicular to the waterfront, extending into the narrow street networks of informal areas. This is visible in Minya's infrastructure detailed in Figure 3.8.

Topography

Cairo and Minya share the eastern hills as borders and limits to urban expansion. In the Muqattam Hills and their extended plateaus in Cairo, a number of stairways connect the planned districts below to informal housing on top. In Minya, a planned suburb has been developed beyond the eastern hills, connecting to the city core (which is both formal and informal) through a main artery. Alexandria has no significant topographical borders dividing informal and formal areas.

Waterways

Comparisons of waterway crossings in the three cities of Cairo, Alexandria, and Minya highlight the differences between Minya's largely rural economy on agricultural land, and Cairo and Alexandria's industrial complexes. Crossing al-Ibrahimiya Canal in Minya are flows of rural products, as well as individuals seeking access to services lacking in the informal peri-urban area. Alexandria has a wide variety of crossings, including bridges for pedestrians and vehicles, as well as informal ferry crossings. In Cairo, most waterway canals within the urban agglomeration have been filled and transformed into traffic arteries.

POLICY-ORIENTED LESSONS LEARNED CONCERNING CROSSINGS

Opportunities

- Adapted to the flow of goods and people: a crossing that acts as a major node is one that accommodates dense flows and welcomes a wide array of activities and services. An example is Ghamra Station in Cairo, which accommodates kiosks, informal commercial activities, seating areas, and flows of people.

- Adapted to needs: crossings must be adapted to the needs of residents, with ramps, escalators, and facilities for the elderly and people with disabilities. Crossings are more inclusive if they provide seating spaces, such as al-‘Asafra crossing in Alexandria.
- Adapted to the context: the environment surrounding a crossing can have a significant impact. For instance, crossings in Minya, a city of predominantly agricultural industry, must include space for the transportation of cattle and large carts of fresh produce.

Risks and challenges

- Some crossings are unsafe for pedestrians. For instance, street-level crossings of railway lines and highways, such as the Ring Road in Cairo, are very dangerous and have repeatedly witnessed accidents.
- Some formally built crossings are not adapted to the needs of the residents, in which cases there have been informal responses to adapt them. This was the case in the renovation of the pedestrian crossing from Ard al-Liwa to al-Sudan Street, where authorities built a three-metre wide pedestrian bridge to replace the preexisting 30-metre wide street-level crossing. Ten times narrower than the previous crossing, the new bridge was subject to many stresses, and heavy traffic was a factor in the breakdown of the sole escalator leading to the pedestrian bridge.
- Old and deteriorating infrastructures are safety hazards.

Towards a successful policy To ensure connectivity across borders, a comprehensive policy plan must ensure that multiple crossings are placed along the borders. Key connection nodes should be identified as a way to alleviate pressure on traffic. Furthermore, crossings should be adapted to the needs of residents and to the context in which they are built. Studies of flows should be undertaken to determine the appropriate size and structure of crossings. In sum, crossings should act as nodes for development opportunities, connecting both sides, rather than operating as bottlenecks hindering flows and limiting traffic.

On activities

Nodes are bustling with energetic social and economic activity due to their strategic locations at the intersection of formal and informal neighbourhoods (Figure 3.9). Our field research identified several categories of activities at these formal-informal intersections.

Informal markets

Informal markets are often located near crossings and transportation hubs, due to the flow of pedestrians. They may be semipermanent (booths, kiosks, or stands) or mobile and easily disassembled, and may be arranged in a linear fashion along

the street, or in marketplace agglomerations. Markets vary in type, selling a range of products, including fresh produce, accessories, clothing, and more.

Transportation hubs

Transportation hubs at the intersection of formal and informal areas are typically organized informally, with rules set and enforced by individuals who mitigate disputes. These hubs act as transfer points between informal and formal areas, which include differing modes of transport. For example, as one moves from informal to formal areas, the number of tuktuks decreases, as they are illegal and not adapted to wide roads and highways.

Municipal services

Due to the absence of municipal services in informal areas, nodes act as the first point of service provision accessible to residents of informal areas, with official services such as police checkpoints, post offices, and ATMs located in these areas. The land surrounding public infrastructure lines such as highways, railways, canals, electrical lines, and oil and gas pipelines, is reserved for maintenance or possible expansion. Therefore, a legal buffer zone is created around these major infrastructure lines, which is used for public services, while it is simultaneously encroached upon by informal activities.

Entertainment services

As critical sites of interaction, crossings are prime locations for entertainment services such as Ferris wheels, amusement parks, and games for children. Entertainment services may be built on private land in a deliberate effort to prevent alternative uses by people, or as temporary installations on public land during seasonal festivities and celebrations.

Waste disposal

Municipal dumpster pickup points are often located in the interfaces between formal and informal areas. When dumpsters are absent or removed, these sites can accumulate waste.

POLICY-ORIENTED LESSONS LEARNED CONCERNING ACTIVITIES

Opportunities Nodes act as centres for the exchange of goods and services and are sites of formal and informal transport and entertainment facilities. The activities concentrated around nodes allow residents from underserved informal areas to access needed services and goods.

Figure 3.9 Activities and Flows

Source: CLUSTER, 2018

Risks and challenges The interface along railways and similar borders risk being turned into waste disposal areas, contributing to pollution, and raising questions of security for children. Another challenge presented by these sites is increased traffic congestion, if activities are not properly managed.

Towards a successful policy Considering each node as a planning and development package can foster linkages and flows around traffic hubs. Such urban interventions at the node scale can act as a form of urban acupuncture, transforming sites of exclusion into opportunities for integration.

On flows

Flows trace the movement of residents between informal and formal areas, highlighting the social and economic interconnections between these areas (Figure 3.9). Our field research identified three types of flows: goods, labour, and capital.

Goods

In the movement from informal to formal areas, the flow of raw materials and fresh produce is typical, along with manufactured products such as wood, metalwork, and clothing. Raw materials may also be sent from formal areas to be manufactured in informal areas, then sold to the formal sector, as exemplified in the supply chain for small workshops in the furniture industry in Ard al-Liwa. Conversely, manufactured industrial goods such as air conditioners, cars, and pharmaceutical products move from formal to informal areas.

Labour

Most jobs in informal areas are held by neighbourhood residents. Some workers in informal areas do not work in the informal sector, instead finding employment in the formal service economy (such as in domestic services), while others work in universities, government, schools, hospitals, and so on. Examining the reverse flow, we find workers from health clinics, municipal services, or religious institutions moving from the formal to informal sector.

Capital

Informal to formal flows of capital occur through investment in formal educational and health institutions, or through capital used to purchase manufactured goods. Formal to informal flows occurs through revenue of labour in the formal market, capital to purchase goods and services in informal areas, capital invested in the construction industry and real-estate economy, and capital invested in infrastructure building and urban services. Investment from government (through different ministries, such as the Ministry of Health and Education, Local Development, and Social Solidarity) and international agencies (e.g., German International Development Agency GIZ, AFD, UN-Habitat, and the World Bank) provide services for low-income residents, and also contribute to flows of capital entering the informal sector.

Opportunities Based on a comparison of flows, we can identify opportunities to facilitate movement between zones that are conducive to the integration of informal and formal areas. Flows from informal to formal areas are more frequent than the reverse, as there are essential services, such as administrative and educational services, as well as job opportunities, that can only be accessed in formal zones. Flows vary in relation to activities in surrounding areas. For instance, in Minya, flows of goods from peri-urban informal areas to formal areas contain a concentration of agricultural products, such as fresh produce. In Alexandria's industrial areas, flows include raw materials such as wood or metal. In informal areas where garbage is recycled, such as Manshiyat Nasir and Ard al-Liwa in Cairo, there is a flow of domestic waste from formal to informal areas. This material is then recycled and redistributed.

Risks and challenges Overemphasizing the directionality of certain flows may perpetuate a division between labour and service zones. Further, while permeability may be posited as a desirable urban quality, the spillover of activities into areas for which these undertakings are not zoned may result in undesirable tensions and conflicts. Further, one-directional flow from informal to informal areas indicates a draining of resources that might otherwise be potentially invested in local development.

Towards a successful policy An integrated policy not only entails improving physical connectivity across borders, but also improving the distribution of services within neighbourhoods. The two-way movement of flows between informal and formal areas should be leveraged to promote the interdependence of these city sectors. Borders should be made more porous and crossings more efficient to promote flows of goods as well as services. Services (e.g., municipal, health, and financial) should be distributed across all zones to promote equal opportunity and access.

Conclusion and reflections

This research seeks to challenge an understanding of the city as divided along informal and formal lines, and to provide policy recommendations that promote a vision of an integrated city. Attempting to recontextualize informality in relation to the formal, we seek to understand the interconnections between informal and formal urban areas (Figure 3.10).

We utilized the variables of borders, crossings, activities, and flows to compare and highlight similarities and differences between the three cities, and to illuminate larger questions around how to challenge the perception of a dualistic city; how to promote integrated urban policy; and how this comparative framework can be extended for use in other African cities.

Figure 3.10 Reflections on the Formal-Informal Interface

Source: CLUSTER, 2018

Employing different levels of analysis to examine the formal-informal interface in the context of Cairo, Alexandria, and Minya, our major findings can be summarized as:

- Informal processes are both diverse and intrinsic to the expansion of urban centres in the global South.
- Borders shape and continue to segregate the urban fabric in many ways, but they are also shaped and mediated by crossings. That is, where crossings meet borders, the formal-informal interface itself becomes a central node, where generative activities and sites such as marketplaces, kiosks, transportation hubs, and meeting places are likely to be found, and where flows of capital, labour, and goods take place.
- Despite the non-dualistic nature of this interface, governments and municipalities continue to adopt policies that treat formal and informal spaces and activities as if they were distinct parts of different cities.

Towards challenging the dualistic city

Throughout this chapter we have attempted to highlight elements that constitute and define the formal-informal interface. In the following section we propose three key concepts to frame this interface as a way to understand the city and challenge a dualistic perception.

1 The boundaries between the formal and informal blur around central crossing nodes

The connection between formal and informal is amplified at key nodes, where major borders intersect with crossings. In all three cities, crossings that intersect compound layers of infrastructural and/or natural borders represent hyper-junctures, where informal activities thrive, and economic opportunities are created (e.g., the Ghamra Station in Cairo or downtown Minya Bridge).

Such crossings are often key nodes in the multimodal transportation system, including everything from tuktuk services to minibuses, public buses to metro lines. Within these spaces we see stands and kiosks established to sell fresh produce, manufactured goods, personal services, and much more. Also, emergent here is their relevance as social spaces, often providing entertainment for families and children.

2 The formal and informal are interconnected

As seen in Cairo, Alexandria, and Minya, formal and informal areas exist in contrast to each other, but also as intertwined patchworks, where borders can be hard to define. The formal and informal are interconnected as a result of different processes, including:

- The juxtaposition of contrasting layers of urbanization, such as industrial installations, high-end development projects, state-owned developments,

public housing, and informal development. Together these layers create a complex matrix of housing types that can coexist within a single area.

- The tendency of informal developments to encroach upon formal structures (such as public housing in Minya, industrial buildings in Alexandria, or historical areas in the south of Cairo), which in turn adapt to the informal.
- Formal urban development expanding to engulf rural settlements, in what used to be the outskirts of the city, rendering those settlements as informal enclaves, as is especially visible in Minya.
- The fragmented nature of formal planning encourages informal development in the interstices between formal developments, as seen in the unplanned spaces between state-owned lands and military barracks in northeast Cairo.

Finally, the formal-informal distinction is not only spatially blurred, but also economically and socially interconnected through flows of capital and labour. The informal economy's impact is felt throughout all three cities, and to varying degrees at all scales, particularly around crossings.

3 The urban experience from both the formal and informal reflects continuity and complexity rather than division and contrast

The journey between the formal and informal parts of these three cities can be characterized by continuity and complexity. We argue that residents' lived urban experience cuts across notions of separation produced by the spatial borders attempting to delineate formal and informal areas.

As depicted in CLUSTER's collage (Figure 3.11) and animated video 'Objects in the Mirror are Closer than They Appear',¹⁷ which both depict the typical daily commute from the informal periphery to Cairo's formal city core, the transition from the informal to the formal is marked by common elements, such as the presence of street vendors, informal fruit and vegetable stands, and vendors in the metro. The video also highlights the existence of informal practices within the heart of the formal city, emphasizing the theme of continuity over contrast. Illustrating the interface connecting formal and informal areas, the animation seeks to challenge perceived distinctions between the two, highlighting instead their interconnected nature.

Towards an integrated urban policy

An integrated urban policy that enhances the permeability of borders, if well-implemented, could help overcome city fragmentation. It could also serve to improve equality and spatial inclusion (Mohamed et al., 2014) by countering the social segregation wrought by urban expansion that has cut off peripheral neighbourhoods from city networks (Nagati & Stryker, 2013).

To mend this fragmentation, we propose authorities adopt policies that enhance the permeability of borders at the formal-informal interface. By fostering connections instead of separations, we submit, a wider ripple effect may positively

Figure 3.11 Urban Experience Across the Formal-Informal Interface
Source: CLUSTER, 2018

influence the urban fabric of adjacent neighbourhoods. We argue for an integrative policy that builds upon relationships between informal and formal neighbourhoods, and addresses the current territorial disparities.

Three main principles of proposed policy changes are as follows:

1 Revise district boundaries to include both formal and informal areas

Current development plans rarely consider informal areas in relation to surrounding neighbourhoods, thus reinforcing the divide between formal and informal areas. Instead, urban works should be surveyed and planned across a wider geographic area that intentionally includes both planned and unplanned areas, ensuring an equal distribution of services throughout. These new inclusive boundaries should be carefully accounted for when collecting census district data, to ensure that skewed data and misrepresentations do not occur.

2 Increase the porosity of borders between informal and formal areas

This study found that borders represent critical connection points that can foster movement of people and flows through the construction of crossings and development of infrastructure. As such, policy development should treat borders as areas of opportunity to link planned and unplanned areas.

3 Identify nodes as key points of urban interventions

The development of nodes as sites for urban acupuncture could positively impact both informal and formal areas. CLUSTER has piloted such development efforts, beginning in 2012 with our public-participatory proposal for a community park in the informal neighbourhood of Ard al-Liwa, located near a crossing, to the formal neighbourhood al-Muhandisin. This project is organized around lateral connections between the formal and informal sides, aiming to restructure the relationship from one of marginalization and dependency to one of integration and interdependence. Such pilot interventions at these nodes could be scaled-up to develop integrated urban planning visions (Nagati & Elgendy, 2013).

Over the years, a number of CLUSTER's design projects and pedagogical programmes have focused on the interface between formal apparatuses and informal practices, including the Urban Solid Waste workshop held in 2012, the Ard al-Liwa Community Park 2012–15, the Ard al-Liwa Youth Centre design proposal in 2018, and CLUSTER's ALFABRIKA Creative Lab, opened in 2019. ALFABRIKA brings students and young designers together with local craftsmen through an exchange between design ideas and new technologies, on the one hand, and grounded practice and apprenticeship, on the other. ALFABRIKA acts as an inclusive space that fosters sustainable solutions, while supporting young designers, students, local craftspeople, and creative industries, through workshops, exchange, production, and exhibitions.¹⁸

Further, CLUSTER has undertaken extended pedagogical engagements in informal areas, such as *Housing Cairo: The Informal Response*, a collaboration led by MAS Urban Design ETH Zurich, which set new precedents to engage informality on its own terms (Angélil et al., 2016). Acknowledging the value of creative informal solutions, CLUSTER's extended work on learning from informality has sought to decode the seemingly 'spontaneous' urbanism in Cairo, and develop tools to contribute to improving living standards in informal neighbourhoods without disrupting their ecosystems. This approach must be viewed against the state's approach of demonizing, demolition, relocation, and replanning.

Towards a comparative framework between African cities

This study further seeks to lay the groundwork towards a framework for comparative urban research across African cities. Such a framework could serve as an entry point to confront, compare, and bring forth the particular challenges that emerge in informal areas, while avoiding the traps of localism and cultural relativism.

The study and framework also offer a practical step towards changing perceptions of urban informality, calling for the inclusion of informal areas as a focus of urban policy. Most importantly, learning from the comparative experience of African metropolises, it seeks to inform alternative policies to better use the formal-informal interface as a key entry point to advance urban integration.

In the context of the African Urban Research Initiative (AURI), our proposed next step is to further develop the analytical tools and comparative methods set out here, through a joint research collaboration between the cities of Lusaka (Zambia), Ouagadougou (Burkina Faso), Cairo, Alexandria, and Minya (Egypt), and Dar es Salaam (Tanzania).

The proposed research has three main goals:

- 1 To study the specificities of the question of the formal-informal interface in different African cities and regions, in order to identify patterns and propose local solutions.
- 2 To challenge the global discourse of the New Urban Agenda, by offering local codes and performance-based standards in an attempt to localize Sustainable Development Goals and Millennium Development Goals.
- 3 To establish a framework for further comparative research by developing a clear methodology and procedure through joint workshops, an exchange of tools and experiences, and the co-production of knowledge.

To this end, a joint research endeavour has been initiated with researchers from the cities of Cairo, Dar es Salaam, Lusaka, and Ouagadougou, and a series of workshops undertaken. A preliminary workshop in Dar es Salaam in October 2018 aimed to exchange research methodologies and set the roadmap for a comparative framework to illustrate the formal-informal processes beyond their binary definitions. A second workshop in Lusaka in May 2019 included relevant stakeholders and policymakers, and sought to establish a common research framework.

Figure 3.12 Formal-Informal Interface in Four African Cities
Source: CLUSTER, 2018

In December 2019, a third workshop in Cairo focused on the development of a joint research paper, consolidating the research teams' comparative findings on the formal-informal interface. (Figure 3.12).

Notes

- 1 CLUSTER Principals: Omar Nagati and Beth Stryker. Research team: Hanaa Gad Mahmoud, Tamer Aly, Marina El-Najjar, Mayar Salama, Martina AbuAlam, Mayar El-Sayed, Amin El-Didi, Martha Meijer, Laura Meynier, Katrine Mandrup Bach, Rana ElRashidy, Rana Gharib, Ahmad Salah, Reem Khorshid, Nour Tarek, Mariam Mahdally, Farah Wahby, Raghdha Hatem, and Mary Sprague.
- 2 Examples include UN-Habitat. (2003). *The challenge of slums: global report on human settlements 2003*. London: Earthscan; UN-Habitat (2016). Urbanization and development: emerging futures. In *World cities report 2016*. New York: United Nations; Susan Eckstein (1990). Urbanization revisited: inner-city slum of hope and squatter settlement of despair. *World Development* 18(2), pp. 165–181; Lisa Peattie & Jose A. Aldrete-Haas (1981). 'Marginal' settlements in developing countries: research, advocacy of policy, and evolution of programs. *Annual Review of Sociology*, 7(1), pp. 157–175.
- 3 While Kafr 'Ashri is not an informal area, but rather a historic residential neighbourhood surrounded by large industrial and institutional hubs, the stark contrast between its urban fabric and street network and that of its surroundings marks its inclusion in this comparison relevant, despite the historical roots of its evolution and thus definition.
- 4 Total population of the Greater Cairo Region (World Population Review, 2018).
- 5 Total population of Alexandria in 2016 (Population2017.com).
- 6 Estimated population in 2017 based on the 2012 population census with 1.66% growth per year (Populationcity.com).
- 7 Density of Cairo, not considering the Greater Cairo Region (CAPMAS, 2017).
- 8 Population per sq. km. (Alexandria Fact Sheet, 2013).
- 9 Density based on our calculations: area (11km²)/total population.
- 10 Informal residential areas represent 52.7 percent of Greater Cairo's residential areas (Soliman, 2002).
- 11 Informal residential areas represent 50 percent of Alexandria's residential areas (Soliman, 2002).
- 12 In the absence of available data, the percentage of informal residential areas was estimated by calculating the area of informal neighbourhoods on the land use map, divided by the total area of Minya city.
- 13 In 2009, 60% of the Greater Cairo population were inhabitants of informal areas (Kipper & Fischer, 2009).
- 14 The population of the informal housing areas is estimated at over 1,584,000 people, which represents 40% of the total population of the city (Barthel et al., n.d.).
- 15 Percentage of population of Minya living in informal areas (Ministry of Housing, Utilities and Urban Communities, 2006).
- 16 As in the famous case of a rockslide in September 2008 in Duwayqa, an informal area to the east of Cairo, where the official number of casualties was estimated to be 119 dead and 55 injured.
- 17 The video is available on CLUSTER Cairo's YouTube channel. www.youtube.com/watch?v=iytq_pTCOe4
- 18 Urban Solid Waste workshop was a workshop in collaboration with Basurama, local architects, urban artists, and the *zabbalin* (traditional trash collecting community) exploring the structural forms available in garbage, and their potential reuse towards an engagement within local Cairo communities. Ard al-Liwa Youth Centre is a design

proposal for the local youth centre located at the edge Ard al-Liwa and one of its vehicular and pedestrian connections to al-Muhandessin. ALFABRIKA is a fabrication lab located in Ard al-Liwa, created for the purpose of bridging the gap between formal design practice and local craftsmanship through multiple programmes and workshops.

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