CHAPTER 4

The Role of the Informal Sector

Informal housing means different things to different people. As a result, while the importance of informal housing in contributing to the expansion of Egypt's housing stock is widely conceded, estimates of its quantitative significance vary greatly.

One approach to defining informality is to rely on the legal status of housing. For housing in Egypt to be "formal" or legal, it must be in an officially approved subdivision (which enables an owner to legally register his land), and must have been built with a building permit (which enables an owner to legally register a building). There may, nevertheless, be degrees of informality, several of which have been identified in areas of Cairo and Beni Suef. Among these are:

1. Dwellings constructed on illegally-occupied land not included in a legal subdivision. Examples of this are temporary or permanent structures situated on (1) public land abutting a canal or right-of-way or (2) private land (vacant land included in a factory yard, commercial lot or vacant land comprising part of a building site slated for non-residential construction).

2. Dwellings constructed on illegally-occupied land included in a legal subdivision. Examples of this are temporary or permanent structures situated on private residential building lots where the land owner is absent, on rights-of-way, or in public open spaces.

3. Dwellings constructed on legally-owned land not included in a legal subdivision. Examples of this are temporary or permanent structures situated on private land included in a parcel (1) which has been subdivided and sold by a subdivider without obtaining a permit to subdivide and re-sell land and (2) in which no zoning regulations are complied with.

4. Dwellings constructed on legally-owned land included in a legal subdivision. Examples of this are permanent dwellings situated on private land zoned for residential use and included in a subdivision which has been legally subdivided, and where the subdivider has complied with most or all zoning regulations, but has built without a building permit or without adhering to the building codes, despite having received a permit.

Levels 1 and 2 are representative of the highest degree of informality and are by definition situations of squatting. In other countries these housing types make up the bulk of what is perceived to be informal housing. In Egypt, however, field observation and direct questioning in the occupant survey suggested that these two types comprise a comparatively modest share of the housing stock. Most dwellings in the informal sector appear to be illegal by virtue of the owners having failed to adhere to subdivision or building permit regulations.

Whatever the precise definition, it is clear that most people believe the incidence of informal housing to be high. For example, many participants in in-depth interviews were asked to estimate the proportion of informal housing in their area and in Cairo as a whole. In those interviews, the Arabic phrase "'gair rasmy," which literally means "not legal," was used for "informal."

One "baladi" (popular housing) contractor said that 90 percent of current construction in the country as a whole is informal; a Dar as-Salaam contractor, "seventy percent of Cairo"s housing is informal"; a Kafr el-Gabal contractor estimated that 90 percent of the construction in his area was without permits; a Bulaq ad-Dakrur steel rod distributor thought the local informal proportion 60 to 70 percent; a Bulaq ad-Dakrur subdivider said that of 2,000 housing units in his area, only 10 had permits. A Beni Suef engineer thought the informal proportion 80 percent.

Government officials tended to give lower estimates. One Cairo governorate official thought 30 to 40 percent a more reasonable figure for his governorate.

Perhaps the best quantitative estimate of the role of the informal sector has been presented in a recent World Bank/GOHBPR "Construction Industry Study." In that study, observed intercensal changes in the 1966 and 1976 housing stocks were compared to permit and registration data throughout Egypt. By subtracting recorded legal units from the change in housing stock, it was estimated that nationwide, about 77 percent of all housing units built between 1966 and 1976 were informal.[1] Further breakdowns in

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[1]GOHBPR, 1981, Appendix 8. It should be noted that while the study presents a figure of 71 percent informal housing (Figure IV, p. A.8.15), this is a typographical error. The actual figure (77 percent) can be calculated based on data presented in Figure IV.

that study suggested that the urban and rural proportions of informal housing were 77.4 percent and 74.6 percent respectively.

Such figures are likely, in fact, to be underestimates of informal housing construction because of an analytical shortcoming in their computation; namely, the GOHBPR computation fails to take into account replacement of losses from the housing stock through demolitions, conversions to other uses, etc. That is, to estimate the number of units built between two census periods, it is necessary to estimate the net change in the stock (which the GOHBPR study does) and then to add an estimate of removals from the stock (which the study does not do). If one assumes gross removals from the stock to average one percent per year (10 percent between censuses), then some 583,000 more housing units would have to have been added between 1966 and 1976 than the study estimated. If these are allocated to the urban and rural sectors in proportion to their 1966 housing stocks, and are assumed to have been replaced by informal construction, then one estimates that the informal proportion of new urban and rural construction between 1966 and 1976 was 81 percent and 89 percent respectively.

In this study, the incidence of informal housing among owners was estimated on the basis of direct questions in the occupant survey, namely:

> For those who built on vacant land
>
> "Have you registered the land?" and "Did you get a building permit from the appropriate authorities to build or make additions to the dwelling?"
>
> For those who acquired an existing dwelling
>
> "Have you registered the property?" and, if they modified or added to it, "Did you get a building permit from the appropriate authorities to build or make additions to the dwelling?"

Squatting or violation of subdivision requirements would be expected to result in failure to legally register either land or buildings, and failure to get a building permit, while itself illegal, could also result in failure to register the property. Thus, each of the levels of informality described above is encompassed by various combinations of responses to these questions. Weighted responses to each of these questions are given in Table 4-1.

Responses indicate high rates of noncompliance with both registration and building permit requirements. A majority of owners in each site failed

Table 4-1

Components of Illegality Among Owners
(Percent Responding to Each Survey Question)

	Cairo	Beni Suef
Registered land?		
Yes	44%	12%
No	56	88
Registered building?		
Yes	62	8
No	38	92
Got building permit?		
Yes	27	32
No	73	68
Combined Responses		
Registered land (if built on vacant land) or registered building (if acquired existing building)?		
Yes	49%	9%
No	51	91
Registered land or building (as appropriate) and got a building permit (if built or added to existing structure)?		
Yes	36	8
No	64	92
Sample Size	143	171
Sample size including missing values	154	175

Source: Weighted occupant survey

to register land or obtain building permits when required. Purchasers of existing buildings in Cairo were more likely than not to have registered their buildings (they did so in 62 percent of cases), although the reverse was overwhelmingly the case in Beni Suef (where 92 percent of purchasers had not registered buildings).

Combining responses to questions permits one to estimate the incidence of informal housing under two alternative definitions--one which relies only on whether registration requirements were met and another, more stringent, which relies on meeting both registration and building permit requirements. In either case, the majority of all owner-occupied housing in Cairo and Beni Suef is estimated to be informal--regardless of its time of construction. In the case of the less stringent definition, 51 percent and 91 percent respectively of Cairo and Beni Suef owner-occupied housing are estimated to be informal; using the more stringent definition, 64 percent and 92 percent respectively are estimated to be informal.

Among renters that were surveyed, questions concerning registration by owners and obtaining building permits could not have been expected to elicit reliable answers and thus were not asked. Consequently, the incidence of informal housing among renters was estimated statistically based on the observed association between informality among owners and selected building and area characteristics. This was done using a multivariate regression analysis which permitted an evaluation of the contribution of each building and area characteristic to the likelihood that a given unit was informal. Regression equations were then used to predict whether or not a given renter household was living in formal or informal housing.[1] Separate equations

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[1] The estimated probability, $\hat{p}$, that a particular household, j, was in an informal unit was:

$$\hat{p}_j(I) = \hat{\alpha} + \sum_{i=1}^{N} \hat{\beta}_i X_{ij}$$

where $\hat{\alpha}$ and $\hat{\beta}_i$ are estimated regression equation parameters (i=1,...,N) and X_{ij} is the value of the i^{th} variable for the j^{th} household. The average likelihood that a renter household was in an informal unit was estimated by averaging the estimated probabilities.

$$\overline{\hat{p}_j}(I) = \sum_{j=1}^{m} (\hat{\alpha} + \sum_{i=1} \hat{\beta}_i X_{ij}) \; / \; M$$

A criterion was then established for assigning a given household to "informal" or "formal" status based on whether its predicted probability of being informal was greater or less than a given "critical" level, P*. P* was chosen such that the proportion of estimated "informal" households was equal to the estimated overall average likelihood that a rental unit was informal, p(I).

were estimated for each site, including the following variables:

Area Characteristics

1. Medium growth area (10-50 percent growth in units, 1976-1981)
2. High growth area (greater than 50 percent growth in units, 1976-1981)
3. Area classified "agricultural land"
4. Area classified "desert land"
5. Land in area subdivided (partitioned) by the government
6. Land in area subdivided by private individuals or cooperatives
7. Area classified primarily "middle to upper class"
8. Area classified primarily "popular" or "historic"

Building Characteristics

1. Built since 1976
2. Built 1971-1976
3. Built 1960-1970
4. Stone exterior walls
5. Elevator in building
6. More than one stairway in building
7. Two stories or less
8. Six stories or more
9. Natural logarithm of number of units in building
10. "Separate rooms" in building
11. Shops in building
12. Building condition "good"
13. Building condition "bad"
14. Building condition "about to collapse"
15. Paved road access
16. Graded road access
17. Located on less than 3m. road
18. Located on greater than 8m. road

Estimated regression parameters are presented in Appendix 1. Major variables contributing significantly to informality in Cairo include being located in a high growth area or in an area classified primarily as agricultural land, which increase the probability of informality by 28 and 31 percentage points respectively, and being located in areas classified primarily as desert land or partitioned by the government, which decreases the probability of informality by 69 and 36 percentage points respectively. Building characteristics are generally not highly related to the likelihood that an owner-occupied unit is informal. In Beni Suef, being located in an area partitioned by the government decreases the likelihood that a unit is informal by 46 percentage points; buildings with stone exteriors are less likely to be informal; with separate rooms, more likely to be informal.

Based on the estimated regression equations, the proportions of renters' units estimated to be informal in Cairo and Beni Suef, respectively, are 60 and 87 percent--in each case, slightly lower than corresponding estimates for owners. Combining estimates for owners and renters, 62 percent of all Cairo housing and 87 percent of all Beni Suef housing is estimated to be informal.

In recent years, higher proportions of units being added to the stock are estimated to be informal. Estimates from the occupant survey are, in fact, remarkably similar to those of the previously discussed GOHBPR/World Bank study. Of units built in Greater Cairo between 1970 and 1981, approximately 84 percent are estimated to be informal; during the same period in Beni Suef, 91 percent of units added are estimated to be informal. Table 4-2 provides a more detailed breakdown of changes over time in the estimated proportion of informal housing. The table indicates no discernable pattern over time of the incidence of informal housing in Beni Suef. In Cairo, however, the table indicates a general rise over time (through the 1971-76 period) in the proportion of informal housing in Cairo. Since the 1971-76 period the proportion of newly added informal housing appears to have fallen somewhat--from about 89 percent to 75 percent of additional units.[1]

Despite the generally high incidence of informal housing in Greater Cairo, much of it is highly concentrated geographically. Figure 4-1 indicates principal areas thought to be largely informal in 1981, and indicates changes in the geographic extent of such areas since 1950/1951.[2] As the map indicates, growth of informal areas has been particularly extensive in areas south of Cairo such as Dar as-Salaam and Helwan, west of Cairo in Giza, and north of Cairo in Shubra al-Kheima.

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[1]This fall in the estimated proportion is significant at above the 90 percent confidence level.

[2]The geographic extent of informal housing areas in 1950/1951 and 1981 was established based on examination of maps, site visits, and interviews with governorate officials and private parties.

Table 4-2

Incidence of Formal and Informal Housing by Time of Construction[1]
(Sample Sizes in Parentheses)

	City					
	Cairo			Beni Suef		
Time of Construction	Informal	Formal	N	Informal	Formal	N
Before 1960	43.7%	56.3%	(212)	91.5%	8.5%	(76)
1960 - 1970	72.2	27.8	(133)	80.3	19.7	(102)
1971 - 1976	88.8	11.3	(76)	92.5	7.5	(58)
After 1976	75.0	25.0	(36)	78.2	21.8	(8)

[1]Source: Weighted Occupant Survey. Note that percentages multiplied by sample sizes do not usually give integer results because of weighting procedures.

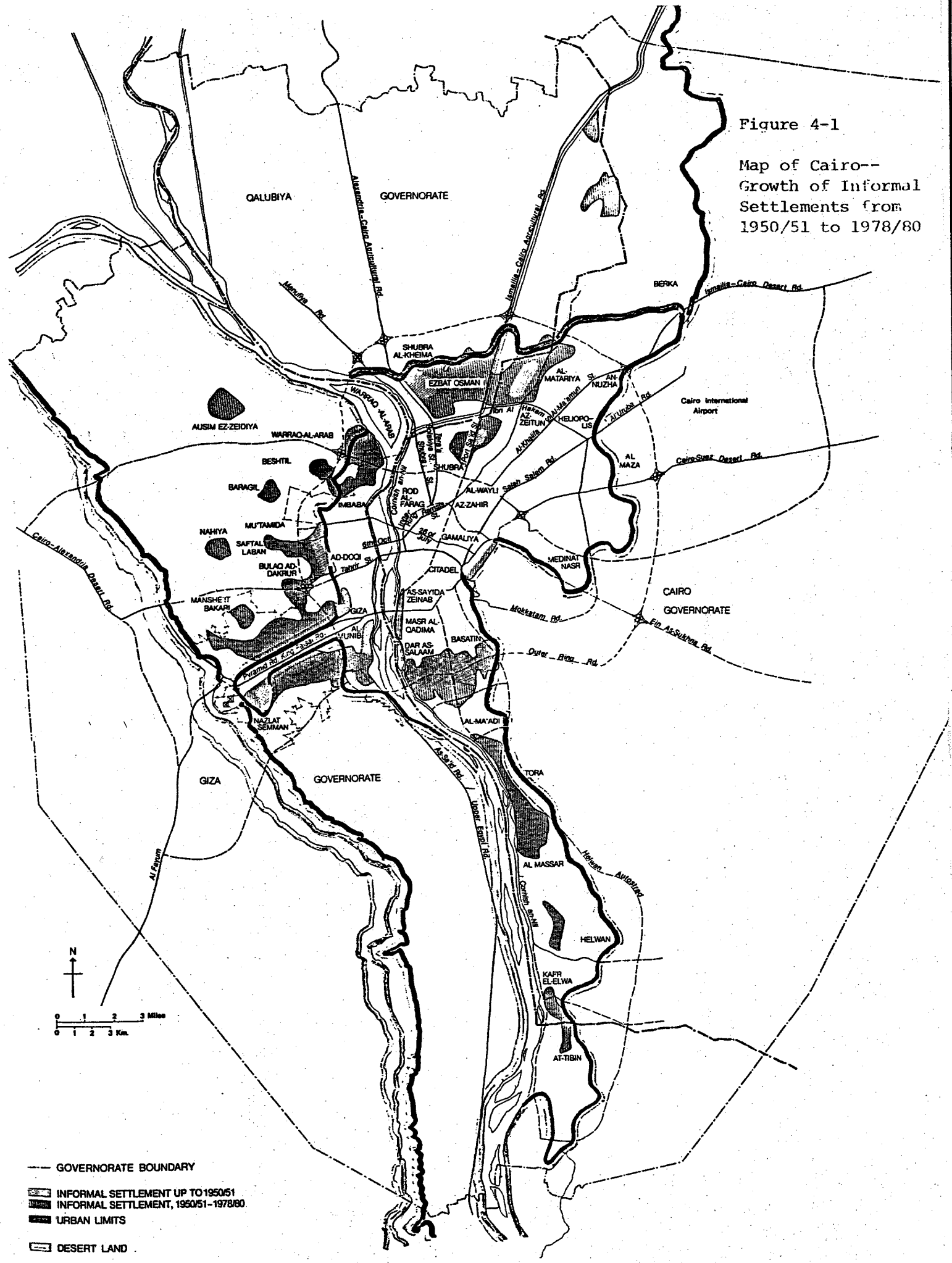


Figure 4-1

Map of Cairo--
Growth of Informal
Settlements from
1950/51 to 1978/80

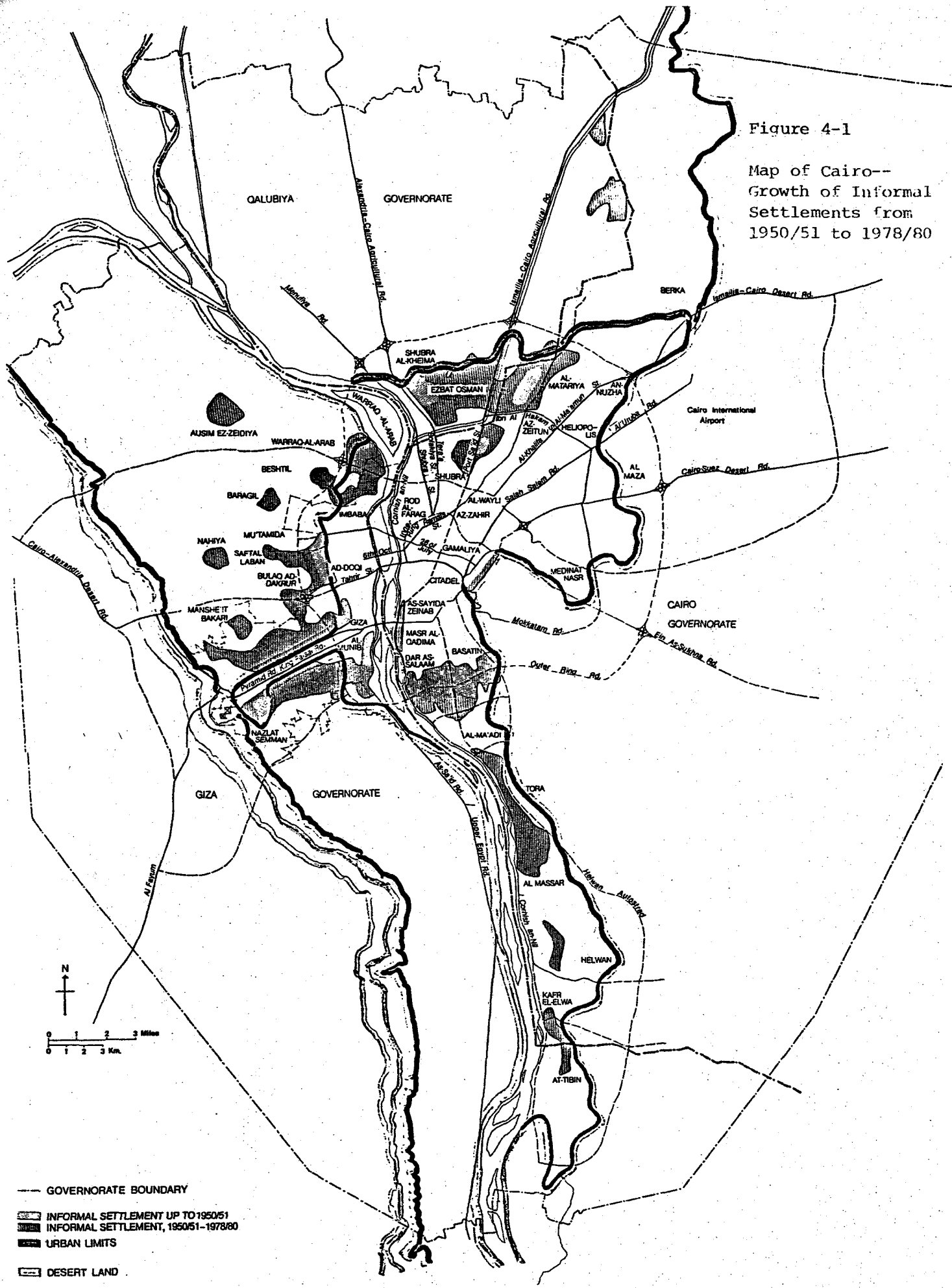


Figure 4-1

Map of Cairo--Growth of Informal Settlements from 1950/51 to 1978/80

In addition to growth in such areas, which are geographically contiguous to previously urbanized areas of Greater Cairo, informal housing has also grown in non-contiguous areas such as the "markaz" and agricultural villages in Giza and Qalyubiya governorates. Growth of informal areas in Beni Suef, which are indicated in Figure 4-2, has been relatively slower than that in Cairo.

The geographical concentration of informal housing is also indicated by occupant survey data. Based on those data, 44 percent of surveyed enumeration districts had from 76 to 100 percent informal housing, while 26 percent of districts had from 0 to 25 percent informal housing. Thus only 30 percent of districts had any significant degree of "mixed" formal and informal housing (from 26 to 75 percent of either type).

4.1 Factors Contributing to the Growth of Informal Housing

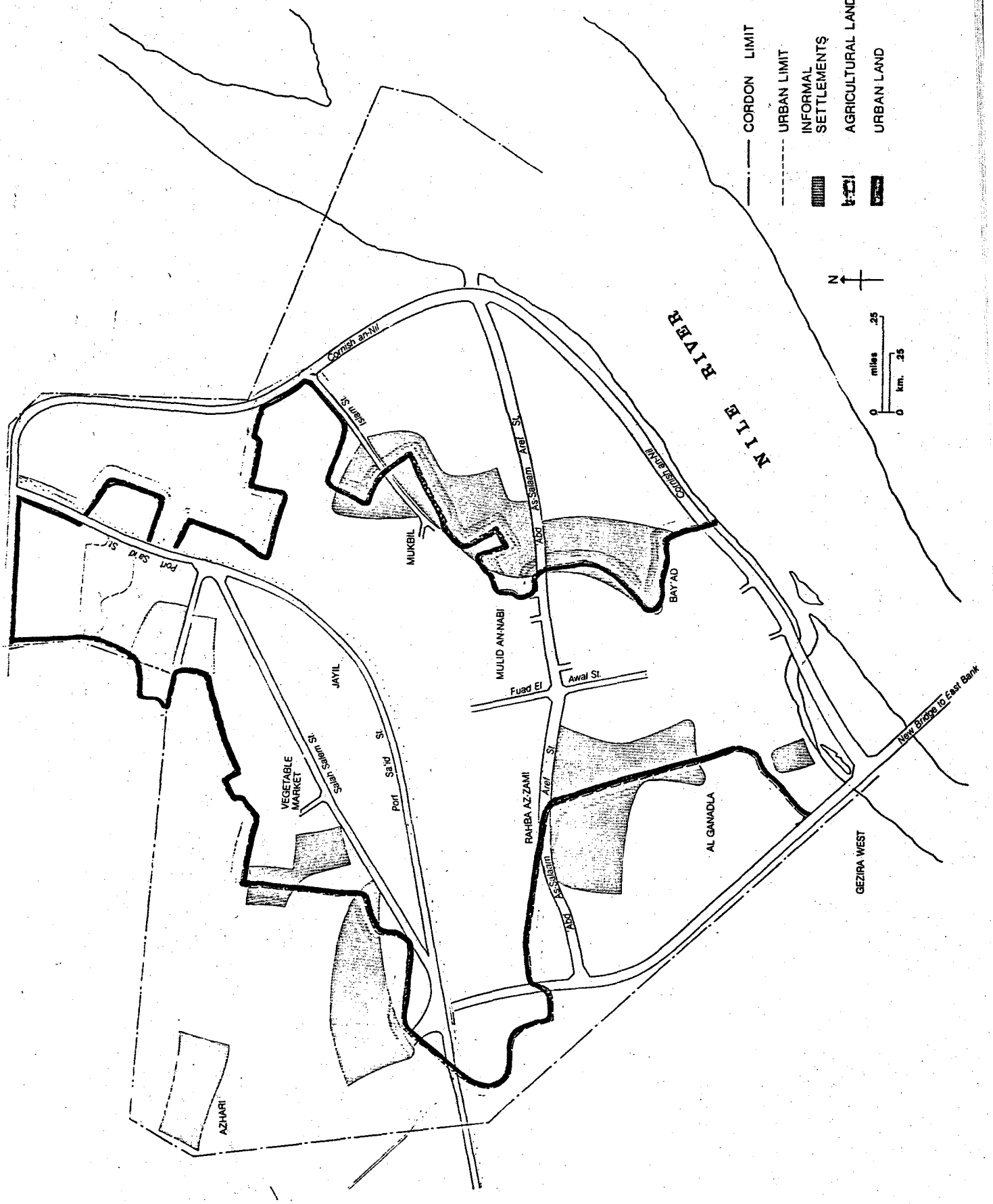
Informal housing occurs when land and property owners either fail to comply with subdivision requirements, resulting in their inability to register land and property legally, or to obtain building permits. Policies to deal with informal housing must be based on an understanding of factors responsible for each source of illegality. This section examines the processes by which subdivision and building occur, and looks at factors which affect violation of subdivision and building permit regulations.

The principal aspect of illegal subdivision is the conversion of agricultural land to urban uses, which is, in general, proscribed by Law 52 of 1940 and 1975. There is great concern that the rate at which such conversion is occurring seriously threatens Egypt's ability to be self-sufficient in food production. The 1979 ARE Housing Plan, for example, estimated that some 60,000 feddans (25,210 ha.) per year of agricultural land were being "lost" mainly to urbanization, threatening a reduction of arable land by some 20 percent by the year 2000. While these numbers may be too high, there is nevertheless concern that urbanization and food self-sufficiency are currently in conflict and, given the continued incursion of housing into agricultural hinterlands, are likely to remain in conflict for some time.

If urban expansion into agricultural areas is to be controlled, one must first understand the processes by which expansion and illegal subdivision are occuring, and the factors which influence the rate of conversion of agricultural to urban land.

Figure 4-2

Map of Beni Suef--Informal Settlements



4.2 Subdivision

The majority of informal housing in the case study areas and in many other parts of Cairo have been situated on land which was illegally subdivided, i.e., subdivided in contravention of procedures and standards dictated by Law 52 of 1940 and 1975. According to planning officials interviewed, this law has been ineffective since enactment. The great majority of the subdivision requests made to the Governorate of Cairo are rejected. In many cases, no such application is made. Once neighborhoods are established in illegal subdivisions, the law is virtually impossible to enforce. Even when a citation is made early after the subdivision has been established, it is difficult to remove people who have bought parcels and constructed houses on them. The city can sue the subcontractor for violation as well as the individual parcel owners, but the sanction on the individual's right to develop private property protects the subdivider and property owner in most cases. The first phase of the informal housing supply process is best described by a number of examples taken from the in-depth interviews.

A Dar as-Salaam subdivider was allocated 3 feddans from his family's 20. Without the help of a planner or architect, without formal application, he divided the area into lots of 100 to 300 square meters and 8 meter wide streets. Purchasers of lots have an incentive to relinquish land for streets: if a main road is eventually constructed the value of his land will rise--street lots are often twice the price of off-street lots. He kept one lot for himself and sold the rest.[1] He said there was only one formal subdivision in the area.

A Basatin subdivider, a former fellah, set up The Cooperative for Land Subdivision. He subdivided two "big pieces" of registered land and five feddans of unregistered agricultural land. More recently he has bought one to two feddan parcels from others and subdivided them. He also engages in construction--without any permits. His subdivided lots are 100 to 300 square meters; he "gives" 2m to the street, as does

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[1] In general, however, purchase and resale of part of the original amount of land appears not to be prevalent. Only 3 percent and 4 percent respectively of Cairo and Beni Suef owners who built on land and who were surveyed in the occupant survey reported that they had sold any of their original purchase of land. Thus, individual purchasers appear to buy only what they personally need from subdividers.

each person to whom he sells a lot, making 6m wide streets. He claimed responsibility for introducing water, electricity and sewage into the area.

Another developer in the same area reported that farmers subdivided the land in the 1960s and then real estate developers moved in and made 200 percent rates of profit. Such rates of profit appear to by typical even now for agricultural to urban land use conversion given the spread between agricultural and urban land prices.

A Manshe'it Sadat carpenter returned from five years in Kuwait, bought 1 kirat (175 sq.m.) of agricultural land from a subdivider. This previous owner originally had 100 feddans, but he sold 20 to someone else to finance his development of the rest.

Early in this survey, a newspaper advertisement appeared offering land for sale in el-Mazabi and Tenth of Ramadan. An interviewer visited this businessman's office in Ezbat en-Nakhl on the day of the advertisement, along with many other interested parties. He was offering 20 to 30 sq.m. parcels, 30 to 50 percent down, 2 to 4 years to repay. The "developer" preferred to deal in agricultural land "because services are easy" to obtain.

Informal development is not always on private, agricultural land. Manshe'it Nassar, for example, was built upon government land in the 1960s. The inhabitants appealed successfully to the President when a government department threatened to bulldoze the area.

At the high end of the formal market, public sector and private companies play a role in subdivision and development. For example, one such developer, the Ma'adi Company, was set up with British support in 1905. The Company originally subdivided much of Ma'adi into 1,050 sq.m. lots. The few remaining lots in the area are being developed as condominiums. The rules are that only 50 percent of the lot can be built upon 3-4m setbacks all around, with a 5 story maximum.

4.3 Factors Contributing to Illegal Subdivision

The decision to subdivide land illegally is based on several factors related to land prices, property taxes, existing subdivision regulations, water availability, and access roads. The last two of these factors will be covered in Chapter 5.

Land Prices

Residential land prices have increased steadily since 1970 when the informal housing phenomenon began to gain momentum. Average prices ranged from LE 2/m2 to LE 4/m2 in the late 1960s, from LE 6/m2 to LE 10/m2 in the mid-1970s, and are currently LE 30/m2 (periphery--Shubra al-Kheima) and LE 60 to LE 100 and sometimes higher than LE 200 for prime residential and commercial locations in central and high income areas. Land prices in Beni Suef have been somewhat lower. In the 1960s they rarely exceeded LE 2/m2, in the mid-1970s averaged LE 4 to LE 6/m2, and currently range from about LE 20/m2 and higher depending on proximity to facilities and prime commercial locations. The willingness to pay these prices varies according to the importance the homeowner places on location. Most seem to be more concerned with proximity to social facilities and/or existing or proposed infrastructure than with proximity to place of employment.

At the same time residential land prices were rising, prices for agricultural land were often stable in real terms, or even falling. This sometimes resulted from the filling of irrigation canals with non-biodegradable garbage and solid waste by residents of nearby residential areas, or by contamination of canals by industrial wastes. As residential land prices began to far exceed the return that a landowner could receive from keeping land in agricultural use, landowners predictably responded by selling land for residential use at the new high prices.

People who could afford to invest in land suitable for residential use bought as much as possible for speculative reasons (usually by feddan --4,201 sq.m.). People of more modest means bought larger lots than required for their homes (usually by kirat--175 sq.m.) so they could either expand their homes or resell unbuilt portions of their lots at a later date. Workers' remittances often provided the capital for the second group and for lower income people who in many instances bought only by the square meter, and only enough land to construct a small dwelling which could later be expanded vertically.

Property Taxes

Taxes on vacant land at the rate of two percent of the appraised valuation have been introduced to reduce speculation. These taxes are sometimes alleged to have resulted in owners (1) subdividing and selling

parcel by parcel to reduce the increasing tax burden of ownership, or (2) selling whole feddans to "contractors" or developers who subdivide land and resell it by kirat or square meter over a very short period of time to avoid tax payments. This latter situation was reported by interviewers to be very profitable.

4.4 Existing Subdivision Regulations

Legal subdivision may occur either on agricultural land, with proper variances, or on non-agricultural urban land. In either case, procedures are time consuming and costly, and the chances of success are small.

Subdivision of agricultural land can legally occur only under special conditions set forth by the 1978 Agricultural Law, which vests authority in the Ministry of Agriculture to develop land defined as agricultural by the Land Reclamation Act. Prior to 1978, local officials and not the Ministry of Agriculture had authority to control subdivision of agricultural land (regardless of their success at enforcement) and to require that subdividers comply with requirements facilitating the cost-efficient provision of infrastructure. Currently, if land being subdivided has been identified as agricultural, this very definition exempts the land from local government subdivision control because under the law it has been categorized as non-developable regardless of what the owner is using it for. However, if the owner wants to subdivide his land, he can get a variance by persuading the authorities that his land is "non-cultivatable." Examples of subdivision activities created by using loopholes in existing laws are:

- An individual subdivides land to accommodate family members. There is often no policing to confirm that subdivision is taking place for this purpose rather than to provide parcels for non-related buyers.
- Persons calling themselves "contractors" buy up "non-cultivatable" agricultural land, compensate the landowner and farm laborers living on the land, and re-sell parcels for residential use--often deriving a profit of 100 percent or more. In most cases, these "contractors" are not contractors by definition but transferrers of land and are inflating land prices and encouraging informal development.

- A landowner installs a facility which is considered to be a contribution to the "Food Security" Program, i.e., an individual can start a poultry farm and on the same site install housing for "employees" of that facility. He does not necessarily have to prove that the occupants of housing in this situation are indeed employees. This type of subdivision is not considered residential subdivision under existing laws.

The procedure for obtaining variances is, however, lengthy. First, a governorate committee has to be formed to evaluate the petition: the local inspectors of housing and education and the local agricultural manager. The committee inspects the property to make sure that all general codes are being followed (e.g., at least 100m from a canal). Once the committee has approved the application in writing, the Minister of Agriculture has to set up a review committee: vice-ministers of agriculture, industry, education, planning and housing. A fee of LE 20 per feddan is charged. This money goes towards reclaiming desert lands.

Not surprisingly, few applications are made. Village leaders in Ikhnassiya al-Khudra, near Beni Suef, where governorate officials claim the law is enforced, said fewer than five percent of the applications succeeded, too discouraging for most people who might consider obtaining permission.

Subdivision of non-agricultural land is apparently not much easier than that of agricultural land. Respondents in the in-depth interviews complained that the application procedure for obtaining a subdivision permit is too expensive and time consuming to make it worthwhile to go through legal channels. In addition to regular fees attached to application, potential subdividers must hire an architect or planner to prepare subdivision plans to be submitted to officials. "Official" architect and syndication fees appear to range from 10 percent of project costs for small projects to 2 percent for large projects. The review process usually takes six months or more and there is no guarantee that permission will be granted in the end. Respondents say that they would rather risk going ahead and subdividing illegally than to have to go through the bureaucratic maze of application and confirmation.

Many subdividers resent the standards included in the subdivision law requiring 10m. road widths and allowances for public uses because they think they are excessive and irrelevant to the indigenous population. Although some illegal subidivers will allow a one-to-two meter right-of-way

fronting building lots and a minimal amount of open space for public use, the majority do not. They will instead shift the responsibility concerning setbacks for roads to the homebuilder.

While illegal subdividers close to existing main line infrastructure sometimes provide extensions to newly subdivided areas, they do not always feel compelled to provide any basic infrastructure. Subdividers know that once subdivision becomes a neighborhood and residents go to register their land or lobby collectively through their local neighborhood councils that residents will eventually obtain public facilities and infrastructure. They also know, from observing the informal process, that the government will also take land by expropriation from private landowners or use adjacent public land to install social facilities like mosques, churches, schools and hospitals.

Land Registration

Under existing laws, all rights of privately held property must be transferred legally and registered with the local district office of the Land Registration Division of the Ministry of Justice.[1] The majority of land owners in the informal sector do not register their property and are rarely reprimanded for not doing so.

Larger landholders, 10 feddans or more, have an informal way of registering which confirms that a transfer has been made. The seller goes to court with the buyer and the seller alleges partial non-payment for land on the part of the buyer. The court then charges, in writing, that the buyer must pay the unpaid amount, and a court order is issued. The buyer then pays and receives receipt from the seller. To many people in the informal sector, this action constitutes a form of registration and they go no further to guarantee formal registration.

Persons buying land by the kirat or square meter rarely register their land but instead will go to their local district office after they have finished building their houses and register their lot numbers and addresses so that they may be eligible for postal and communication service.

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[1] The fee is 2 percent of LE 1,000 or less; 4 percent of LE 3,000, and 7 percent for LE 4,000 or more. There is also an application fee of LE 2.

Individuals almost always wait until building completion to do so, if they do at all, in order to avoid citation for informal construction because the vast majority have not obtained a building permit.

Many people are cited and fined when they have constructed the foundations or first floor but are not removed by authorities in most cases unless they are building in a public area or on government land. Often people said that they considered a written and dated citation as informal proof that they had started their building on their land. They know authorities will not return with a removal order for several weeks or even several months and by that time they will have constructed the second floor and cannot be removed. Periodic rulings from the governorates and/or the National Assembly declaring all informal dwellings to be formal confirms their presumption that they will not be punished or removed because they have not registered their land or obtained a building permit.

4.5 Design Characteristics of Illegal Subdivisions

Subdividers of illegal subdivisions rarely comply with standards for street width and public open space and do not use architects to devise any street layout design. Consequently, every informal development established within the boundaries of these subdivisions has its own characteristics determined by the existing street pattern and buildings, topography, and natural and man-made features, e.g., channels or irrigation canals.

The three main siting configurations, irregular, linear, and fragmentary, are depicted in Figure 4-3.

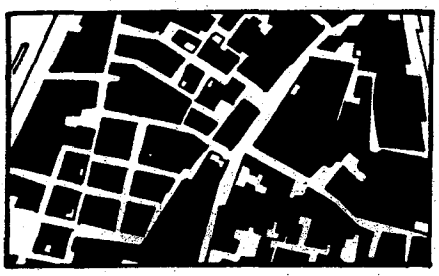
Linear patterns are representative of at least 70 to 80 percent of the study areas. A typical linear settlement established on vacant flat land, Ezbat Osman, is depicted in Figure 4-4.

The subdivision of land into 60 to 80 sq.m. lots and the linear attachment of lots is a typical lot layout in many informal areas. On the other hand, the median lot size among informal owners in the occupant survey was 88 sq.m. in Greater Cairo, with 50 percent in the range 62 to 130 sq.m.

In other sections of Ezbat Osman lots are either grouped into square blocks, or one large lot comprises a block. The product of these lot groupings is a grid pattern which is not atypical of recently developed

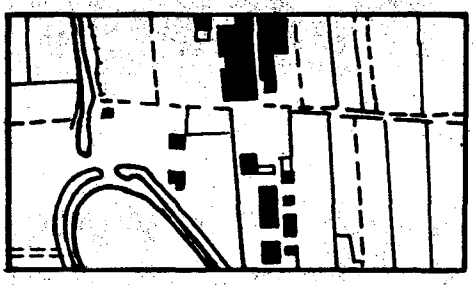
Figure 4-3

Siting Configurations



Irregular Pattern. Represented in traditional sections of the study areas which were built up areas before 1950. Informal dwellings are constructed in a fill-in manner on vacant lots adjacent to existing residential, commercial or industrial structures. Street widths vary from 2-3 m. to 10 m.

Linear Pattern. Represented in recently-developed sections which became built-up areas during the late 1960s and 1970s. Informal dwellings are constructed in a regular pattern as a result of residents' efforts to provide unobstructed rights-of-way and layouts that do not diverge completely from zoning guidelines. Street widths vary from 2-20 m.

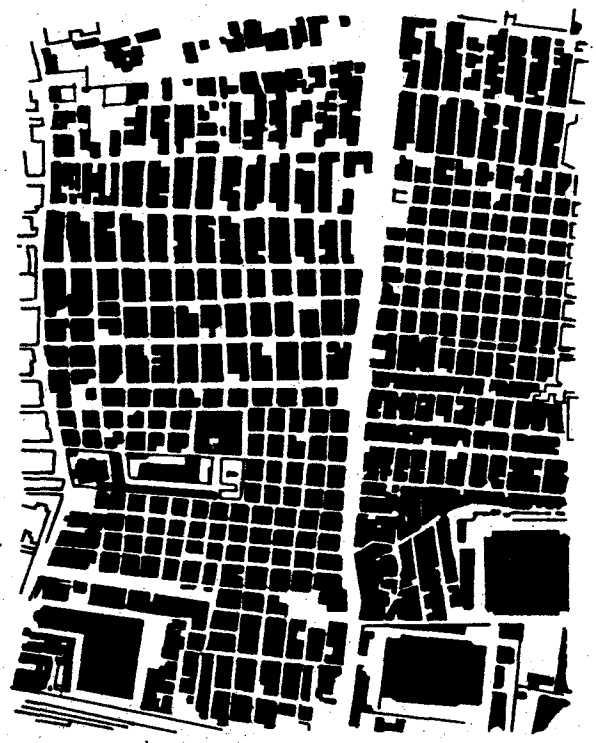


Fragmentary Pattern. Represented in agricultural sections within and outside the cordon and on the urban periphery where subdivision and conversion to residential use is being undertaken. Spacing between buildings distinguishes this pattern from the irregular pattern in which dwellings are attached to form blocks. As these areas develop into residential neighborhoods they usually assume a linear pattern.

SCALE 1 : 5000

Figure 4-4

Section of Ezbat Osman, Central Shubra al-Kheima



SCALE (1:20,000)

0 100 200

The wider E/W and N/S roads are unpaved tracks which were originally established as transport routes between agricultural fields. The larger buildings are public facilities and factories.

sections of many world cities. This is the result of the subdivider's lot definition and the homebuilders' maximization of lot coverage.

The individual lot owner usually allows 2m. of the front of his lot for street space because the subdivider does not always do so and, if land is allocated by the subdivider for this purpose it is a minimal 1 to 2m. There is little or no public space other than streets and space resulting from building front recessions. Residents will sometimes collectively decide to setback further than 2m. each (providing a 4m. street), if the majority of them want to have a street with ground-floor shops and one wide enough to accommodate vehicular traffic. This is the exception rather than the rule, however, because most people who want a higher value attached to commercial property will simply try to purchase fronting on an existing wide street.

Thus, in the early stages of communities, rights-of-way are privately owned. Later on, the government takes them over and maintains them as public roads, although they rarely meet the 10m. minimum standard.

4.6 Building Permits

As indicated above, it is common for owners to build without permits. This appears to be the result of the costs of complying with procedures required for a permit and of obtaining the permit itself, lack of knowledge of building codes, and the general lack of enforcement.

Obtaining a building permit requires that an owner present architectural drawings of a proposed structure (often costing in excess of LE 350 from an architect or engineer) to local officials for approval. This cost is in itself a deterrent to many informal builders. Moreover, it appears that often adequate designs for informal structures can be produced by either owners themselves or building contractors (31 percent of informal owners surveyed in the Cairo occupant survey designed their own structure; 47 percent of informal owners' units were designed by building contractors; 11 percent of informal owners' units were designed by architects or engineers).

While obtaining a building permit entitles recipients to obtain subsidized building materials, it is widely perceived that for small-scale and informal jobs the resultant cost savings relative to black

market prices do not offset the costs of complying with permit requirements. In some cases, owners do not obtain building permits because of delays in permit approval or receiving building materials.[1]

In other cases, ignorance of building codes and permit requirements reduces compliance. For example, a Dar as-Salaam plasterer, in common with many other supply participants, said he knew nothing of the regulations. A Mit Oqba masonry contractor said, "I do not know anything of legal matters or building codes and I do not think that any other masons or owners have such knowledge."

Enforcement is generally lax. Those responsible for administering building regulations are simply overwhelmed. The police chief responsible for building code violations in one mainly informal district claims to work from 7 a.m. to 10 p.m. making site inspections and writing reports. Thus far in 1981, there had been about 2,000 reported violations of building codes in his district. For those who do have permits there are frequent violations concerning extra floors and set-backs. The police chief said that "the law is very handicapped in tearing down buildings except when on public land" and that even on government land occupancy entitles the occupier to become the legal owner and to subdivide. Most commonly, when violators are caught, a comparatively modest fine is the punishment.

The burden of the enforcement officials is mirrored in responses to the occupant survey. Of Cairo informal owners that had built (rather than purchase) their structures, only 27 percent had ever been visited by authorities either during or after construction and not one of them cited "being hassled by authorities" as the major problem encountered during construction. Enforcement efforts appear to be made more earnestly in the formal sector, however, where 86 percent of Cairo owners report having been visited by authorities during or after construction--about 9 percent of whom claimed "being hassled by authorities" to be their major construction problem.

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[1]Delays in receiving permits appears to be extremely modest. Most Cairo owners responding to the occupant survey waited only one month after applying before receiving a permit. Waits for building materials were longer--sometimes as long as a year, but more often from 3 to 6 months.

4.7 Cultural and Economic Correlates of Informality

Households that participate in the informal housing sector and those that do not overlap considerably in terms of social and economic characteristics. In Cairo, for example, there are no statistically significant differences between formal and informal households in sex or age of the household head, household structure, or income relative to expenditures. There are some noteworthy differences, however, which shed light on the growth of informal housing areas.

One of the most salient differences between formal and informal households is their geographic origin. Among formal owners in Cairo, for example, 89 percent were born in an urban area and 88 percent had spent most of their lives in an urban area. Among informal owners in Cairo, by contrast, only 53 percent had been born in an urban area and only 70 percent had spent most of their lives in an urban area. In a multivariate analysis of the demographic factors associated with living in informal housing, having had a rural birthplace was estimated to increase the chances of living in informal housing by 41 percentage points (controlling for other demographic variables) in Cairo and by 10 percentage points in Beni Suef.[1] Thus, the informal sector is more heavily comprised of rural to urban migrants than is the formal sector. It is likely that both cultural attitudes toward land and building laws and resultant behavior are influenced by rural origins. Traditional practices concerning land use and construction include little or no notion of "proper" land use or construction techniques by urban standards--as is evidenced by the estimate based on the occupant survey that 100 percent of owner-occupied housing in the agricultural villages surrounding Beni Suef is informal.

This cultural predilection is enhanced by a tendency of many rural to urban migrants to be of lower education levels, and hence perhaps less likely to be aware of subdivision, registration, and building regulations. Educational differences are highlighted by the extremes of the distribution

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[1] Living in informal housing was related to demographic variables using logit analysis. Explanatory variables included age, sex, education, occupation, labor force status, and length of stay of the household head; perceived income relative to expenditures; savings; household size; whether or not a household owns all or only part of its building; and site.

of educational accomplishments among households in formal and informal units. Among formal owners in Cairo, for example, 21 percent are illiterate and 20 percent are university graduates. Among informal owners, 43 percent are illiterate and only 3ppercent are university graduates. In response to a question, "How much does the average person know about the rules and regulations of building on vacant land?" Thirty-five percent of formal owners in Cairo answered either "knows a few of them" or "doesn't know anything at all," while 94 percent of informal owners in Cairo gave one of these two answers. Such ignorance of the law is likely to be in part a function of lack of education, although it probably also reflects a sense by households in the informal sector that the content of the laws and regulations themselves is largely irrelevant to their concerns. Thus, changing the attitudes of current informal sector households is likely to be more than a matter of simply educating them to the rules. Rather, it may be appropriate to devise a more realistic set of planning standards concerning land use and building, with which potential informal sector households would see it in their interest to comply voluntarily.

CHAPTER 5

Physical and Social Infrastructure

Physical and social infrastructure are not only potential determinants of the growth of informal areas, but also important outcomes relevant to the well-being of residents of those areas. This chapter provides an overview of recent changes in certain types of infrastructure in Cairo and Beni Suef, and looks at aggregate differences in access to infrastructure between formal and informal areas. The chapter then examines in greater detail the processes by which physical and social infrastructure is supplied, focusing particularly on communities examined in case studies and in-depth interviews.

5.1 Recent Patterns of Infrastructure Change in Cairo and Beni Suef

Provision of basic utilities in Greater Cairo has increased rapidly in recent years. Table 5-1, for example, indicates the proportion of buildings connected to public water, public sewer, and electricity systems in enumeration districts covered by the scanning survey in 1976 and 1981. For comparison, census figures for Greater Cairo as a whole for 1970 and 1976 are also presented. The geographical extent of major utility systems in Greater Cairo and Beni Suef is shown by overlays to Figures 5-1 and 5-2.

In sampled enumeration districts, provision of each utility increased significantly between 1976 and 1981, continuing a trend indicated by census data for 1970 and 1976. Increases in the provision of electricity appear to have been most dramatic, with the proportion of buildings connected increasing from 59 percent in 1970 to an estimated 90 percent (for sampled enumeration districts) in 1981. While utility provision for sampled districts may be somewhat higher than area-wide provision (sample averages are higher than each corresponding census average in 1976), it seems clear that rapid increases in utility provision are occurring. This is a major accomplishment in light of the rapid increases in the housing stock described in Chapter 2.

Table 5-1

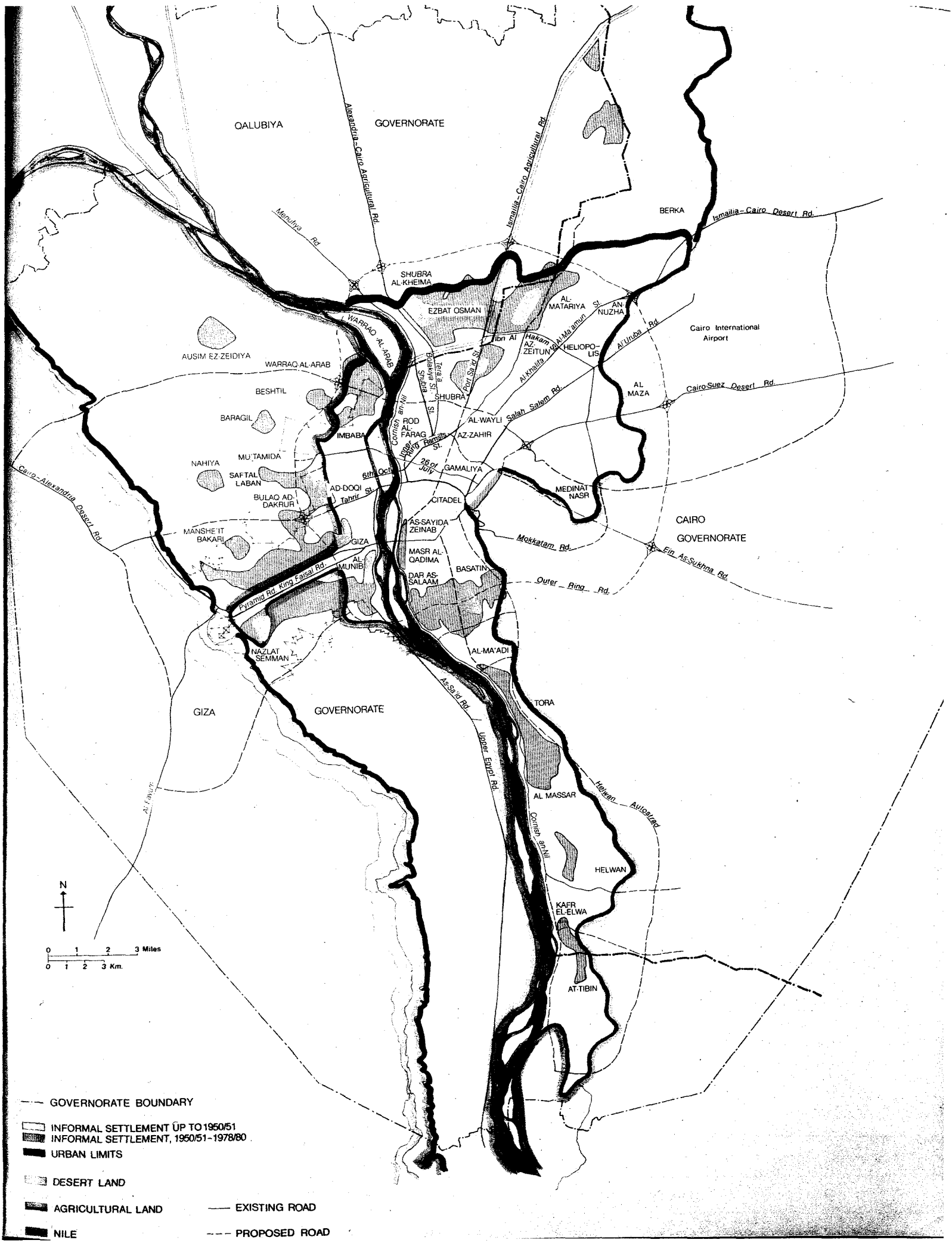
Recent Changes in Provision of Basic Utilities in Greater Cairo
(Percentage of Buildings Connected)

Utility	Greater Cairo		Greater Cairo Scanning Survey Enumeration Districts	
	1970[1]	1976[2]	1976[3]	1981[3]
Public Water	50%	56%	57%	65%
Public Sewer	44	52	56	71
Electricity	59	76	82	90

[1]Source: Joint Housing and Community Upgrading Team, Housing and Community Upgrading for Low Income Egyptians, U.S. Agency for International Development, August 1977.

[2]Source: Arab Republic of Egypt, The National Policy for the Confrontation of the Housing Problem, Appendix I, Report of the Subcommittee for Housing, Social Studies, and Construction Planning, November 1979.

[3]Source: 1981 scanning survey of 50 enumeration districts and corresponding 1976 CAPMAS data.


QALUBIYA GOVERNORATE
Alexandria–Cairo Agricultural Rd.
Ismailia–Cairo Agricultural Rd.
Menufiya Rd.
Ismailia–Cairo Desert Rd.
BERKA
SHUBRA AL-KHEIMA
EZBAT OSMAN
AL-MATARIYA
AN-NUZHA
Cairo International Airport
AUSIM EZ-ZEIDIYA
WARRAQ AL-ARAB
WARRAQ AL-ARAB
BESHTIL
BARAGIL
IMBABA
ROD AL-FARAG
SHUBRA
AL-WAYLI
AZ-ZAHIR
AL-MAZA
Cairo-Suez Desert Rd.
Salah Salem Rd.
Al-Khalifa Al-Ma'amun St.
HELIOPOLIS
Al'Uruba Rd.
Ibn Al Hakam St.
AZ-ZEITUN
Port Said St.
Tera'a Shubra St.
Corniche an-Nil
Upper Ring Rd.
Ramsis St.
NAHIYA
MU'TAMIDA
SAFTAL LABAN
BULAQ AD-DAKRUR
AD-DOQI
Tahrir St.
6th Oct.
26 of July
GAMALIYA
CITADEL
MEDINAT NASR
Cairo-Alexandria Desert Rd.
MANSHE'IT BAKARI
GIZA
AL-MUNIB
AS-SAYIDA ZEINAB
MASR AL-QADIMA
DAR AS-SALAAM
BASATIN
Mokkatam Rd.
Ein As-Sukhna Rd.
CAIRO GOVERNORATE
Outer Ring Rd.
Pyramid Rd. King Faisal Rd.
NAZLAT SEMMAN
AL-MA'ADI
As-Sa'id Rd.
Upper Egypt Rd.
TORA
GIZA GOVERNORATE
AL MASSAR
Helwan Autostrad
Corniche an-Nil
HELWAN
KAFR EL-ELWA
AT-TIBIN
Al Fayum
N
0 1 2 3 Miles
0 1 2 3 Km.
GOVERNORATE BOUNDARY
INFORMAL SETTLEMENT UP TO 1950/51
INFORMAL SETTLEMENT, 1950/51–1978/80
URBAN LIMITS
DESERT LAND
AGRICULTURAL LAND
NILE
EXISTING ROAD
PROPOSED ROAD


AZHARI
VEGETABLE MARKET
Salah Salem St.
JAYIL
Port Sa'id St.
Port Sa'id St.
MUKBIL
Islam St.
Cornish an-Nil
MULID AN-NABI
RAHBA AZ-ZAMI
Fuad El Awal St.
Abd As-Salaam Aref St.
Abd As-Salaam Aref St.
AL GANADLA
BAY'AD
Cornish an-Nil
NILE RIVER
GEZIRA WEST
New Bridge to East Bank
CORDONE LIMIT
URBAN LIMIT
INFORMAL SETTLEMENTS
AGRICULTURAL LAND
URBAN LAND
N
0 miles .25
0 km. .25

Actual accomplishments may, in fact, be even more significant since provision of utilities to buildings understates connections to individual housing units. This is a result of a strong positive correlation between the likelihood that a building is connected to a utility and the building's size. Figures 5-3 and 5-4, for example, illustrate the estimated relationships between the likelihood that an individual dwelling unit is connected to public water and public sewer systems and the number of units in the building in which it is located. Relationships are indicated for both formal and informal housing.

As the figures indicate, units in larger buildings are far more likely to be connected to utilities than are units in small buildings. Thus, dwelling units in single unit informal structures are estimated to have public water and sewer connections in 58 and 74 percent of cases, respectively, but units in 20-unit informal buildings are estimated to be connected in 98 percent and 96 percent of cases respectively.[1] Relationships for formal housing are similar, although the chances of being connected are estimated to be higher at each building size. Thus, single unit formal buildings are estimated to be connected to public water and sewer in 84 and 76 percent of cases and connection rates are above 90 per-

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[1] These relationships were estimated using multivariate logit analysis. Estimated equations for Cairo were:

$$SPUB = .9097 + .2544\ N - .0963\ N*I$$
$$(.0654)^{**}\ (.0605)$$

$$WPUB = 1.449 + .2863\ N - 1.278\ I - .0835\ N*I$$
$$(.1072)^{**}\ (.634)^{**}\ (.1150)$$

where, SPUB = log likelihood of public sewer connection
WPUB = log likelihood of public water connection
N = number of dwelling units in building
I = informal housing dummy variable (=1 if informal; 0 otherwise)
and, ** indicates coefficient is significant at the .05 level or above.

Standard errors are in parentheses.

The log likelihood is defined as $\ln\left(\frac{p}{1-p}\right)$ where p is the probability of the event in question. If $\ln\left(\frac{p}{1-p}\right) = a + bX$, then the probability of the event is $p = \frac{e^{a + bX}}{1 + e^{a + bX}}$ where e is the base of the natural logarithm. It is a series of such relationships that are plotted in Figures 5-6 and 5-7.

Figure 5-3
Estimated Relationship Between Building Size and Public Water Connections: Cairo

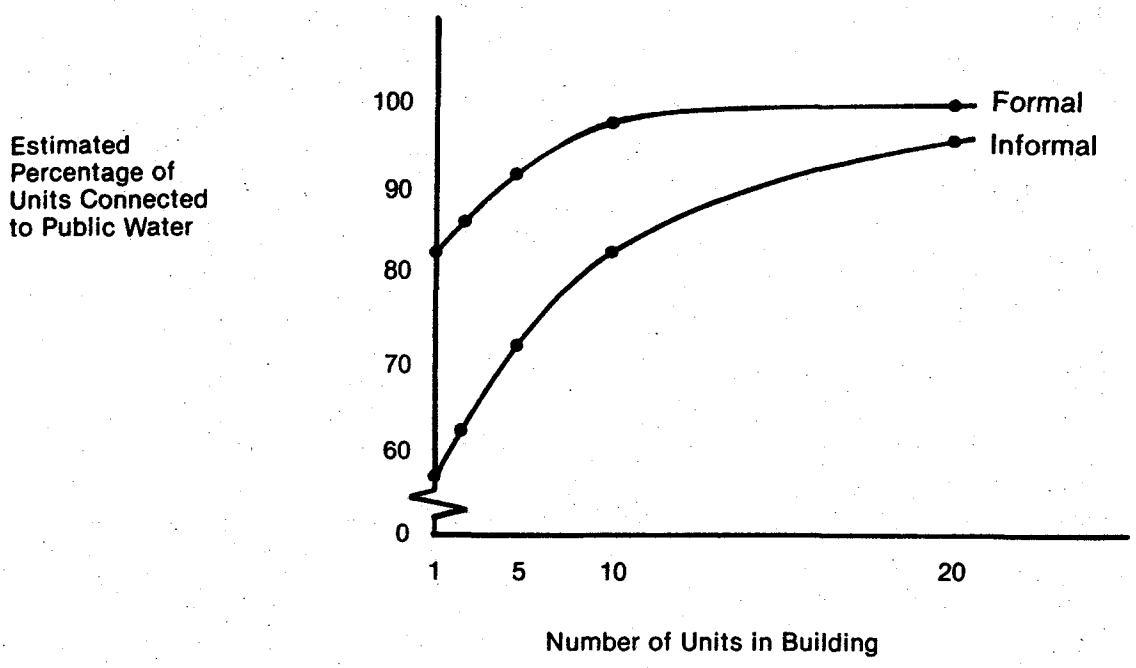
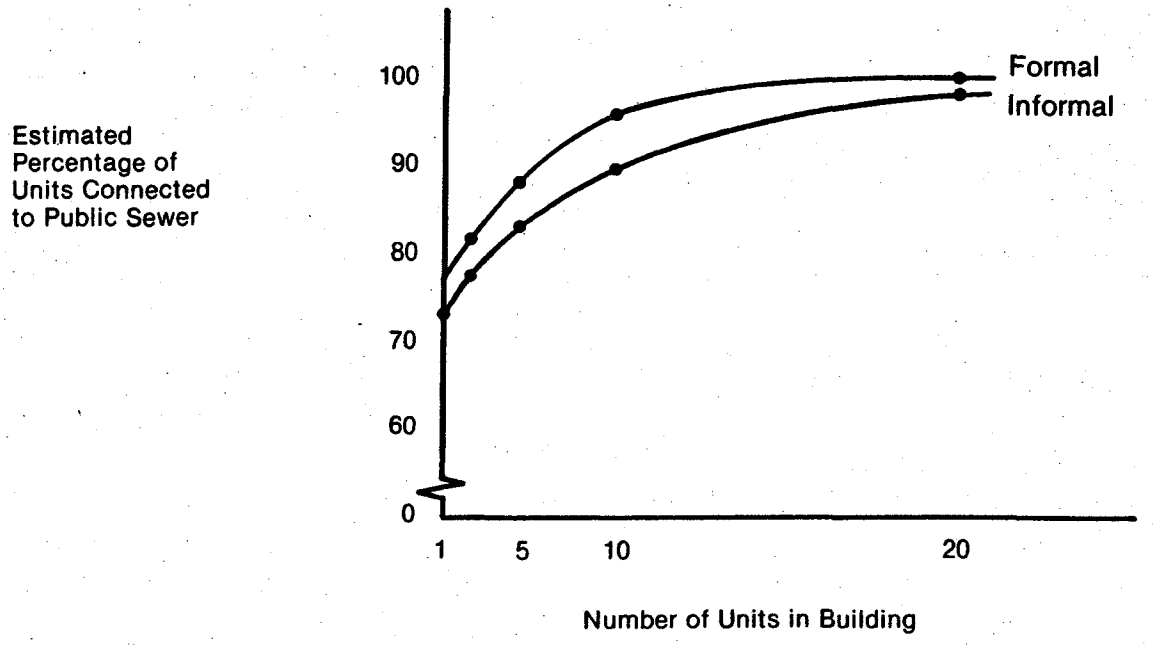


Figure 5-4
Estimated Relationship Between Building Size and Public Sewer Connections: ~~Bani Suef~~ Cairo



Source: Weighted Occupant Survey

cent for buildings with five units or more. It should be noted that differences in utility connections between formal and informal housing are attenuated with increasing building size, with both formal and informal units in 20-unit and above buildings almost universally connected to both public water and sewers.

While the same sorts of relationships between building size and utility provision are noted in Beni Suef, overall levels of service provision are lower and have been changing less rapidly. Table 5-2 indicates proportions of Beni Suef city buildings connected to utilities in 1976 and 1981 for sampled enumeration districts, and of Beni Suef markaz villages' buildings connected in 1981 only.[1] Figure 5-2 indicates the geographical extent of major utility systems in Beni Suef in 1981. The table indicates lower levels of utility provision to Beni Suef city buildings than is the case in Greater Cairo, particularly in the case of public sewer connections. Provision of public sewer and water connections appears to have been stagnant in recent years; only electricity connections have increased significantly from 1976 to 1981 (from 61 percent to 85 percent of buildings connected). Villages surrounding Beni Suef within the markaz are poorly served by basic utilities, with virtually no buildings connected to public water or sewer systems and slightly fewer than half connected to electricity.

Informal units are less well-served by utilities than formal units in Beni Suef. Among one and two unit buildings, which comprise the overwhelming majority of buildings in sampled Beni Suef areas, from 79 to 81 percent of formal units (for one and two unit buildings respectively) are estimated to be served by public sewers, but only 14 to 17 percent of informal units are estimated to be served. In one and two unit buildings, from 22 to 48 percent of formal households (for one and two unit buildings respectively) are estimated to have individual water connections to the public system, while only 16 to 40 percent of informal units are estimated to be connected.

Levels of provision of basic utilities vary not only across cities and among buildings, but also by the time of a building's construction. Figure 5-9, for example, indicates for buildings of various ages

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[1] Data on 1976 village connections to utilities were not available.

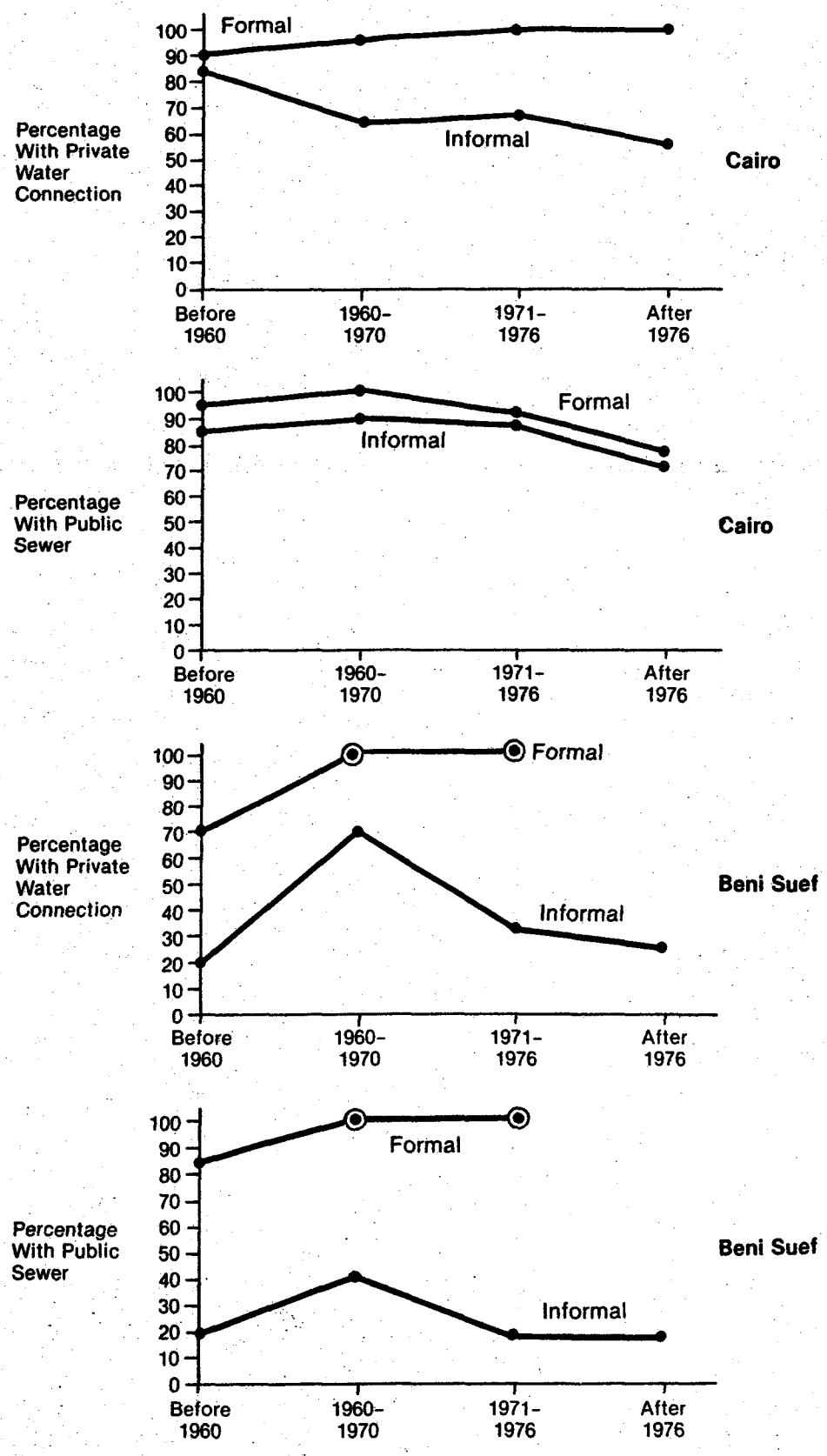
Table 5-2

Recent Changes in Provision of Basic Utilities in Beni Suef
(Percentage of Buildings Connected)

Utility	Beni Suef City		Beni Suef Markaz Villages
	1976	1981	1981
Public Water	57%	58%	4%
Public Sewer	35	28	0
Electricity	61	85	49

Source: Unpublished 1976 CAPMAS data and 1981 Scanning Survey.

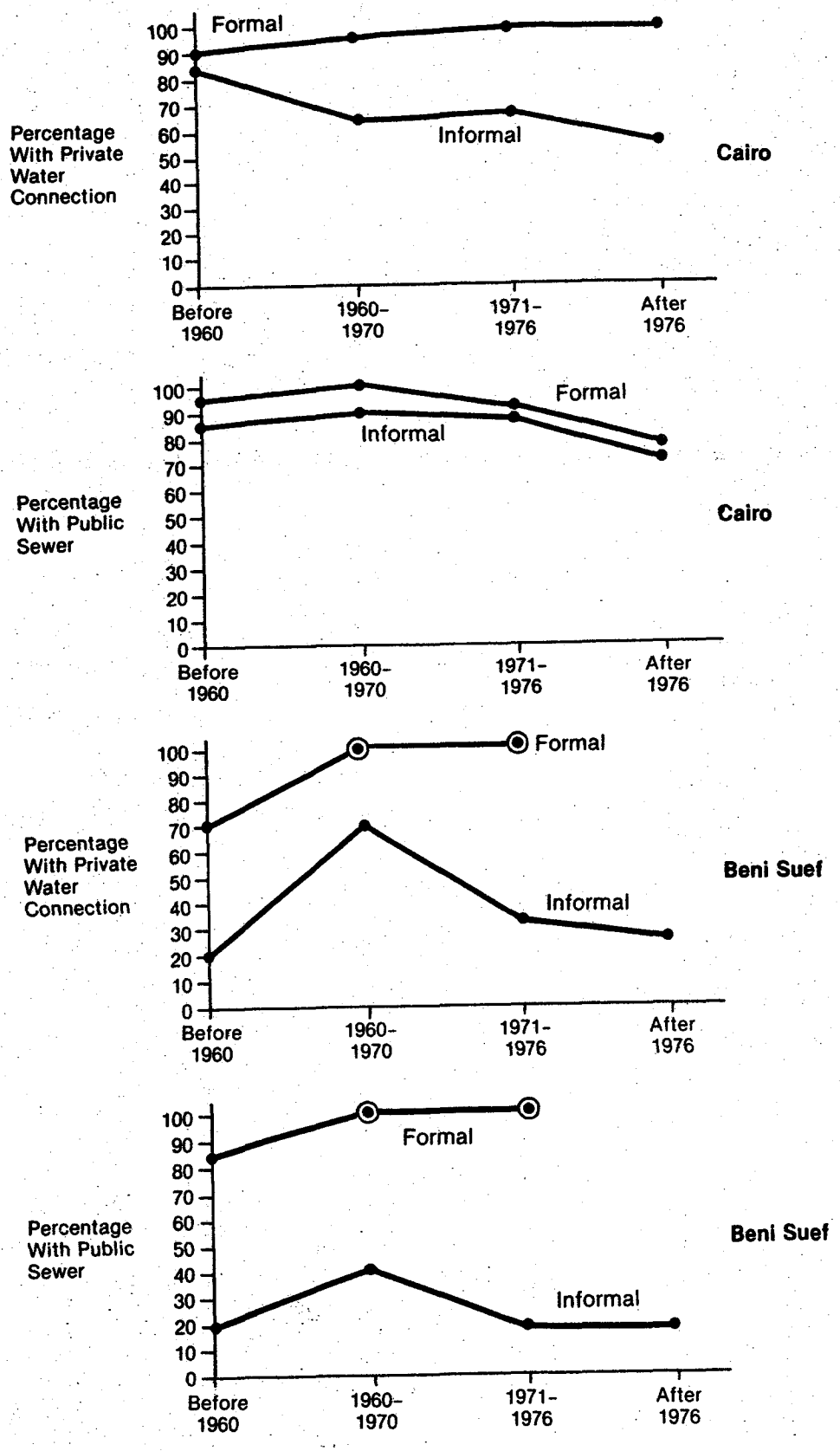
Figure 5-5
Relationship Between Time of Construction and Infrastructure Connections



◉ Fewer Than 5 Observations

Source: Weighted Occupant Survey

Figure 5-5
Relationship Between Time of Construction and Infrastructure Connections



◉ Fewer Than 5 Observations

Source: Weighted Occupant Survey

the proportions of units in the formal and informal sectors in Cairo and Beni Suef that have private water connections to the public system and public sewer connections.[1]

In Cairo, the incidence of private water connections is considerably lower among recently built informal units than among recently built formal units, 55 percent versus 100 percent respectively for units built between 1971 and 1976. Among units built during earlier time periods, differences in private water connections are less between formal and informal units (e.g., 88 percent versus 81 percent respectively for units in buildings built before 1960) suggesting that over time informal areas tend to catch up with formal areas in levels of public water provision. This tends not to be as true of sewer provision--differences between formal and informal units in public sewer connections show no clear pattern in time. On the other hand, the incidence of sewer provision is similar for informal and formal units of all ages.

In Beni Suef, there is no indication that differences in the provision of basic utilities are attenuated over time. Formal units of all ages are consistently better served than informal units.

It is likely that the comparative differences in levels of formal and informal infrastructure provision and changes over time between Beni Suef and Cairo are a function of both political and economic factors. In Cairo, for example, there appear to be strong political pressures by residents of informal areas to have main lines of infrastructure extended once areas are developed. In Cairo, where most informal housing has been built at high density in areas contiguous to the existing urban fringe or in infill areas between existing developments, it has been comparatively easier for authorities to extend main lines, and in so doing to serve large numbers of households for each linear unit of extension. In Beni Suef city, density is lower than in Cairo, and surrounding agricultural villages are relatively far from main infrastructure lines. Because of

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[1]Similar tables are not presented for electricity connections. In Cairo there is no significant difference in either average electricity connection rates (98.5% formal, 98.1% informal) or over time. In Beni Suef the informal connection rate, 69.3%, is significantly lower than the formal rate, 96.3%, but there is no pattern over time.

the low density and dispersed settlement pattern in Beni Suef, not only might it be more difficult for informal area residents to marshall effective political pressure for infrastructure, but it would be more costly to serve each household than in Cairo.

This overview of recent changes in infrastructure provision is enhanced considerably by an examination of case study and in-depth interview information which is presented in the following sections.

5.2 The Process of Providing Physical Infrastructure

The location of most informal housing in illegal subdivisions initially precludes the on-site provision of infrastructure by municipal and governorate authorities. Even in legal subdivisions, the government is only responsible for providing utilities to the border of a subdivision, and the developer required to do the rest. If it is difficult for the government to do its part, it can refuse legal permission for the subdivision.

However, the political realities of the situation dictate that the government may be forced to relax its policies. Once informal housing areas are spatially consolidated and represent permanent residential communities and residents collectively request government recognition, formal provision of infrastructure may be forthcoming.

Residents accept the reality that they may have to wait two years or more after government recognition and sanction of the existence of their communities to receive basic services. People interviewed in the case study areas demonstrate a willingness and determination to provide themselves with basic services and understand that service provision by the government is an expensive long-term process. Consequently, the existence of infrastructure in areas adjacent to potential residential areas is a prime determinant for location.

Informal settlements in the case study areas have been established in vacant areas within communities where infrastructure was already in existence or adjacent to formal areas where the municipal infrastructure network could be accessed or extended. The most rapidly growing areas are neither those with high levels of infrastructure nor those with none. Areas with from 25 to 50 percent of existing buildings connected to utilities grew more rapidly from 1976 to 1981 than did areas with either higher or lower proportions of connections.

The on-site availability of water seems to be the single most important precondition for settlement because it is a necessity both for sustenance and for construction of homes. Availability of water in agricultural areas and immediate access to it by pumps has therefore made settlement on these lands highly desirable. Also, the presence of unpaved tracts traversing agricultural fields and connecting to major and minor roads provides access to and from informal settlements established in these areas.

Electricity and sewerage are less of a concern to residents because power can be obtained by other means (small generators, gas lamps, kerosene lamps, etc.) and the problem of sewerage resolved by installation of septic tanks, cesspits or holding tanks.

While the previous section indicated generally high levels of provision of physical infrastructure, it is clear that there is great variability among areas. Moverover, it is often the case that informal housing in predominantly informal areas is less well served than informal housing in predominantly formal areas. For example, households' levels of infrastructure and access to public transport indicated by the household survey were tabulated according to whether a dwelling was classified as formal or informal and by whether the dwelling was located in an area which was predominately formal or informal. The results are summarized in Tables 5-3 and 5-4. The tables indicate that a dwelling's location in an informal area matters relatively more than its' being classified as informal in determining infrastructure outcomes. For example, informal dwellings located in predominately formal areas (those with more than 50 percent formal dwellings) are generally as well (or better) served by public water and sewer systems, electricity, and public transportation than are formal dwellings in formal neighborhoods. Informal dwellings in informal neighborhoods are less well served by utilities and public transportation than either formal dwellings in informal neighborhoods or informal dwellings in formal neighborhoods; the only exception to this is in the case of electricity in Cairo which is about equally well supplied irrespective of the status (formal/informal) of dwellings or neighborhoods.[1]

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[1] Appendix 8 presents tabulations of a number of infrastructure and other outcomes (including the estimated proportion of informal housing) for each enumeration district. There, it should be noted that many areas have infrastucture levels well below the city-wide averages for informal areas. This is consistent with low levels of infrastructure in some case study areas described in following sections of this chapter.

Table 5-3

Access to Utilities and Public Transportation for Formal and Informal Dwellings in Formal and Informal Neighborhoods -- Cairo
(Percent of Dwellings in Each Category)

Type of infra-infrastructure	Formal dwelling		Informal dwelling	
	Formal Neighborhood*	Informal Neighborhood	Formal Neighborhood*	Informal Neighborhood
Water				
Private connection to pure water	91	87	95	65
No private connection, no public faucet	1	8	0	21
Sewer				
Public sewer	95	87	94	84
Cesspool	4	0	4	11
Neither cesspool nor pit latrine	0	11	0	3
Electricity	98	99	99	97
Transportation				
Within 15 minutes of public transportion stop	95	92	98	79
Approximate sample size**	115	80	48	255

*Neighborhoods estimated to have more than 50 percent formal dwelling units.

**Sample size for "water"; sample sizes may vary slightly for other variables because of missing values.

Source: Weighted occupant survey

Table 5-4

Access to Utilities and Public Transportation for Formal and Informal Dwellings in Formal and Informal Neighborhoods -- Beni Suef
(Percent of Dwellings in Each Category)

Type of infrastructure	Formal dwelling		Informal dwelling	
	Formal Neighborhood*	Informal Neighborhood	Formal Neighborhood*	Informal Neighborhood
Water				
Private connection to pure water	73	***	68	39
No private connection, no public faucet	0		0	27
Sewer				
Public sewer	86	***	73	20
Cesspool	12		14	26
Neither cesspool nor pit latrine	3		7	46
Electricity	97	***	100	69
Transportation				
Within 15 minutes of public transportion stop	89	***	100	64
Approximate sample size**	31		13	186

*Neighborhoods estimated to have more than 50 percent formal dwelling units.

**Sample size for "water"; sample sizes may vary slightly for other variables because of missing values.

***Fewer than 5 observations.

Source: Weighted occupant survey

Main line infrastructure is provided by special regional authorities which work closely with the governorates--in the sense that the governor requests that infrastructure be provided in an area, the authority tends to do so. District officials submit plans to the governor, who passes them on to the agencies once approved. Once main lines have been extended to or near informal areas, individual connections become largely the responsibility of informal area residents.

The following section reviews the informal process of individual and collective efforts of residents to provide themselves with basic infrastructure.

Water

One of the primary reasons why agricultural land is so often preferred for informal settlements is the availability of water. Piped water may not be available for many years in informal settlements, and even then only from inconvenient public fountains. Thus, the ability to obtain water from an on-site or nearby well facilitates construction, and ensures the immediate availability of water for drinking and washing.

Water Used for Construction

Water for construction is obtained primarily from three sources:

1. Pumped from a nearby canal;
2. From the pump of an establishment; or
3. From a groundwater pump installed by a homebuilder on the construction site.

The latter two sources sometimes serve a dual purpose upon completion of construction of providing potable water for the house construction and/or for communal use in the neighborhood.

Wash Water

Canal water and groundwater are secondary water sources used for household purposes. Although approximately 2 to 7 percent of women in the Cairo case study areas do wash kitchen utensils and clothing in canals; 50 to 65 percent do so in the bathrooms and hallways of their homes or apartments (E.S. Parsons/ECG-Cairo: 1981, pp. B-33-39). Canals in the Cairo case study areas are contaminated by garbage and chemical waste and consequently the majority of residents prefer alternative sources of water

for washing purposes. Groundwater is a desirable water source for washing utensils, floors, and vegetables, rinsing clothing, while tap water is used for cooking, washing the hair, and washing laundry (Ibid.).

Potable Water

Approximately 90 percent of all households in sections of the three Cairo case study areas (Shubra al-Kheima, Dar as-Salaam, and Kafr el-Gabal) are reported not connected to water and 67 to 68 percent of households are located in buildings with no water tap (E.S. Parsons/ECG-Cairo: 1981, pp. B-28, C-3 and 9). These figures are indicative of much lower levels of service than is true of the Greater Cairo area as a whole--illustrating the variability of service levels among communities. Although official statistics are not available specifically for informal case study areas in Beni Suef, the situation appears to be similar due to the peripheral routing of water mains on the boundaries of those areas. Overall levels of service in sampled enumeration districts were (as indicated in the previous section) extremely low.

The majority of residents in all study areas depend upon the following sources of potable water:

1. Pump installed by an individual or the community;
2. Containers delivered by vendors;
3. Taps constructed by the government;
4. Tap of a mosque, or extension of a tap from a mosque for public use;
5. Tap of an industrial, commercial, or community establishment;
6. Tap financed and/or constructed by community members;
7. Tap of a neighbor.

Groundwater obtained from pumps has provided an acceptable source of drinking water for many informal areas, including the three case study areas before the installation of public taps in most sections in the mid-1970s. A typical groundwater system costs about LE 150 in the Matariyah/Esbat en-Nakhl region, including a well, electric pump, and holding tank. In the same region, a handpump system without a holding tank costs about LE 35. However, there are problems in some informal settlements with contamination from dust and from sewage intrusion. To avoid this it is necessary to drill to depths of 15 to 20 m in Dar es-Salaam. Originally,

it was only necessary to drill to 5 or 7 m in Kafr el-Gabal, but pollution has forced drilling to depths of 25 to 30 m. This can be expensive: a water pump costs LE 70 for 7 m and Le 300 for 30 m. Even then, residents of the higher density areas are wary of using pumped water, and prefer acquisition from other sources.

Informal settlements are often located near existing water mains. For example, the Cairo case study areas are traversed by mains which were installed to accommodate industrial establishments (Shubra al-Kheima) and/or middle- or upper-income residential developments (Nile Corniche, Ma'adi and Dar as-Salaam). Informal neighborhoods in Beni Suef are situated on the edge of some existing extensions of water mains and pumping stations which are part of the main city core network. Extensions from main lines, or the primary network, to formal residential subdivisions and municipal facilities form a secondary network. It is this secondary network that residents of informal areas will lobby collectively to have formally extended into their neighborhoods. Figure 5-6 presents a schematic diagram of water provision networks.

The informal status of homeowners in the study areas, their location in illegal subdivisions, and the prohibitive cost of water installation prevented most residents from obtaining legal connections into their neighborhoods. Most respondents said that they simply waited until their neighborhoods developed and then went to the authorities requesting drinking water outlets either in the form of public standpipes or public taps in religious facilities. Residents are anxious to establish mosques or churches in their neighborhoods knowing that these institutions are given priority for water installation under existing laws.

Authorities will not deny the public drinking water and attempt to install standpipes where needed, usually at 500 to 1000m. intervals throughout the community. In Beni Suef, for example, public faucets served 7 percent of formal owners and 32 percent of informal owners. Even so, some 34 percent of all Beni Suef households had no potable water source--mainly relying on public pumps outside their buildings.

Most public taps are controlled, e.g., water allocation is supervised by a guard, and if residents pay, they do so on a monthly basis at an average cost from 10 to 25 pt. per family for pump maintenance (E.S. Parsons, pp. 4-6). Individuals and owners of establishments will either allow residents to take water without payment, as a form of charity, or

Figure 5-6

Water Provision Networks

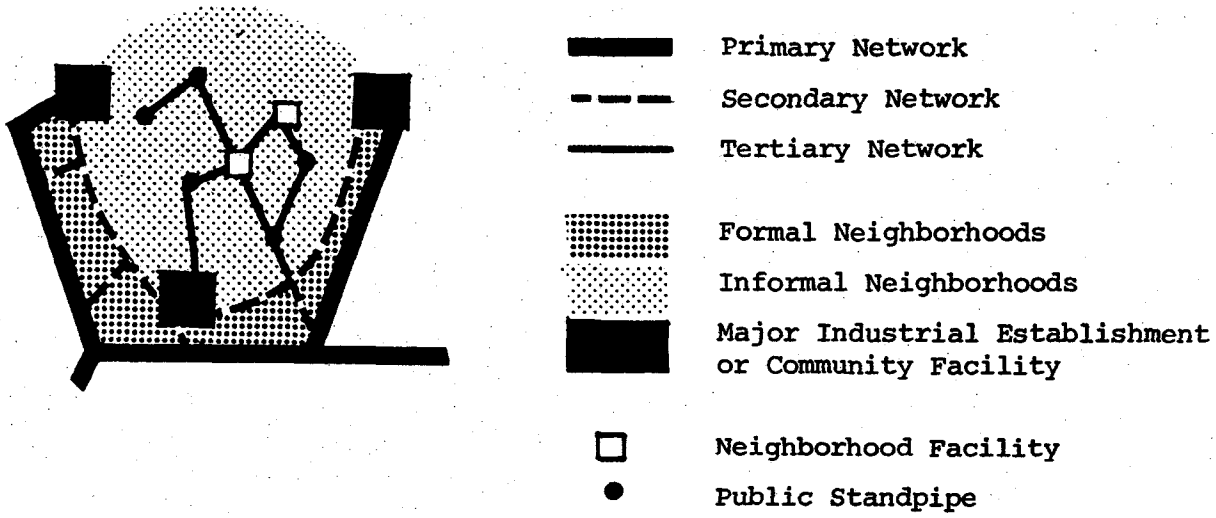
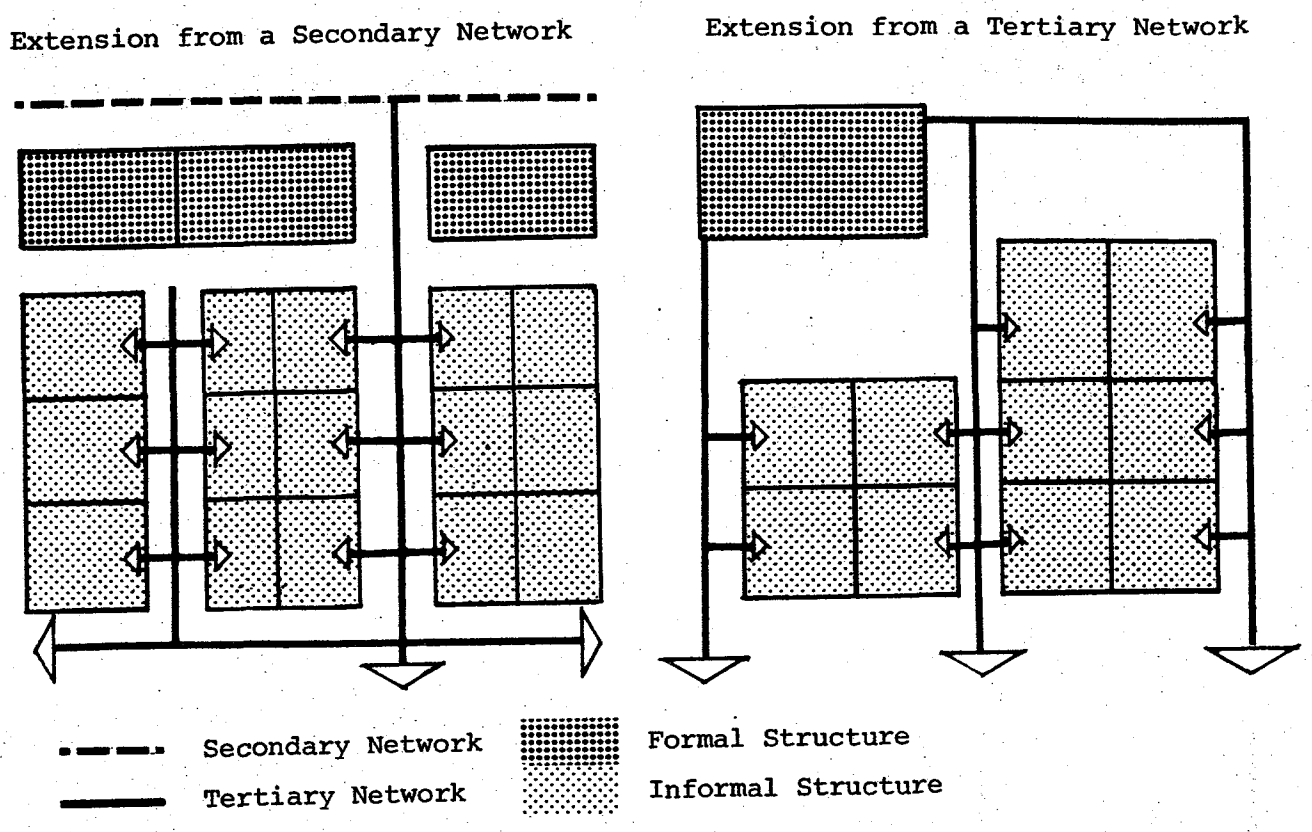


Figure 5-7

Extension of Piped Water to Informal Neighborhoods



charge a similar amount to that charged at public taps. Of the residents formally surveyed in sections of the Cairo case study areas, 30 to 50 percent obtained water from a public tap and 8 to 15 percent obtained water from a neighbor in another house (E.S. Parsons/ECG-Cairo).

Homeowners who can afford to pay for water delivery will either pay a water vendor per container approximately 10 to 15 pt. or an individual whom they have contracted to carry out the task on a monthly basis for approximately LE 2 to 3. Landlords often arrange this service for their tenants, but the cost is not included in the tenants' rent.

Residents in areas of Dar es Salaam depend almost entirely on water vendors because of the restricted hours on water distribution of public taps (E.S. Parsons/ECG-Cairo: 1981, pp. 4-11). Because income levels are concentrated within the lower and lower-middle brackets, the option of collection or delivery of water is dependent upon family willingness and ability to pay.

The pipes installed by the government to connect standpipes and public taps provide a tertiary network into which many residents tap to extend piped water to side streets and individual houses. Figure 5-7 presents a schematic diagram of means of extension of piped water to informal neighborhoods.

Arrangements to connect to existing secondary networks can be made in two ways. Residents may pay a local contractor to tap into a main line at the cost of LE 70 to 110 (MOHR, 1977, p. 39) or install the connection themselves with the help of a laborer. If homeowners choose to carry out an installation themselves, they can hire a plumber for LE 12 per day and buy pipes for LE 1/m.

Sometimes an agreement is made between formal and informal homeowners to allow house-to-house connections since, more often than not, formal households' lots are connected to water from the time lots are purchased while informal households' lots are not connected.[1] This is not a desirable type of connection in many cases because some formal homeowners do not want to risk being caught by authorities or simply do not wish to participate in such an activity. The easiest and least expensive means to extension is a simple connection to a main line leading to a nearby facility. When connections are made to private formal homes, the owner will meter the cost of

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[1] In Cairo, 69 percent of formal owners responding to the occupant survey indicated that their lots were connected to public water at the time they acquired them. The corresponding figure for informal owners was 17 percent.

water and the recipients will usually divide the cost among themselves. When connections are made to facilities, the supervisor of the facility will manage the cost and recipients will divide it among themselves.

Some residents in Kafr el Gabal pay fees to the mosque for access to water. However, the fees are so high that this is often only justified for high rise buildings (the cost of a 200 m extension from the Kafr el-Gabal mosques is about LE 1,200).

Homeowners on main streets may succeed in getting the government to install a connection to the public water main if the building has been officially designated as formal and if they are willing to wait for their turn after making full payment and receiving an application number. Residents on side streets typically do not have such an option. Generally, within five to six years after their buildings have been completed, they will collectively hire a contractor to hook up the entire street to the pipe on the main street.

Officials are well aware of illegal tapping into water mains but have a very difficult time controlling this activity because contractors will often tap into mains in the middle of the night or on holidays when they know the chances of being caught are minimal.

A major problem in most areas, particularly Dar as Salaam, is that homeowners and contractors do not know (or ignore) that water pressure is low, their tapping decreasing water pressure of the main system even further. Low water pressure and frequent cuts in service are such a problem that building permits now stipulate the installation of water reservoirs on roofs of buildings exceeding four stories. Informal builders do not obtain permits and as a result rarely install reservoirs.

Transportation

Because of the scarcity of affordable housing and building sites in Cairo and Beni Suef, residents must often live great distances from workplaces and shopping areas. Thus, it is extremely important that settlements have reasonable access to major roads and/or railway lines connecting with other parts of the respective cities. Access within settlements is also important to their attractiveness.

Most informal development has occurred on agricultural land adjacent to a main arterial or secondary feeder road, and in some cases

also a railway line. Residents living close to these main roads and railroads have good access to other parts of the city, and may expect to pay a premium for it when purchasing land. Many others can readily walk to major transport nodes. However, intrasettlement vehicular access is limited by design characteristics of informal settlements and by the poor condition of roads.

The predominance of linear and grid street patterns in the study areas has resulted in a street pattern in which regular inlets are provided into most neighborhoods. Street widths within neighborhoods range from three to six meters and are adequate for the movement of pedestrians and small vehicles. In Shubra al-Kheima and the Beni Suef areas, large unpaved tracts which were originally agricultural transport routes between fields or along canals serve as main roads within communities. Vehicular traffic is accommodated on these roads but their poor condition restricts movements: most roads have never been graded, are obstructed by holes, garbage, standing water, open drainage ditches, or by the top section of holding tanks. Because neighborhoods are unplanned and illegal, subdividers rarely leave any public space, and provision of secondary feeder roads is often difficult unless residents refrain from building on rights-of-way which were in existence before residential development.

Examples from the three case study areas illustrate these problems.

Shubra al-Kheima

The central portion of Shubra al-Kheima, where most recent informal development has occurred, is bounded on the west by Cairo/Alexandria road and Cairo/Alexandria railway, and on the north, east and south by agricultural fields. The railway limits access to and egress from the areas to two points where there are controlled crossings. Congestion at these points is extreme most times of the day due to the heavy usage of the Cairo/Alexandria road by large transport trucks and all traffic moving between Cairo and the Delta area. Roads within the area leading to these points are relatively narrow passages running parallel to canals, and traffic is frequently at a standstill because of delays at railroad crossings. The north/south through streets within the area dump traffic onto the east/west road parallel to the Bulagiyah Canal.

Bridges over the canal are:

1. Built by people in the community and cannot accommodate motorized vehicles; or
2. Built by the government to accommodate vehicles making deliveries to industrial establishments.

The largest bridge is located centrally on the Bulagiyah Canal and most traffic in Ezbat Osman, both passenger cars and transport vehicles use this bridge to gain access to the east/west road leading to the Cairo/Alexandria road. Congestion is increased by this intersection and the presence of animal drawn carts.

Dar as-Salaam

Dar as-Salaam is bounded on the east by the Cairo/Helwan railway, on the west and south by agricultural fields. The only access road leading to the Nile Corniche and Salah Salaam road is a secondary feeder road on the northern edge of the area. Circulation within the borders of Dar as-Salaam is the worst observed in any of the case study areas. Vehicular movement is almost entirely restricted to the periphery and the condition of roads in those areas is very poor, limiting movement greatly. No adequate north/south route within the area exists and movement is primarily restricted to east/west traversing because of the rectilinear configuration of dwelling attachments.

Beni Suef

The physical condition of roads in the Beni Suef case study areas is similar to that in the Cairo areas. Of the six identified informal developments, four have access to a primary street and two are situated within agricultural areas and are accessible only by unpaved tracts. Street patterns within each area are similar to those found in the Cairo areas.

Residents in all case study areas complained about traffic congestion and the time it takes to get out of their areas to other parts of the city. They would like their streets paved but their priorities lie in water and sewerage installations. Most people said they would be satisfied if the government would pave feeder streets so that they could more easily transport commercial goods and could obtain private sector taxi services.

The government has provided mini-bus taxi service but it does not satisfy demand. There is little self-help in road provision because residents cannot afford the cost of the heavy equipment required for grading and materials required for repair. Shopkeepers try to keep street areas in front of their shops unobstructed and wet down the street to minimize dust. Residents sometimes repair a walking bridge over a canal when the need arises. Most residents, as discontent as they are with the roads in their neighborhoods, are willing to wait for municipal provision and improvement of roads.

Waste Disposal

The problems of sewage and other waste disposal do not appear to be major factors in the site selection process for informal housing, as does water. Septic or holding tanks can be constructed in most areas and/or waste can be dumped into canals. Furthermore, waste water is kept to a minimum in many settlements because of the limited availability of piped water.

Still, the high infant mortality rates and health risks reported in other studies of these areas are partly attributable to sewerage inadequacies --such as intrustion from cesspools into groundwater used for drinking--and these problems are greater in informal than formal areas.

Figure 5-1 clearly shows the limited extent of the Cairo sewerage network; the system is operating at well above capacity.

Solid waste disposal services are also poor: this was the prime complaint of the Cairo and Beni Suef informal area residents about their districts. This was also identified by households as the service which had deteriorated most. Families also complained of a related problem, flies and insects.

Disposal of Sewage

All of the case study areas lack public sewage systems. One main sewer line extends from the eastern edge of the village of Bagame to the central neighborhood of Ezbat Osman in Shubra al-Kheima. Dar as-Salaam is completely unsewered and no drainage connectors or canals are present. Informal neighborhoods adjacent to formal built-up areas on the periphery of the Beni Suef city core have access to secondary sewerage networks but tapping into the network is expensive.

Informal neighborhoods on side streets in the Matariya/Ezbat en-Nakhl area among others are tapping into sewer lines on the main streets. These residents each contribute money to a common fund, then (they claim) go to the municipality to get a permit, get an engineer to prepare plans, and hire a contractor to lay pipes and connect with the one on the main street.

The majority of surveyed households in sections of the Cairo study areas use holding tanks for disposal of toilet waste (E.S. Parsons: 1980, pp. 5-2). Seepage tanks are used but are less effective because of soil conditions, e.g., in Shubra al-Kheima tight soil prevents proper drainage and in some sections within Dar as-Salaam groundwater is only two meters below the surface. Ma'adi officials are particularly concerned about the drainage problem in Dar as-Salaam because it is resulting in deterioration of building foundations.

Drainage of holding tanks is usually undertaken by individuals using animal drawn carts. Tanks are rarely drained frequently enough and excess sewage spills into streets. Drainage carts are often emptied into canals or ditches exacerbating the public health problems in these areas. To avoid overflow of tanks, residents will sometimes dump wastewater into the streets or into a nearby canal or ditch. In houses very close to canals sewage is dumped directly through pipes connected to houses.

Residents in the study areas are very concerned about the poor public health conditions resulting from the lack of sewerage systems and the inadequacies of methods they have to employ. Ezbat Osman residents attempt to improve wastewater drainage by installing very primitive pipe systems on side streets. Residents in this section said they were setting up sewerage lines so that when the sewer is extended down the central north/south street, connections would be easier. In all study areas where canals are present, residents will sometimes dig an open drainage ditch to absorb standing water and channel it into the nearest canal.

Most residents of case study areas interviewed were quite willing to pay for sewer connections but were not very optimistic that the city system would ever be extended to their vicinity. Their disposition toward self-help in provision of sewerage is very strong and residents intimated that they would be willing to install their own neighborhood networks if a main connector were extended to their communities.

Disposal of Solid Waste

Garbage is dumped into vacant areas of wider streets, trenches and canals. Residents say that they intermittently arrange pick-ups in individual streets or in the immediate areas around their homes but that the volume of waste is so large their efforts seem futile. When these efforts are undertaken the garbage is usually dumped in piles in the nearest open public space where it is scattered by the wind, or ground into the street by cars or people walking over it. In some areas, residents will pay to have garbage hauled to the neighborhood periphery and dumped into canals or trenches, or burned. When these efforts at removal are not mobilized by community members the degradation of the residential environment is extreme.

Many canals in Shubra al- Kheima are completely blocked and dried up by the massive quantity of garbage which has been discarded. Residents say that the government used to attempt clearing them but have not done so for at least one year. These canals are the source of wash water for many of the poorest residents of the area.

Some of the wider streets on the western periphery of Dar as-Salaam are virtually impassable because of the combination of standing water and non-biodegradable garbage. Narrow side streets in many sections of all study areas are relatively less obstructed than wider ones because they commonly serve as play areas for small children and residents make an effort to remove garbage to the ends of streets. Residents in one- and two-story dwellings located on three meter wide streets spend a good portion of the day sitting in their entries or congregating in the street with neighbors. The street in these areas is, in a sense, an extension of the dwelling and its semi-private usage often results in a greater responsibility on the behalf of residents to keep it unobstructed with garbage.

The World Bank is presently assisting in the development of a new solid waste collection facility as part of an upgrading project in Manshe'it Nassar. Although subsidized waste collection undertaken to date by the project has been successful, there are doubts that people will eventually be willing to pay for the full cost of the service as planned. An underlying problem is that Cairo's private sector garbage collectors, the

Zabalin, prefer to go to high income areas to obtain higher value waste materials. Also, waste materials contain large amounts of sand, which puts an additional load on donkey carts. Although the current fee of 15 to 30 piasters per household might be affordable, the long run solution of constructing a solid waste facility might increase the fee beyond the means of local residents (albeit, some of these costs could be covered by selling land currently being used for open housing of garbage or by utilizing general tax revenues).

Electricity

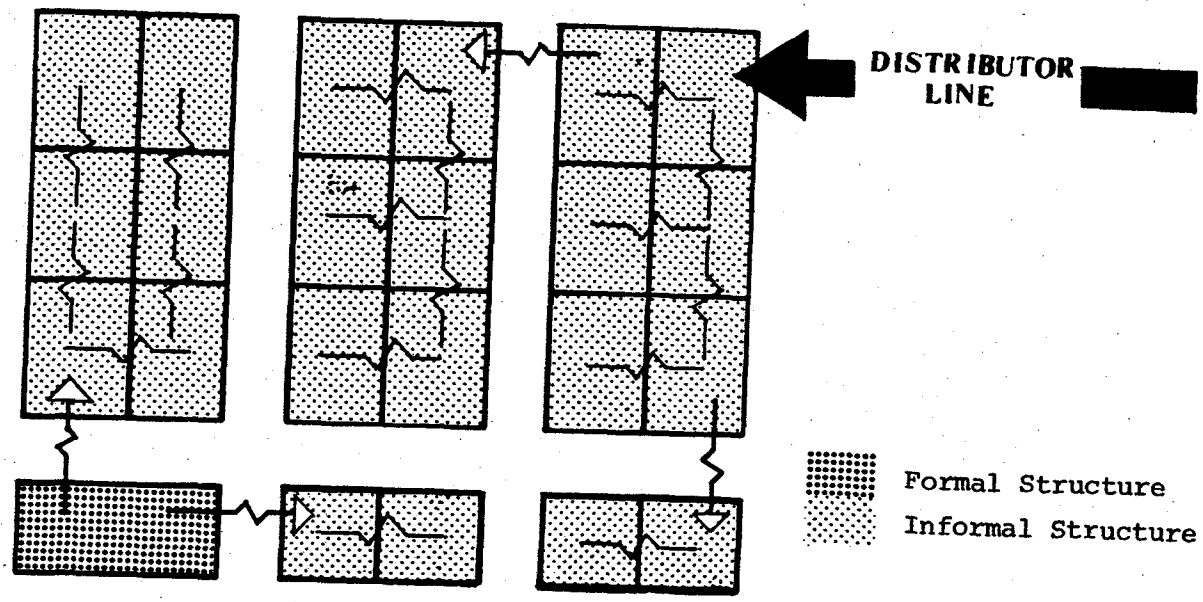
Under existing laws, all communities, formal or informal, must be given access to electricity. The government must supply principal power lines without charging individuals. Individuals are allowed to obtain a connection to any existing distribution point if their house is within a 250 meter radius of that power source. Installation takes an average of one month after payment of about LE 60. In other areas if ten or more people file a request with the Ministry of Power and are prepared to set aside 8 sq.m. for a distribution point, power will be provided within three to six months. For those on government land such as Basatin, the governor must make a request for special permission. Principal power lines were in existence in all case study areas when informal communities were established.

Many of the initial distribution points were built by farm owners or subdividers to service people living on their land. As informal neighborhoods expanded, residents outside of a service area would go to the local power company, request the installation of a distribution shed for their area, and share the cost of installation. Individual homeowners would then hire an electrician or plumber to install a house connection, paying for the wiring by the meter and the cost of electricity according to voltage required. Average cost of hook-up from a house to distribution station is LE 60. This process continues today. Figure 5-8 presents a schematic diagram indicating typical networking of electrical connections in formal and informal areas.

Once initial connections are made to one or two houses on a block, neighbors may extend connections into their unserviced houses and share the cost with the owner providing the connection.

Figure 5-8

Typical Networking of Electrical Connections in Informal Areas



Because of illegal connections, old wiring, and so forth, there are frequent power outages in both formal and informal areas (e.g., about three per week in Imbaba).

Social and Other Services

Tabulations were made from the household survey in Cairo and Beni Suef to estimate household access to services depending on whether or not the dewlling was formal or informal and whether or not the neighborhood was predominately formal or informal. Results of these tabulations are presented in Tables 5-5 and 5-6.

Patterns of access to services among different groups are similar to patterns of access to utilities and transport. Informal dwellings located in predominately formal neighborhoods are often as well or better served by neighborhood services than are formal dwellings located in formal neighborhoods. Dwellings located in informal neighborhoods are, however, nearly always less well served by neighborhood services than dwellings in formal neighborhoods.

Informal settlements which have grown up around existing villages, as in Giza and Qalyubiya, have access to the full range of services: shops, mosques, youth clubs, schools, and sometimes health units.

In other informal settlements, communities have to provide these facilities on a self-help basis or campaign for them, first at the local council then at the governorate level. Dar es-Salaam has provided itself with shops, mosques, private schools, and other services; the government has also built schools. The Governorate or Cairo tends to locate schools around the edge of the informal areas.

In these and other areas, the gradual evolution of their housing developments into communities creates common goals. Older residents in Shubra al-Ballad are pleased that their area has expanded and said that it is no longer an agricultural village but "...just as good as the rest of the city." The older residents will often participate in mobilization efforts to lobby for and help to manage the installation of a facility. Many of these people are small-scale businessmen who are willing to donate their management skills and will often supply discounted materials for construction of facilities to supplement subsidized ones provided by the government.

Mosques and Churches

Mosques and churches, the traditional nuclei for organized activities, are the social facilities which receive the most extensive self-help efforts in most areas.[1] Their establishment in an informal area is often the first sign of permanence to residents.

Mosques and churches are installed in a community either by the government and/or community associations or groups. Land is donated by an individual or expropriated by the government. The government will provide subsidized materials. With community donations and labor, a mosque can be constructed within a month or two.

Residents in Shubra al-Ballad said that a recently constructed mosque cost LE 10,000. They managed construction, hired laborers to undertake construction, and a contractor to install the roof. They had extended rooms on each side of the mosque to serve as a place for temporary housing for needy families and for a reception room for neighborhood gatherings.

In Shubra al-Kheima mosques are frequently built on canal banks because of the shortage of land within densely-built residential areas. Respondents said this pattern emerged because the land belongs to the Ministry of Agriculture and since agriculture has been discontinued the land could be used for building mosques.

The mosque or church usually serves as a facility for activities involving community assistance. No facilities were observed that were established solely for welfare purposes.

Public Health Facilities

Residents rely on existing clinics or hospitals in adjacent areas for health care. Clinics in industrial establishments are used by residents in Shubra al-Kheima. Private physicians have opened offices in apartment buildings, but no facility per se has been established by the community to house medical personnel. Some landlords say that they will sometimes offer reduced rent to a doctor who wants to establish an office in their neighborhood. Residents do not seem as concerned about establishing new health facilities as they are over the lack of ambulance service from

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[1] Note that access to mosques and churches (Tables 5-5 and 5-6) is very similar in both formal and informal neighborhoods.

Table 5-5

Access to Services for Formal and Informal Dwellings in Formal and Informal Neighborhoods -- Cairo (Percent of Dwellings in Each Category)

Dwelling less than 15 minutes away from:	Formal dwelling		Informal dwelling	
	Formal Neighborhood*	Informal Neighborhood	Formal Neighborhood*	Informal Neighborhood
Bakery/bread seller	94	88	97	91
Vegetable grocer	92	81	96	83
Butcher	84	78	86	80
Grocery	95	94	98	96
Hospital	57	53	41	32
Clinic	77	74	73	78
Primary school	85	70	97	79
Preparatory school	74	60	75	57
Secondary school	51	31	59	32
Police station	61	61	74	52
Garden/public park	30	31	31	18
Mosque/church	97	96	100	95
Telephone	72	48	81	54
Approximate sample size**	115	80	48	255

*Neighborhoods estimated to have more than 50 percent formal dwelling units.

**Sample size for "water" (see Table 5-3); sample size may vary slightly for other variables because of missing values.

Source: Weighted occupant survey

Table 5-6

Access to Services for Formal and Informal Dwellings in Formal and Informal Neighborhoods -- Beni Suef (Percent of Dwellings in Each Category)

Dwelling less than 15 minutes away from:	Formal dwelling		Informal dwelling	
	Formal Neighborhood*	Informal Neighborhood	Formal Neighborhood*	Informal Neighborhood
Bakery/bread seller	100	***	100	59
Vegetable grocer	97	***	79	56
Butcher	100	***	87	60
Grocery	100	***	100	80
Hospital	19	***	22	29
Clinic	56	***	35	41
Primary school	95	***	100	86
Preparatory school	81	***	79	43
Secondary school	24	***	38	22
Police station	58	***	74	39
Garden/public park	22	***	66	19
Mosque/church	100	***	100	94
Telephone	75	***	87	66
Approximate sample size**	31		13	186

*Neighborhoods estimated to have more than 50 percent formal dwelling units.

**Sample size for "water"; sample size may vary slightly for other variables because of missing values.

***Fewer than 5 observations.

Source: Weighted occupant survey

their areas to existing medical centers. They do not believe they can do anything about this until roads are improved to enable ambulances to enter their communities.

Education and Recreation Facilities

There were no informally provided schools observed in any of the case study areas but Quran instruction was available in mosques. Provision by the government of all forms of educational facilities to informal areas is lower than that in formal areas. Children attend existing schools within their communities or in adjacent communities. Residents depend on government provision and staffing of schools. Recreation for children is provided by private individuals who will set up play equipment like swings and, in larger areas, merry-go-rounds. Residents pay collectively to keep this temporary recreation facility in their neighborhoods. Children will sometimes organize youth clubs and play soccer or exercise in groups in public open spaces. If registered in a school, children will usually utilize playgrounds and stadiums provided as part of that facility.

Commercial Establishments

One of the great advantages of owning a three to five story building is that commercial space can be provided on the ground floor. Residents in the study areas have created a sufficient number of retail establishments to supply fresh and processed foods, household products, satisfying the daily needs of most families. Street vendors supply cooked foods and there are numerous coffee shops situated along the wider streets.

Respondents in Shubra al-Kheima say that it is very typical for a textile employee to work for five years and save money to rent a shop or install one in his own home and begin his own business. It is also common for men working in the Gulf to return home and start shops in these neighborhoods. Several establishments catering to construction needs of the community have been started over the past ten years. There are material suppliers, electricians, plumbers, metal workers in almost all of the study areas who began their businesses in response to the demand created by the informal building boom.

Communication

Communication facilities are practically non-existent in the study areas. The few post offices have been established by the government. Businessmen complain bitterly of the lack of telephone services. They say it costs them a substantial amount of money to send messengers to check on deliveries and pick-ups of materials.

Transport

Individuals within the community often supply transport services for moving building materials, furniture, or appliances. Because of the narrowness of many streets, items are often transported by an animal-drawn cart or by people. Shop owners will often send someone to pick up products from the distribution source because delivery would be difficult with the poor condition of roads and traffic congestion within communities. The government sometimes has arranged a mini-bus (Shubra al-Kheima) taxi to carry residents from their neighborhoods to the periphery where connections to other taxis or public transportation can be made. Private taxis rarely service these areas because of congestion.

Security

Some areas are poorly supplied with security services. The fraction of the population living within 15 minutes of a police station is comparatively low--52 percent of Cairo households in informal housing in informal areas and only 39 percent for the corresponding group in Beni Suef. Complaints were sometimes expressed to interviewers of high crime levels and few policemen in some informal areas.

CHAPTER 6

Land and Building Acquisition and the Building Process

This chapter examines the ways in which households seek out and acquire land or buildings, acquire building materials and labor, and undertake construction. Principal actors in the construction process, their methods of operation, and major cost elements are identified.

6.1 Land and Building Acquisition

Cairo

Households in the formal and informal sectors who choose to become owners tend to do so in somewhat different ways. More than half (57 percent) of formal owners, for example, purchase or otherwise acquire (e.g., through inheritance) existing dwellings rather than build on vacant land. Two thirds of those acquiring existing units claim not to have made major changes or additions subsequently. Informal owners, in contrast, tend to build on vacant land; 67 percent do so; of the remaining 33 percent who acquire existing dwellings, 57 percent of them claim to have subsequently made major additions or changes, the minority leaving units largely as they acquired them. Informal households, by choosing to either build on vacant land or to add incrementally to existing buildings, undoubtedly do so in part to match their temporal pattern of housing with that of their resources. The higher and possibly more stable incomes and greater assets of formal sector households enable them to purchase dwellings much closer to their ultimate aspiration levels than is the case for informal sector participants.

Once having acquired or built a dwelling, tenure patterns are also different in the two sectors. Among formal owners 28 percent claim to own only their dwelling units; 26 percent to own the dwelling unit and "part" of the building"; and 45 percent, the dwelling unit and all of the building. Among informal owners the corresponding proportions are: 21 percent, dwelling unit only; 9 percent, dwelling unit and part of the building; and 70 percent, dwelling unit and all of the building. Thus, partial building ownership, as occurs in the case of some housing cooperatives is far more prevalent among formal owners.

These differences in choices among formal and informal owners are reflected in their expressed reasons for choosing either lots or existing dwellings. Among owners that built on vacant land, for example, nearly three times as many informal as formal owners mentioned the low price of land as the major reason for choosing their land (28 percent versus 11 percent, respectively). By contrast, formal owners who purchased or acquired an existing dwelling were far more likely than informal owners to mention price as the major factor (20 percent versus 4 percent, respectively). Thus, informal households, who are more inclined to build than purchase, are more sensitive to the price of land than any other factor in selecting their land; formal households, who are more inclined to purchase than to build, are more sensitive to the price of existing housing than any other factor in selecting their property.

Next to price in affecting choice of land and existing buildings is inheritance. Among households that acquired an existing dwelling, significant fractions of both formal and informal owners (38 and 32 percent respectively) did so by inheritance. Among owners that built on land, smaller fractions acquired land by inheritance--18 percent of formal owners but only 5 percent of informal owners.

Other reasons for choosing land or buildings tended to be highly idiosyncratic. Modest fractions of owners in both the formal and informal sector who built on vacant land cited proximity to relatives or friends as the major reason for choosing their land (13 percent and 11 percent, respectively). Few formal or informal households cited convenience to infrastructure, services, or transportation as the principal reason for choosing a given piece of property. Expressed lack of concern about such factors may imply that many households feel that it is simply not worth the additional cost to achieve high levels of access to these services when initially choosing land or a dwelling. Thus households' budgetary constraints tend to dominate their property choices at the time most first choose land or a building.

Processes of search for land and buildings tend to be informal. Even among formal owners, few tended to rely on brokers (about 13 percent) or advertisements (about 5 percent) to find out about their property. Even smaller fractions of informal owners relied on these two sources combined. Reliance in both formal and informal sectors is on word of mouth and personal search.

When households find land to build on, more often than not it is identified as a "building lot"--76 percent of the time for formal builders and 59 percent of the time for informal builders. When not identified as a building lot, land is overwhelmingly identified as agricultural land (86 percent of the time for formal builders and 88 percent of the time for informal builders.

Most land and existing buildings that are not inherited tend to be directly purchased from the previous owner rather than either rented then purchased or acquired by squatting. Only 4 percent of formal owners and 6 percent of informal owners claimed to have obtained land by way of "hekr"--squatting with a subsequent possibility of legal ownership. In most cases the previous owner is a private individual. Among builders on vacant land, 61 percent of formal owners and 70 percent of informal owners acquired land from a private individual. Other principal previous owners were the government (4 percent of formal and 6 percent of informal owners), awqaf (5 percent of formal and 2 percent of informal owners), and unions, cooperatives, and "other" organizations or individuals (12 percent of formal and 19 percent of informal owners). Among those who acquired existing dwellings, the government was the previous owner in a sizeable fraction of cases (26 percent of formal and 40 percent of informal cases); private individuals were the previous owners for 60 and 40 percent of formal and informal households respectively; and awqaf or "other" organizations were previous owners for 10 and 35 percent of formal and informal households respectively.

Beni Suef

The processes of acquiring land and buildings in Beni Suef are similar in most respects to those in Cairo. An important difference, however, is that the comparatively slower growth in Beni Suef than in Cairo, especially in the villages surrounding Beni Suef city, implies less reliance on new construction on vacant land and more on the acquisition of existing buildings. Thus in both the formal and informal sectors only about one-quarter of all owners built on vacant land; 62 percent and 68 percent respectively of formal and informal owners acquired their dwellingsin substantially the same condition as their current condition.

Of households that acquired existing dwellings inheritance played the major role among both formal and informal households--52 percent of the former and 77 percent of the latter acquired dwellings through inheritance. As in Cairo, inheritance of land was important in the formal sector (45 percent of formal owners who subsequently built acquired land in this way) and unimportant in the informal sector (only 4 percent of informal owners who subsequently built inherited land). Aside from inheritance, most land or building transactions in both sectors involved sales by private individuals of "building lots" or property thought by respondents to be in "residential subdivisions." When land was not identified as a "building lot," it was overwhelmingly agricultural land.

As in Cairo, search processes tended to be informal with little reliance on brokers or advertisements. Aside from inheritance, reasons given for choosing a property tended generally to be diffuse. As in Cairo, however, many informal households who built on vacant land emphasized "low price" as the principal reason for choosing a site (21 percent of respondents), and also emphasized proximity to relatives and friends (26 percent of respondents). Also as in Cairo, infrastructure, services, and transportation were hardly ever mentioned by either formal or informal households as principal reasons for choosing land or buildings.

6.2 The Building Process

The supply side of the housing market is made up of a combination of individuals providing their own services in designing, building, or supervising construction and firms (including government entities) that provide services and materials for construction. The following sections describe the roles of each and the conditions they confront in undertaking building activities.

Building Materials

No one involved in building currently appears to have any great difficulty in obtaining materials. Formal sector contractors are able to use subsidized, government-controlled supplies. The informal

sector contractors use materials from private distributors, more expensive in terms of out of pocket costs but much more quickly acquired. Many choose to build units without building permits and, therefore, without cheap supplies because of delays involved in the official process. Access to private open market supplies is almost immediate. Spot shortages in this market sometimes develop but these appear to be short-lived. These private distributors cover the gamut from legal to black market operations. The former include both public and private sector distributors selling materials obtained legally at regulated but non-subsidized prices. The latter include distributors of materials obtained at subsidized prices who sell them at a profit in the open market. These materials may be obtained initially from contractors who inflate their estimates of material needs when applying for building permits.[1] Alternatively, contractors with permits will use non-subsidized materials to minimize delays, and then sell the subsidized materials when they finally arrive at market prices to recoup their original expenditure. One respondent was caught doing this and required to pay a LE 200 fine (J.1).

To quote one contractor: "I get all my supplies from the open market. It is cheaper because some suppliers give good credit terms and sometimes I can save on transportation by bribing drivers." However, many other informal contractors and distributors must pay cash in advance for their supplies.

The prevailing attitude seems to be that it is more economical to build at today's prices and wage rates than to delay and possibly forego the opportunity of providing one's self with a home before inflation makes doing so an impossibility for a lower or lower-middle income family.

The stockpiling of materials is not common. Most builders of low-cost, informal dwellings obtain their materials from small-scale

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[1] Among surveyed formal owners who built, however, none reported having obtained allotments of more building materials than they needed. Given the candor with which households responded to most questions regarding illegal activities, it is tempting to take this finding at face value (or at least as an approximation). This would suggest, as many interviewees alleged or inferred, that principal sources of black market materials were not individual owners but rather large contractors or either domestic primary suppliers or large importers.

distributors (many homebuilders in the case study areas in Cairo sell glass, wood, and metal framing to obtain extra income) or intermediate-level suppliers in the vicinity of the areas where they live.

A reinforced iron bar supplier in Cairo who was interviewed has a permit to receive 40 tons of subsidized iron per month. It costs LE 2 to renew the permit annually. He only makes 5 percent on the controlled prices. He started importing iron 6 years ago and can obtain it at very short notice.

The government can sometimes have an impact on overall supply. One contractor reported that it was much more difficult to obtain cement when the government tightly controlled its supply in 1977-1979.

Supply problems can be measured by the spread between controlled and open market prices. Currently reported prices for key building materials are given in Table 6-1. For example, cement, for which the government price is about half the open market price, appears to be in comparatively shorter supply than does steel, for which open market prices were often reported to be barely above the official prices. While comparisons of the spread between official and black market prices is bound to be somewhat tenuous, it does appear that key materials are in comparatively more abundant supply now than has been the case in the recent past. Table 6-2 indicates estimated official, world, black market, and maximum spot market prices of key materials during 1976-78 as reported by Wheaton (1981). Comparison of Wheaton's figures for cement suggest that the ratio of black market to official prices has been reduced from roughly 2.5 to one in 1976-78 to 2 to one at present; for steel (re-bar), black market to official prices from about 1.3 to one to nearer 1.1 (or less) to one.[1] While these results should be viewed cautiously, there was ample evidence in interviews with materials suppliers that materials availability has improved within the past several years.

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[1] While the range of black market prices given by interviewees extended to LE 400 per ton for re-bars, most estimates were in the LE 325 to LE 350 range; thus the LE 400 price is likely to more nearly approximate Wheaton's "highest spot market price."

Table 6-1

Materials Used in Informal Housing Construction

MATERIAL		USE		SOURCE	PRICE
*	Mud Brick (unfired)	Brick form) nonformed)	walls	Local brickmaker, fields canal banks, etc.	LE 15/1,000
**	Red Brick (fired)	Whole new) and used)	walls, foundation	Brick distributor and salvage from bldg. sites	LE 30-65/ 1,000
	Cement	Concrete mix for foundations, beams and pillars		Government and market	About LE 70/ ton--open About LE 35 government LE 45 government/white cement
***	Stone	Foundations, walls		Quarry or building site	Variable
	Gypsum & Mastic	Interior and exterior wall coating		Government and market	LE 100/ton--open market LE 20/ton--government
****	Steel reinforcing rods (re-bars)	Structural reinforcement		Government and market	LE 325-400/ ton--open LE 310-330/ ton--government
	Wood	Doors, window frames & shutters (assembled or not assembled)		Market	Variable by size & type
	Glass	Windows, doors		Market	LE 2 1/2/m^2
	Eastern toilet			Regular market	LE 14.50
	Western toilet			Regular market	LE 15

Table 6-1 (cont'd)

Materials Used in Informal Housing Construction

MATERIAL	USE	SOURCE	PRICE
Water closet for toilets		Regular market	LE 45
Sink		Regular market	LE 9-11
Tiles		Regular market	LE 4.50/44

* Used primarily in urban periphery areas and around villages.
** Prices much higher for smaller quantities.
*** When used for walls--usually in areas near quarry.
**** Variation in price reflects different diameters.

Source: In-depth interviews, 1981.

Table 6-2

Alternative Material Prices 1976-1978[1]

Material	Official Price	World Price	Average Black Market	Highest Spot Market
Cement	18 LE/ton	34	45	90
Steel	150 LE/ton	180	190	220
Wood	120 LE/m^3	140	180	210
Glass	0.85/m^2	1.6	2.0	3.0

[1]Source: William C. Wheaton, "Housing Policies and Urban Markets' in Developing Countries: The Egyptian Experience," Journal of Urban Economics, Vol. 9, 1981, p. 246.

Despite these improvements it is apparent that shortages continue to exist periodically, raising the cost of construction particularly for informal housing. Moreover, to the extent that official prices for key materials continue to be lower than world prices, it is likely that demand for "official" materials is artificially increased--reducing supply and raising prices to the informal sector.

Despite the existence of occasional shortages in key building materials, effects of shortages are sometimes mitigated by varying mixes of construction materials. For example, cement and re-bars are marginal substitutes for each other; when the price of one rises relative to the other, the second tends to be substituted for the first.

There is particular government concern with the use of topsoil to make bricks, yet bricks are readily available and few are made with other materials. Members of the study team visited a small brick works near Beni Suef, beside a canal and surrounded by arable land. These sun-dried mud-bricks were sold for LE 15 per 1,000, and baked bricks for LE 30 per 1000. Trucks and carts came from the town to collect the bricks. Five men and a number of children produced about 2,000 bricks per day. There is resistance from suppliers to using other types of bricks which are being produced legally. For example, an architectural contractor in Ezbat en-Nakhl claimed that gypsum bricks are not durable, and that shale bricks are too heavy to be conveniently handled.

The quality of some of the less important foreign imports is often higher. Glass from Belgium, Switzerland and Britain and paint from China, Germany and Czechoslovakia tend to be of higher quality. Imported re-bars are of better quality: the length is stable, sections are exactly round, the outside surface is smooth, and they are stronger and more malleable. However, Egyptian cement is reported to be superior to imports from China, Japan, India and Spain.

Most of the distributors interviewed who serviced the informal sector operated on a very small scale. A typical cement dealer in Esbat en-Nakhl sold less than 10 tons of cement per month. As with all imported commodities, the price is regulated such that he cannot achieve any price advantage over his competitors. His profit margin is

allegedly 2 percent. He does not stockpile materials because he has neither the space nor the financial capacity. Another small distributor in Bulaq ad-Dakrur obtains cement from owners and contractors who have excess cement obtained at subsidized prices for formal sector construction. His profit margin is obviously unregulated.

A contractor in Mit Oqba indicated that while most distributors of a particular commodity charge roughly the same price, there is considerable variation in quality.

Labor

Labor for the simpler housing is readily available. It is recruited from cafes and other gathering places, sometimes directly by the contractor, sometimes by his foreman (H.5, J.1). Few contractors have large permanent labor forces; the smaller ones have none at all. A typical small contractor has a core team that he uses on a part-time basis, whenever there is work. However, there were some cases of much larger informal sector operations, including a land developer who claimed to employ 150 construction laborers.

The quality of labor is generally adequate for lower quality housing. Many do complain of a lack of skilled trade labor. One carpenter said he frequently turned down work because he could not get adequately skilled labor. As has been well documented, skilled tradesmen can easily be tempted to go to other Arab countries (J.2).

Some steps are being taken to improve the supply of skilled labor. The headmaster of the Dar as-Salaam Technical School for Building and Construction said that his school was one of the first of its kind in Egypt. It emphasized practical studies, some lasting 3 to 5 months, others many years. He complained of a lack of suitable teachers (D.8). Many students went to other Arab countries when they qualified, returning after a few years to start businesses. He hoped to expand the school to 1,500 students.

Many cases were reported of the same contractors and laborers working in both the formal and informal sector, and charging somewhat lower rates in the latter (G.3). This is particularly true when doing work for friends and relatives, as is often the case in informal sector

work. Within the informal sector, the ranges of rates are given in Table 6-3. Supervisors are often paid by the month--about LE 250. Laborers may also be paid on square meters of output. The rates for Beni Suef are about LE 1 per day less.

According to one contractor "Ninety-nine percent do not have social security." The employee is supposed to pay 8 percent and his employer 15 percent.

Construction

A dwelling unit or structure is defined as informal when it is constructed without a building permit being obtained and/or when building codes are not followed. An informal structure may be designed and constructed by the individual owner and laborers hired by him, by laborers and a site manager contracted by the owner, or by a contractor who takes responsibility for the entire construction process. The services of a professional may be used, usually in the case of larger buildings requiring structural design, or not used at all, as tends to be the case for buildings under 3 stories. Materials for construction of informal units and structures are obtained from the regular and black markets at competitive prices. Five major types of informal dwellings have been identified in the study areas and are presented in Table 6.4.

Dwelling Characteristics

Most dwelling units are permanent structures built on land owned by the real property owner. The exceptions are Types A(1) and E.

Most Type A and B dwellings (one or two stories) are owner occupied, used almost exclusively for residential purposes, and were built by the owner and his family or the owner and hired labor. A small number of dwellings are under construction by laborers and a site manager. Construction responsibility is dependent upon the dwelling owner's free time and availability of funds. These housing types are usually built by low to lower middle income groups primarily to meet immediate shelter needs rather than as investment in rental units, although the latter case

Table 6-3

Labor Rates in the Informal Sector (1981)
(LE/day)

	LE/Day
Reinforced concrete carpenter	3-7
Reinforced concrete blacksmith	2-6
Reinforced concrete laborer	1-6
Plasterer	8
Bricklayer	5-12
Tiler (walls)	15
Tiler (floors)	10
General laborer	3-4
Painter	3-4
Plumber	10-20
Electrician	6-10

Source: In-depth interviews, 1981.

Table 6-4

Types of Informal Housing--Case Study Areas

Type Category	DWELLING TYPE	Temporary	Permanent	OCCUPANCY	OWNER PRESENT & OCCUPYING ONE OR MORE DWELLING UNITS	LAND OWNED BY DWELLING OWNER	DWELLING USE	BUILDER OF DWELLING			INVESTMENT PURPOSE		
								Owner & Family	Owner & Laborers	Contractor	Family Shelter	Residential Property (Rental)	Commercial Property (Rental)
A	(1) 1 story	X		single family	X		Res.	X			X		
A	(2) 1 story	X		multi-family	X		Res.	X			X		
A	(3) 1 story		X	single family	X	X	Res.	X	X		X		
A	(4) 1 story		X	multi-family	X	X	Res.	X	X		X		
B	(5) 2 stories		X	single family	X	X	Res.	X	X		X		
B	(6) 2 stories		X	multi-family	X	X	Res.	X	X		X		
C	(7) 3 to 5 stories		X	multi-family	X	X	Res.		X	X	X		
C	(8) 3 to 5 stories		X	multi-family		X	Res.		X	X			
C	(9) 3 to 5 stories		X	multi-family	X	X	Res. & Commer.		X	X	X	X	X
C	(10) 3 to 5 stories		X	multi-family		X	Res. & Commer.		X	X		X	X
D	(11) 5 stories and more		X	multi-storey	X	X	Res.			X	X	X	
D	(12) 5 stories and more		X	multi-family		X	Res.			X		X	
D	(13) 5 stories and more		X	multi-family	X	X	Res. & Commer.			X	X	X	X
D	(14) 5 stories and more		X	multi-family		X	Res. & Commer.			X		X	X

E

OTHER TYPES OF INFORMAL DWELLING UNITS:

(15) single or multiple room additions (permitted by building code) to existing

- 15.a Formal Residential Building
- 15.b Formal Residential/Commercial Building
- 15.c Formal Industrial or Commercial Building

(16) additional floors containing one or more units (not permitted by building code) in formal buildings.

does exist. Housing designs are basically urban adaptations of rural types and are found in the older sections and peripheral (agricultural) areas, along canals (particularly A(1)), and along narrow side streets.

The Type C dwellings (3 to 5 stories) are owner occupied when used to provide shelter for the nuclear and extended family but not necessarily owner occupied when used as a residential or residential/ commercial rental property. The most common usage of this building type is C(9) because many working class people consider a dwelling which provides them with shelter and steady rental income as a sound investment with tangible returns. Of the owners interviewed in Shubra al-Kheima, many were older residents who had accumulated capital through working as industrial laborers and had phased the construction of their homes over a ten to fifteen year period. Many of the residents interviewed in all study areas had accumulated capital through working abroad in the Persian Gulf States and were constructing over a period of months or only a few years. Individuals with enough capital to invest in a rental property will sometimes build a Type C(10) dwelling.

Many of the older Type C dwellings are actually Type A and B dwellings which have been upgraded and vertically extended. Owners often design building components and take part in the phased construction of Type C dwellings. Type C dwellings are located in most sections of the study areas and are not confined to major arterials or wider streets, although there is a higher incidence of C(9) and C(10) type on major thoroughfares or on busy side streets because of the commercial potential of these locations. In older traditional sections, A and B types are being upgraded to C types and in recently developed areas this type is becoming predominant because of the constriction in the land market, rising land prices, and the prospect of higher rental incomes.

Type D dwellings (5 story and higher) include units which are used as residential rental or condominium units; two of the four sub-types include units which are rented or sold for commercial use. They may or may not be owner occupied. Since this dwelling type requires a rather substantial capital investment, it may usually be financed by persons who are primarily entrepeneurs, a group of investors profiting

well from the informal housing market. Construction of this type is undertaken by a contractor employing both skilled and unskilled labor and utilizing professionals to meet more complex engineering requirements. Often undistinguishable from formally constructed buildings, type D structures are situated on main arterials or in areas adjacent to them. They are usually middle- and middle-upper income areas.

Type E dwelling units (room and floor additions) provide shelter for a variety of income groups and their construction is usually contingent upon the permission of the owner of the dwelling or structure to which these additions are made. Sub-types 15(a) and 15(b) may include a penthouse built on the upper floor of a formal building, a shack built on the upper floor of a dilapidated formal or informal building, etc. Sub-type 15(c) may consist of a two-room appendage to a factory or department store which is inhabited by an employee of that establishment. Sub-type 16 may include an addition of one or more floors on the top of a medium-rise apartment building or the inclusion of three additional floors in a newly-constructed formal residential/commercial building.

Type A and B dwellings are the predominant type found in most areas (ES Parsons 1980, p.2-14/CAPMAS, 1976). A substantial number of people said they began to upgrade and vertically extend these types in the early and mid-1970s when demand for apartments increased dramatically. It was the popularity and economic viability of the A and B type dwellings that resulted in extensive horizontal expansion of informal areas in the 1970s. Although the trend of building Type A and B dwellings continues both in Cairo and Beni Suef, rising land costs, the increased and steady demand for rental units will almost certainly lead to a higher proportion of the informal housing stock being comprised of Types C, D and E. Site observations and the scanning and occupant surveys confirm this : a substantial number of A and B dwellings are being vertically extended and upgraded and most new buildings being constructed are intended to be higher than 2 and 3 stories.

Landowners frequently hold the land for some time before they wish or are able to build. Twenty five percent of Cairo owners had held their land for five of more years before developing it; the median

length of time before development in Cairo was about 2 years. In Beni Suef, holding periods before development were shorter--a median of one year with half of all builders on vacant land having held land for from 6 to 36 months before developing it.

The owner of the land usually hires a contractor to construct his property, although all the contractors contacted had built their own homes on their own land and some had been subdividers. Owners often bought the materials but only infrequently provided any labor. For example, among Cairo owners that built on vacant land only 7 and 11 percent respectively of formal and informal owners said that either they or relatives actually carried out construction. Among formal owners, contractors generally carried out the work (76 percent of cases) although sometimes work was done by gangs of workmen supervised by the owner (17 percent of cases). Among informal owners, this latter method was most prevalent (45 percent of cases) with only slightly fewer owners (40 percent) reporting that a contractor actually carried out construction. These figures suggest that there is at present only a limited role for self-help in construction activities.

The services of an architect or an engineer are required to obtain a building permit in the formal sector. Hardly a single contractor or owner employed an architect to design an informally constructed house. In 47 percent of Cairo informal household cases the building contractor did the design; in 31 percent of cases the household head did the design. In Beni Suef, owners themselves and contractors together designed 67 percent of informal houses, the remainder being done by friends and relatives and architects or engineers.

Informal contractors tend to use cheaper labor--a semi-skilled man to do a skilled man's job. There are savings to be made on materials too. As one contractor said: "If prices go up, I decrease the amount of expensive materials. I like turnkey projects. I make more profit using fewer re-bars, less cement, and poorer bricks." Another gave more detail: "I use fewer than the required 4 iron bars per square meter of cross section; put in stirrups every 40 cm. instead of every 25 cm." One claimed he could cheat an owner even if the owner bought the materials.

The luxurious buildings were alleged to have a lower labor proportion (10 percent) than popular units (15 percent) with a significantly larger portion of better housing cost being devoted to interior finishing (cabinetry, wall and floor finishing materials, plumbing, and electrical fittings). Total costs are about the same in Cairo and Beni Suef. Labor is slightly cheaper in Beni Suef, but materials slightly more expensive.

One Cairo-wide general contractor costed out a popular dwelling unit of 50 sq.m.:

	LE
8,000 bricks (4 truckloads)	320
Bricklaying	80
Cement	86
$9m^3$ concrete	500
Carpentry of doors, windows	300
Painting and plastering	250
Plumbing	200
Floors and tiles	200
Electrical fittings	50
Total	1,986

These cost figures may be compared to those of public and cooperative housing. The least expensive public sector units currently under construction in Cairo are at Birket at LE 3,000 to LE 4.500 (these costs are exclusive of land costs since Governorate land, which is assumed to be free, is being used). Cooperative housing tends to range from LE 5,000 to LE 10,000, attracting government subsidies for interest on loans for the 100 sq.m. units at the lower end of that range.

Finance

Formal financial institutions in Egypt have a limited reach. Despite overall economic growth, as measured by real household incomes, household savings, asset formation and activities of the general banking system--all of which register increases, the level of formal, home mortgage funds has remained stagnant. In 1977 and 1979, the primary source of funds for home mortgage lending institutions in Egypt continued to be Central Bank allocations (Pratt Associates 1979, PADCO 1981). In other words, the housing finance institutions were unable to mobilize household savings.

Respondents differed as to the relative quality of formal and informal housing. Formal sector participants believed informal housing to be at a far lower standard because of the lack of architect/engineering professional input and use of untrained labor. However, the lack of formal sector housing at comparable construction costs makes such comparisons almost meaningless, and in fact, team members observed very poor quality formal sector buildings. One general contractor, a former teacher in a technical school, said "Informal buildings are overdesigned by 50 percent in every aspect--if there is no engineer on the job." A Mit Oqba contractor asserted: "More formal buildings collapse than informal."

A Dar as-Salaam contractor advised that in terms of quality there is no useful distinction between informal and formal buildings: "The only meaningful distinction is between 'popular' and 'luxurious' housing."

The rate at which buildings are constructed depends upon the availability of the owner's funds. Interviewers frequently heard of a construction rate of 1 to 2 months per floor for popular housing. One 5 story building had been erected in 6 months although another in the same area took 18 months. The availability of materials and labor per se appeared to have only a modest impact on the rate of construction.

Perceptions of problems encountered during construction differed predictably between formal and informal owners. Among the former, the major problems were "shortage of building materials" (24 percent), "shortage of skilled labor" (10 percent), and "being hassled by authorities (8 percent). Among the latter, major problems were "shortage of building materials" (42 percent), "shortage of money" (17 percent), and "getting water to the site" (11 percent).

Overall building costs were generally discussed by interviewees in terms of three categories, costs for which were estimated to range as follows:

	LE/sq.m.
Popular	30-50
Average	60-70
Luxurious	80-100

Many obtain seed capital by selling inherited land or by spending a period of time in other Arab countries earning up to 10 times their Egyptian salaries. One owner managed to save LE 10,000 in 5 years in Saudi Arabia. Almost half the contractors and subcontractors began in the same way with less spectacular savings.

Sometimes the landowner supplies credit to purchasers. Bulaq ad-Dakrur and Ezbat en-Nakhl respondents reported land sold on the basis of a 30 to 50 percent down payment with 2 to 4 years to repay the loan, and 12 percent interest.

Owners tend to give contractors between 20 and 30 percent advances, with additional payments as floors are completed. Contractors similarly give advances to subcontractors, one plumber reporting that 50 percent downpayments were common.

In Kafr el-Gabal there were three types of sales throughout the supply process: "be'ia beda" (literally, white cash), "be'ia balga" (half cash), and "be'ia soda" (all credit). Interest for this informal credit was 5 percent.[1]

Although there were few complaints concerning a lack of finance, it is clear that the rate at which it was available, usually on a windfall or transitory basis, determined the rate of land development and construction. This is discussed at greater length in Chapter 8.

Marketing

Throughout the supply side of the informal sector, marketing is by family connection and other personal contact. Only one participant interviewed, a subdivider, used newspaper advertisements.

The Kafr el-Gabal community study (see Appendix 3) describes the roles of three local families and their control of the informal housing sector in the area. A major point of contact for these families was the local soccer team; a member of one was the captain.

Other studies, confirmed by some of this study's in-depth interviews, indicate that informal settlements or parts of these settlements are dominated by people from a particular tribe, region or group of villages, with many of the old networks and informal political and business systems intact.

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[1] Loans are available at 7 percent in the AID supported Helwan Project, with repayments at the rate of 25 percent of income. The loans are targeted at people with an annual income of LE 900.

Several consequences follow from this situation for the low and moderate income groups. First, the relatively small amount of funds available for mortgages from the central does not reach a broad spectrum of households. Instead they are channeled to a few upper income households. For the majority, formal sector housing finance is not relevant. Second, mortgage funds are made available to formal housing. To be eligible for credit, the housing must be in the 'formal' sector, i.e. the household must have legal title to the land, use building permits and 'formal' construction methods. Consequently, much of this credit is provided to cooperative housing, hotels, etc. Third, the income distribution typical of a developing country such as Egypt is non-egalitarian and 'tilts' these mortgage funds to the upper income groups. Thus, 68 percent of the mortgages that were executed in 1977 by the Credit Foncier were for loans in excess of LE 10,000 (Pratt Associates, 1979). This figure is well beyond the reach of most urban households--whose median 1981 income was approximately one-tenth that level. (See Chapter 8 for a more extended analysis of income and "affordability" of housing).

Informal suppliers are faced with similar problems. Of all interviewed direct participants in the construction process only two had ever dealt with a bank. A Nasr City subcontractor once borrowed LE 5,000. He had to supply his academic record, social record, and a resume of past experience and provide some security. The interest rate was 14 percent. A Dar as-Salaam electrical goods supplier said that he occasonally dealt with banks. The banks will only extend credit on the basis of registered land or buildings on registered land.

Even when suppliers might qualify for credit, they may not apply. Some do not understand or trust financial institutions. Some believe that formal institutions are not flexible enough to respond to the erratic income stream of informal suppliers, and are likely to foreclose after the first late payment. Others are reluctant to get involved with formal institutions because so many of the activities in which they are involved (including tax evasion) are illegal, and thought best to remain undocumented (M.7).

All of these factors restrict the ability of informal suppliers to provide credit to homeowners, except on a short-term basis. Informal homeowners and suppliers rely, instead mainly on their own savings, often accumulated over short periods of time.