

Researching the Nile Valley

The Nile Valley covers merely 5% of Egypt's territory, while at the same time providing a living environment for 95% of the country's population. This thousand kilometer long and fertile strip of land embedded within the smooth topography of the valley forms a unique cultural landscape, birth-place to one of the world's most ancient civilizations. Since ancient times, life in the Nile Valley is only enabled by the waters on the Nile river whose scarcity produces a sharp edge to the barren desert.

Today, this 'linear oasis' experiences strong population growth while its economy is still based on traditional small-scale agriculture. Within a living environment restricted by the Nile's limited water resources, urbanization almost always occurs at the expense of productive farming land. In one of the most fertile regions of the world, food self-sufficiency is increasingly threatened. Meanwhile, global modes of production and distribution have arrived in the Nile Valley but unaccompanied by integrative force. Pre-industrial modes of life meet global dreams of luxury in a region that seems not to have found its place yet in a globalized world. Yet, perhaps the most stunning observation in the Nile Valley is that despite enormous pressures, the region maintains a relative stability.

ETH Studio Basel has travelled to Egypt to research—within a predefined section of the Nile Valley—this specific mode of urbanization.

Nile Valley on ETH Studio Basel website:

Student Work

<http://www.studio-basel.com/Projects/Nile-Valley/Student-Work.html>

Dr. Arnold Hottinger, 'Egypt in the Network of Globalization', video lecture

<http://www.studio-basel.com/Events/Public-Talks/Aegypten-im-Netz-der-Globalisierung.html>

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URBANIZATION OF
LIMITED RESOURCES

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عملية التمدن في ظل محدودية المصادر

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URBANIZATION OF LIMITED RESOURCES

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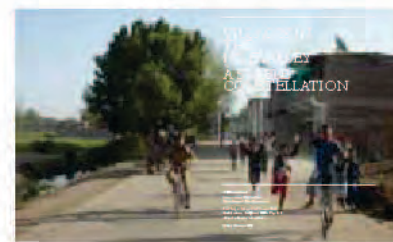
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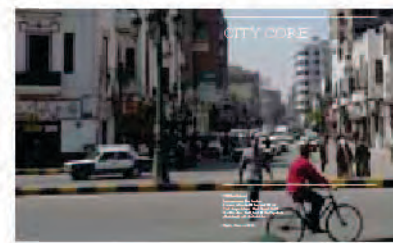
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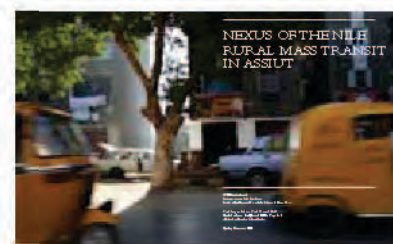
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INVESTIGATING SPECIFICITY

ETH Studio Basel has been working for five years on urban portraits of international metropolises. This research was part of a joint program dealing with “specificity”: Our aim was to show why cities that are drawn into the undertow of global developments do not, as might be expected, become immersed in placeless uniformity, but develop new differentiations. In the most general sense, this research raised the question of which role “identity” will play in a world that tends to set off similar mechanisms of urban development across the globe. In brief, the results can be summarized as follows: The differences and specificities that these metropolises develop are different from the traditional hallmarks of identity in organically evolved cities. But they have retained the dual – and ambiguous – character that has always distinguished the special traits of cities. The new qualities, of course, also exhibit the characteristics of a “culture of difference”; they showcase the determination of an urban society to establish non-exchangeability, i.e., identity, under the new conditions. But urban differentiation is by no means only a matter of agenda. Differences that are not the result of intentional action are evidence of the fact that globalization is inevitably subject to the physical nature of the location and the anthropological conditions. Globalization can neither overcome topography or the climate, nor can it exceed the limitations of resources or the local exposure to the forces of nature. “Specificity”, one might say, is also the doomed attempt of mankind to shed the bonds of discrete, conditional existence completely in favor of a global promise.

The research in Assiut has slightly shifted the emphasis. We realized that in studying this city, we would not be looking at a focal point of global urbanization. The city would be considerably smaller, with rural, agrarian aspects playing a significant role. Essentially, however, we were seeking neither the exceptional place nor the metropolis: We were interested in the linear settlement space along the Nile that leads to one of the world’s largest metropolises. Above all, Assiut is a cross-section of a 1,400-km agrarian valley – a section that takes on the character of a city here and in other places. The interesting thing about it is how this monumental riverine oasis has taken recourse to the most archaic of agrarian traditions in responding to the dramatic upheavals Egypt has experienced in the past 40 years. This question was of interest to us because due to its spectacular population growth, Egypt is not only confronted with serious challenges of agricultural production, but also faces a severe shortage of settlement space due to biogeographical limitations. The capital, Cairo, has earned an international reputation for its explosive growth of epic proportions. Would the valley be “agro-urbanized” next? If so, in which way? We were interested in studying the extent to which Egypt’s strictly limited settlement space gives way to the pressure of urbanization and whether the thus transformed agricultural sector would become part of a new urban equilibrium.

The results were quite surprising. To put it simply, the transformation of the valley is taking place at a remarkably unagitated rate, in a comparatively controlled manner, and above all while preserving the ultimately agrarian fundamental structure. It is astonishing to see how much of the expertise is locally based, recalling rural-collective models of self-organization, and how comparatively effective the impact of these local jurisdictions is. The agricultural technology, limited mainly by the availability of water, is reformed at



best, but certainly not subjected to radical rationalization. While the statistic does show that here, too, population growth is considerable, this development leaves almost none of the footprints of hasty and uncontrolled settlement as seen in other zones with strong growth. The only evidence of a completely new urbanization strategy imposed by the capital, namely the new city in the desert, has left the old city practically unaffected; also, it is not fully inhabited. Conversely, the agrarian villages surrounding Assiut seem to be experiencing growth that is almost inconspicuous and organic.

The fact that Assiut itself, which is after all one of the country's largest cities, hardly exhibits any evidence of informal or precarious growth can be regarded as unexpected, given the country's steep population growth. None of the city's multiple transformation processes, which are mostly modest and oriented towards the existing structures, give any intimation at all of the dramatic developments underway only a few hundred kilometers away in the nation's capital. Neither is its own growth immediately eye-catching. Our research unearthed no indications that the valley is directly linked to the global cycle; often, not even the national authority, or that of the central state, are clearly discernible. Thus, it seems that even in a highly centralized state with explosive demographic and economic problems, a truncated and cryptic form of "pressure equalization" takes place between the metropolis and the surrounding territory that is as yet not fully understood. For instance, we know almost nothing about the reality of migration behavior in Egypt, about commuters, or about the real-life economic conditions of private households affected by such movements. No satisfactory statistical information is available for any of these issues. Although Cairo and Assiut are 600km apart, it is certain that the developments in the two cities influence one another and stand in sharp mutual contrast. Further study would be required to understand the underlying mechanisms. Such research would most likely shed an unexpected light on "town-country problems" under the conditions of globalization.

This work has shown us that, while we now understand quite a bit about the mechanisms governing large and very large cities, we know very little about how these forces of the center interact with the hinterland. As the research in Assiut has shown, processes that are clearly traditional in nature can be preserved in the countryside even when the associated centers are subject to exceptional transformation pressure. The specificity of Assiut is ultimately reflected in the way the city has managed to defy these forces. Accordingly, the investigations on water, agriculture, mobility, or spatial organization are almost ethnographic in nature, considering the way social organization is geared more towards tradition than towards the future, although it can nevertheless be expected to be subjected to massive transformation pressure in the future. For us, however, the research has mainly helped to direct our interests away from the metropolitan centers towards the surrounding territories. What does it really mean when a territory, the space between the metropolises, is indeed subjected to the undertow of globalization?

Marcel Meili, 2009

NILE VALLEY: A LINEAR RURAL URBANIZATION

The Nile Valley covers merely 5% of Egypt's territory, while providing a living environment for 95% of the country's population. This thousand kilometer long and fertile strip of land embedded in smooth valley topography bordering the desert allowed the genesis of civilizations dating back as far as 3000 B.C. Today, the sublime beauty of this 'linear oasis' meandering through the Sahara is still recognizable, a testament to the extraordinary achievements of its ancient cultures. Throughout the 19th and the 20th centuries, modernization processes have tremendously transformed Egypt and the Nile Valley with multiple layers of urbanization and new technologies in agriculture and water management. This growth reflected the significant political and economical breaks that society repeatedly underwent, from the period of Muhammad Ali, to the British protectorate, to independence under Nasser, Sadat, and since 1981, Hosni Mubarak.

Today, Egypt is considered a developing country drawing main economic revenue from pass-tolls of the Suez Canal, the real estate market, and the tourist sector. However, main challenges to the country's development still remain the scarcity of water, land, and above all, a rapid population growth of more than one million people each year. Egyptian society is also experiencing an increasing social and economic divide, with the formation of new and affluent elites, while much of the population continue to live in poverty. Governmental apparatus and economic management are strongly centralized and concentrated on the Greater Region of Cairo. In contrast, the major agricultural regions of Upper Egypt and in the Nile Valley seem to hold less political power and legal means for controlling their future. In this situation, various informal energies emerge and coalesce into a vital, self-sustaining mechanism. Informal housing composes much of new construction in Egypt and the Nile Valley, executed in a way that appears more advanced than elsewhere in the developing world. The massive demand for housing is also not met through the so-called New Town or New Settlement program, run by the state since the 1970s. Developed through three generations of cities spread along the Nile Valley on desert land, the program continues to target an upper middle class and is incompatible with actual family needs.

This research project examines the Nile Valley as neither a rural nor urban condition. Rather, the region is seen as an example of contemporary changing urbanization within a complete economic stasis. It is an urbanization paradox in which a rapidly increasing population coupled with extremely limited economic means creates an environment forced to 'move forward within its stagnation'.

TERRITORIAL RESEARCH: 10 KM × 30 KM ASSIUT

After several years of investigation in international metropolises, this semester we focused on a new field of contemporary urbanization: like an expedition starting in Cairo, we explored the oldest valley in the world, the linear oasis along the Nile. From the earliest civilizations up until present day, the urbanization processes in the Nile Valley have generated a complex and specific territorial organization under extreme geographical limitations. The research unfolded in the region of Upper Egypt where the cities of El Minya and Assiut act as the largest regional centers. The project focuses on a section of the Nile Valley within a 50 kilometer radius around the city of Assiut, which contains paradigmatic urban phenomena and landscape conditions. While this territory has been inhabited and cultivated throughout millennia, we focused on its present day transformation.

All students travelled to Egypt and Nile Valley for a two-week fieldwork phase during March 2009. The results of the fieldwork in Egypt and the further development of the research in Basel took form of visual narratives with drawings, maps, diagrams, photographs, architectural portraits or anatomies of urban processes, that are presented in this book. A target for each work was to formulate a thesis regarding a particular research topic. However, we look beyond the obvious and commonly understood, into processes and situations that often go 'unseen', largely unplanned or created through conflict, negotiation and power plays of many actors in the field. The different themes that students address come together into a larger picture, an 'urban portrait,' reflecting the present reality of the territory and speculating possibilities for its future.

Territorial research on location is only feasible through local collaboration. The Department of Architecture of Assiut University joined us as main partner in collaboration during the semester and the fieldwork, involving their students, experts and teaching staff. Student groups conducted research together with students of Assiut University.



RESEARCH TOPICS

Each research topic was developed by an individual team of student-researchers and tested through case studies. Each case study relates to a specific physical location, in which the recent tendencies are best visible.



- I. Nile Riverbanks
- II. Water Management
- III. Agriculture
- IV. Rural Settlements
- V. Edges of the Nile Valley
- VI. City Core
- VII. City Edges
- VIII. Desert City – New Assiut
- IX. Industry and Production
- X. Transport and Mobility



I. Nile Riverbanks

The space of the Nile has enormous cultural and symbolic significance for the Egyptian population as the ‘space of life’. The presence of water in the desert land creates a specific landscape that has been cultivated, controlled, and appropriated throughout history. This research topic investigates the role that the river plays within the present day urban configuration of the Nile Valley. Can we trace and read the rich ‘Nile culture’ through the use of the river and its riverbanks? How does the city of Assiut and smaller towns and villages relate to the Nile? Are riverbanks used as a leisure space? Are the banks public or private? Which programs are commonly found along the river? What are recent trends of transformation of Nile riverbanks? What is the role of private capital in these transformations? How do agriculture and urbanization affect the environmental quality of the Nile, such as biodiversity? How is the river itself used? Does it still function as a decisive infrastructural axis for Upper Egypt?

The group was instructed to conduct their investigations within the approximately 12-km stretch of the Nile River in the vicinity of Assiut. Within this space, students observed and described the different spatial configurations along the riverbanks and the forces behind them, with the goal of discovering how, if at all, the Nile as a space is affected by contemporary global and regional trends, and how the Nile influences urban development in the Nile Valley.

II. Water Management

Egyptian Culture is based on land reclamation by irrigation with Nile water. Over the course of centuries, techniques of irrigation and water management have developed mostly in a slowly evolutionary manner, but there were also actual “Bewässerungsrevolutionen” (Knörnschild, 1993), such as the change from a seasonal “flooding system” to year-round irrigation. However, the high value of water over time—and today also its scarcity, especially since attempts to introduce large scale state-run agricultural production—lead to a highly elaborated distribution and management of water. At present, political negotiation of the Nile artery as a vital resource is present on various scales, from national (riparian states—Nile basin initiative) to regional and local. The goal of the research was to show how water management in the region of Assiut works in first, the administrative aspects on different levels (national, regional, and local) and second, the everyday mode of operation “in the field.” What are the different techniques of water management used in the Upper Nile Valley? How are the systems of drainage, irrigation, and drinking water supply organized? Who are the different actors involved? Are there examples of informal access to water? Is water a free resource?

The group observed how the use of water influences society and social organizations, what ways society is organized around water, and what “water use associations” exist in the region.



III. Agriculture

Farming in Egypt is confined to less than 3% of the total land area, 90% of which is concentrated in the Delta. Despite this lack of land, the highly fertile soil makes agriculture one of the most important economic sectors in Egypt. Agriculture has traditionally shaped and structured the Nile Valley. Today, under enormous population pressure agricultural land is increasingly threatened and occupied by the expansion of urban settlements.

In 1960, Egypt was self-sufficient in almost all basic food supplies, but today is already heavily reliant on food imports. The reason for this is simple: in this short period, the population exploded from 28 to over 80 million, while the amount of the available arable land stayed more or less the same. Additionally, scarcity of water for agricultural use has become a crucial issue, especially since attempts to introduce large-scale state-run agricultural production. The presence of state in agricultural sector was stronger in the period from 1950's to 1970's, while from the 90's onward, the practice has turned toward deregulation. Research describes how these changes affected agricultural production—from changes in landownership to differing sizes of parcels to changes in types of production.

The group investigated different forms of agriculture within the research parameter, how agriculture in the Nile Valley works today, and how the traditional cultural landscape is affected by contemporary trends. A critical issue addressed is how agriculture 'defends' its terrain against the growing settlements and whether one can perceive the Nile Valley without the aspect of agriculture.



IV. Rural Settlements

Egyptian population densities are high by international standards—rural settlements are occupied by up to 2,000 persons per square kilometer. Such indicators elucidate the great paradox of the Egyptian countryside—an enormous population bound to limited resources of land and self-sustaining ways of life, lacking infrastructure and services of an urban region with comparable or lesser density.

The villages are structured like small towns with narrow alleyways and multi-storied houses for multi-generational families. Other unique features of Egypt's rural population patterns are the short distances and reasonably good transportation systems which bind the settlements in the Valley into an intricate linear network. No village is more than a few kilometers from a sizeable town, and movements between are quite efficient.

The growth and expansion of villages into agricultural land was unleashed by the construction of Aswan Dam in early '70s when flooding of the Nile Valley was permanently put under control. Only in recent years, the danger of this kind of urbanization and the rapid land consumption has been recognized, and the government is trying restrict the future growth of villages.

The group created a dichotomy of these villages and determined constituent elements of specific typologies via cataloging main economies, relationships to larger towns and centers, levels of services and infrastructure, family structures, and education level to determine the self-sustainability of the rural settlements and question whether there are limits to their growth.



V. Edges of the Nile Valley

The Nile Valley is a specific geological formation, created over millennia by fertile alluvial deposit brought by the Nile. Throughout history, the ecology and inhabitation of the edges were different than that of the Valley itself. With much less water and fertile soil, different flora and fauna were present at the edges. Also, throughout history and until modern times the edges were preferable sites for placing villages, towns and temples as the raised terrain served as protection from the annual floods.

With the explosion of urbanization in the valley since the 1960s and '70s, the situation has changed. Ongoing construction in the valley and ever decreasing agricultural land, are placing further pressure on the edges where opportunities to gain new land, expand settlements or to locate production sites are being sought. A striking example of this phenomenon is small-scale informal land reclamation. Fertile soil is brought from the valley (from the new construction sites) and laid in small fields at the desert edge to allow new sites for agriculture, which are then irrigated through improvisatory water systems. The work describes characteristic developments along the edges of the Nile Valley within the research frame. Research describes the character of the valley edges as defined through infrastructure or topography, as well as determining how conditions shape a dispersed or a sharp edge between the desert and the fertile Nile land. The group also categorizes the different urban uses found along the edges, and describes how the authorities in Assiut steer and influence the development of this reclaimed land.



VI. City Core

This research topic covers the historical core of Assiut city. Like El Minya or Sohag, Assiut is a regional center in the Nile Valley providing the surrounding territory with services. Assiut also has a large Coptic Christian community and it is the region's most important agricultural center.

The cities in the valley were founded directly along the Nile on a topographical elevation; their histories go back to the times of ancient Egypt. Assiut was founded in pharaonic times, and was historically an important destination for travellers, traders and camel caravans arriving through the desert from Darfur, Sudan. Until 1850, the largest slave market in Egypt was located in Assiut. However, historic layers, whether ancient or modern, are not easily recognizable in Assiut in a manner that can be observed in a European city. Assiut is less concerned with its history than with its everyday life, in which can be found ancient ways of trading and living in a spontaneous and lively mixture with contemporary lifestyles.

The research starts though observation and description of the city core of Assiut in its basic lineaments (morphology, urban typologies and urban structures and functions). The work then proceeds into case studies which focus on the city's relationship to its heritage, religious spaces, and urban development and urban culture. At first glance, the city of Assiut seems to lack urban facilities as we know them from other cities of that size (such as culture, food or shopping). The research seeks to find what role Assiut holds within the region, and to describe the urban culture of Assiut as a potential 'rural city'.



VII. City Edges

This research topic focuses on the rapidly developing and transforming edges of Assiut City. Due to a large population increase since the mid-20th century and ongoing urbanization of the valley, these cities are constantly expanding onto surrounding agricultural land. Most of such developments are informal: people occupy a plot of land and commence construction overnight, construction continues even longer than a generation before its completion. During the 1970s and '80s the state tried to steer city expansion through the development of different types of public housing, but these efforts are now largely diminished.

The research target is an investigation into the phenomenon of city expansion, through informal, private development, as well as “formal” public housing. Investigation about the informal development first looked into the ways in which people occupy agricultural land (mechanisms and techniques of occupation) and how they construct their houses (building types, construction techniques, building materials, builders, etc.). On the side of the state, “formal” activities, students researched the different housing schemes and strategies that were developed to produce living space. From analyzing and establishing typologies of informal and formal housing, the group determined whether there exists a specific balance between the formal and the informal energies and activities.

Apart from first impressions and documentary description of the locations, research also includes information from the local experts at Assiut University and in public administration. Interviews with people on site give insight of the everyday life in the settlement and illuminate the origin of these settlers and their daily activities.

VIII. Desert City - New Assiut

Research on New Assiut investigates another paradigm of the current urbanization in Egypt and the Nile Valley—the so-called New Towns developments or Desert Cities—established in the mid-70s. In this period, the government first recognized that the inhabited areas along the Nile—especially in the Greater Cairo Region—were no longer able to absorb the growing population and therefore decided to “open the door to conquer the desert.”

Originally, these cities were planned to attract both private and public investors and provide working classes with public housing. However, neo-liberal dogma in the aftermath of the early '90s IWF and World Bank program to restructure the Egyptian economy enormously impacted the formation of desert urbanization. New Assiut—belonging to the third generation of New Towns—exemplifies the current stage of this development. Much of its public housing is already complete, but the majority of the future city, which offers plots to the private market, is still under construction. The state had reduced its involvement to the construction of infrastructure networks, and private developers are allowed to construct houses within a maximum time-frame of five years. This very slow construction process creates a surreal condition of the urban fabric—the city not yet inhabited appears as a ghost town.

In the first step, the research observed and described the various physical and the functional aspects of the New Town of Assiut. This information was further developed into an analysis of the various forces and actors involved to determine the relationship between the city of Assiut and its sister-town New Assiut, in order to determine how they are interdependent—if at all.

IX. Industry and Production

The research focuses on the various modes of production within the Nile Valley, and the often improvisational ways in which they are able to overcome conditions of scarcity and lack of financial incentives; these small and basic markets and production sites must satisfy the needs and demands of a large and ever-increasing population.

Although there were several large efforts to modernize the country, an industrial shift never replaced agricultural production in Egypt. Governorates along the Nile have established Industrial Zones to attract production. These areas tend to be large demarcated zones at the fringe of the Valley, often lacking infrastructure, water supplies, and power. Many of these areas were established without feasibility studies on the nature of local market demands.

Developing countries of informal economy-based production, in the case of Egypt, is represented by a unique type of micro-enterprise or workshop. Such enterprises are organized as generations-held family holdings and built on highly connected social networks, which enable them to operate productively and sustain themselves “outside” of the formal markets. In Cairo for example, such networks are visible in spatial arrangements of workshops clusters—neighborhoods of shoemakers, neighborhoods of metal workshops, etc.

Analysis compared modes of production and described how they operate in response to market demand, what they produce, and how they are supplied with raw materials. Another investigation conducted was how the main labor forces, those not involved in agricultural production, are distributed between the formal and informal production sectors.

X. Transport and Mobility

This research starts from a premise that the Nile Valley is a rapidly urbanizing condition marked by an increasing population growth. With over 2,000 people per square kilometer, this high density generates a dense and highly interconnected network of settlements—villages and urban areas—spread along the valley. The question raised is how this unique condition of dense linear urbanization creates its own specific systems of transport and flows of people and goods. Research aimed to identify what types of mobility infrastructures are present along with the different modalities of transportation, as well as distinguishing between state-provided and self-organized aspects of this system.

In the first step, work was geared toward identifying means of transport and types of transport infrastructure within the research frame. Additional research examined the possibilities of drawing the various hierarchies of this network and describing how the villages are linked to each other and connected with the urban cores. Field work investigated everyday commuting and moving patterns of the various population groups living in the valley—farmers, peasants, town dwellers and the wealthy living in New Assiut and working in the city. Massive population growth and its resulting density incite questions about the movement of goods within the Valley as well. A question posed was how the transport and distribution of agricultural and industrial products are organized, and how these sectors are supplied with raw materials, fertilizers, etc.

Over millennia the Nile was used as the main infrastructural artery for transportation. Now that alternative transit options are highly varied and available, research identifies the role of the Nile with respect to orientation and transit.

STUDENTS RESEARCH NILE SETTLEMENT DYNAMICS

In Switzerland, illegal construction is a mortal sin; in Egypt, it is frequently the norm. Students at the ETH Zurich Department of Architecture have conducted an in-depth study of the Assiut region on the Nile. They found that the government's tolerance of uncontrolled settlement growth is what prevents the social system from becoming destabilized. By Samuel Schläfli, Zurich.

Christian Müller Inderbitzin, research assistant at ETH Studio Basel, is studying a book of over 700 pages. It shows photographs of desert landscapes, chaotic street scenes, barren farmland, unfinished brick buildings, and leathery sun-tanned faces. These are accompanied by graphics, the occasional text bloc, and no end of zoning plans – ranging from small-scale views of individual villages to overviews of an entire urban region. This volume, as thick as a Bible, was compiled within just one semester. “Of course the students devoted many free weekends and many after-work hours to this project, but that’s really not unusual for us,” says Müller Inderbitzin.

On two days a week, 21 third- and fourth-year architecture students at the research group headed by Roger Diener and Marcel Meili studied the Egyptian region of Assiut. In recent years, ETH Studio Basel has devoted individual se-

mesters to urban “portraits” of metropolises such as Hong Kong, Casablanca, Belgrade, or Havana. In the past summer semester, the focus of research was not on a single city, but on an urban territory extending beyond the actual city and including aspects of the surrounding territory. The two professors and their assistants decided on the area surrounding the Egyptian city of Assiut, situated 375 km south of Cairo on the western bank of the Nile with a population of around 400,000. Müller Inderbitzin explains this choice: “Life along the Nile is restricted to a very narrow corridor that is between 25 and 30 km wide. It has been inhabited and cultivated for thousands of years. Although it constitutes only five per cent of Egypt’s territory, this is where practically the entire population lives. Due to the population explosion, this territory is exposed to massive pressure today and is one of the most densely populated areas of the world. These parameters seemed to constitute an interesting framework for our research.”

Local academic colleagues provide translations and introductions

After two weeks of research and presentations by Oriental experts such as the former veteran NZZ Middle East correspondent Arnold Hottinger, the students and assistants flew to Assiut. There, they were welcomed by colleagues from the local university’s Department of Architecture and accommodated on campus. Their hosts made themselves available as translators and helped their guests by introducing them to many local authorities and valuable contact people. In groups of two, the students spent two weeks conducting field research on specific topics. Besides studying conventional questions of urban planning and architecture, they also investigated issues such as agriculture, water supply, and the importance of the Nile. All of these activities took place in a predefined section of about 30 by 10 km that incorporated highly divergent zones such as the old town, the new town, agricultural areas, the Nile, and the desert. “Since the inhabited Nile corridor is quite linear and undifferentiated in terms of settlement structure, we

assumed that by observing our chosen section, we could describe phenomena that occur in extensive areas of the Nile valley,” Müller Inderbitzin explains.

The observations of the architecture students show that construction along the Nile proceeds at a fast pace. In Assiut alone, an area corresponding to 280 football pitches has been built up in the past four years. Usually, agricultural land was sacrificed for the new settlements. The lost arable land is, however, reclaimed from the desert incrementally by hauling topsoil from the banks of the Nile and making it fertile through groundwater irrigation. However, supplies of subterranean water are finite. While legislation by the government in Cairo forbids uncontrolled growth and limits usage of natural resources, the students found that the territory of Assiut is expanding largely independently of the regulations issued in Cairo. The water budget allocated by the government for irrigating fields was exceeded by ten per cent in Assiut, yet the city has no reason to fear any sanctions or penalties. Furthermore, the “rezoning” of agricultural land into building sites also largely bypasses the administration in Cairo. “Mostly, we were surprised at how free from friction the uncontrolled self-administration functions. The illegal construction activity and the many legal infractions that are tolerated by the administration in Cairo are, in a way, an outlet for the enormous pressure that the region is exposed to due to the population increase,” says Müller Inderbitzin. He believes that the state is not really interested in monitoring settlement growth or cracking down on uncontrolled construction, as state intervention could upset the relatively stable and conflict-free system.

Bad planning creates modern ghost towns

Government efforts to channel population growth into more orderly patterns have failed so far, according to the students’ findings. “New Assiut,” a modern satellite city designed at the drawing board and located a few kilometers east of the old town, was conceived about 15 years ago for a population of 100,000. Today, only one-tenth of the buildings are inhabited, and many houses remain unfinished shells. The ETH students attributed this finding to the fact that “New Assiut” was built for a middle class that is still practically non-existent today. This situation is compounded by the fact that the finished three-room apartments do not meet the requirements of ordinary families, which usually live at close quarters in large family communities – a lifestyle that is not easily reconcilable with small living spaces. “We were constantly surprised to see how archaically and traditionally the society is still organized,” says Müller Inder-



bitzin. He suspects that the government’s “New Assiut” project is also aimed at realizing didactic goals in connection with a modernization drive. The introduction of new residential patterns may have been intended to dissolve traditional social structures.

The field research was not always conducted under favorable conditions: Often, the ETH team had to fend off the police escorts that are generally allocated to foreigners travelling along the Nile. “That is a relic from the times when this was a dangerous area. Today, security for foreigners is not an issue at all any more. It is really more a case of police surveillance than protection,” Müller Inderbitzin believes. Another problem was the fact that the students had no access to official maps, forcing them to base their plans on satellite imagery retrieved from Google Earth. Nevertheless, the 21 students managed to collect a plethora of data on location that they then evaluated in Basel during the remaining eight weeks of the semester.

A different notion of planning

The results of the field research are not primarily intended to bring about changes on the ground, but rather to secure a snapshot of current conditions. “All of our studies are based on personal observations and experiences. They make no claim to be complete or representative,” Müller Inderbitzin explains. For the final presentation in Basel, the group also invited a few colleagues from Egypt. However, the subsequent discussion once again confirmed what had been obvious during the stay in Egypt: Urban planning means different things in Basel and in Assiut. “Our Egyptian colleagues were not always fully able to relate to what we were trying to achieve with our field research. In Assiut, a highly technocratic notion of planning still prevails. There, planning is frequently still done from the university campus or the administrative office, and the architects do not really take into consideration the social, ecological, and economic framework conditions for their planning,” Müller Inderbitzin believes.

Published on 25 September 2009 in ETH Life



EGYPT'S HAPHAZARD, BUT ORGANIC GROWTH

In the Nile Valley, population growth is absorbed by the villages. All construction is done illegally. ETH researchers come here to study how settlements develop when the state tolerates almost everything. By Astrid Frefel, Assiut

"We built a great blaze and fired 5000 bricks. We had to do it on a public holiday because it's illegal." A farmer in a village near the Upper Egyptian city of Assiut describes the first steps in constructing a house. His statement was taken by students from ETH Studio Basel studying the urbanization of the Nile Valley, about 400 km south of Cairo.



Students from the Department of Architecture at the huge local university volunteered to assist as guides and translators. Some of them first had to become accustomed to the methods of field research applied by their European colleagues. Separating everyday norms from scientific work was not always easy for them. In the group on "Traffic and Mobility," the Swiss not only had to secure permission from the police to travel in the most widespread means of transportation, the minibuses; they also had to persuade their Egyptian colleagues to board these vehicles, which are not the world's most safest. For in Egypt, public transport is only used by those who cannot afford a car.

Tolerance, a vent for settlement pressure

Christian Müller Anderbitzin, one of the assistants, summarizes the experience: "Despite difficulties, we still collected a great deal of material." The investigation focused on a cross-section of the Nile Valley covering an area of 10

by 30km. Of particular interest are the transition areas, for example on the margins of urban or desert areas. This is where most of the changes are happening. "Despite the population explosion, the development is surprisingly tension-free and smooth. It is driven by the rural part. There are a number of outlet functions that absorb pressure and conflict potential, as well as a distinct form of urbanization with densely constructed, multi-storey houses. Due to the well-developed public transportation system, people are very mobile," the Swiss architect notes.

These outlets could be described as serving a conscious laissez-faire policy. The state is tolerant towards illegal land grabs and construction activity, and looks the other way when water use exceeds allocated quotas. Due to distance issues – most of the decision-makers are based in Cairo – oversight is slack, and jurisdiction is often jumbled. As the students discovered in their research, all of these factors contribute to a development that is stable and comparably free of conflicts.

Moderate success of planning

New Assiut is located on the other bank of the Nile, and is already in the desert. In the city center, a couple of men are sitting in the tea house; a wholesale trader and a carpenter's shop in the market are doing business. Otherwise, the city appears to be empty and derelict. The carpenter estimates that about 4000 families live here. That is much less than the planners anticipated when construction on the desert city began nine years ago. The small apartments, designed in a way that precludes them from being merged, often do not meet the needs of the people, who traditionally live with their extended families.

Of the already completed apartments, it is mainly the council flats that are inhabited. The private mansions are no more than concrete structures; this is the result of real estate speculation, as the final construction is only begun when the buildings are sold. Long empty streets are bordered only by lampposts, the commercial district is also practically empty, and the idea of building an outpost of the university remains more wishful thinking than a realistic



goal. The original plans were for an autonomous twin town, but the students found that what has emerged so far is no more than an offshoot of Assiut whose viability remains uncertain. They also cite the World Bank's statement to the effect that planning here was conducted without taking local dynamics into account.

These dynamics are instead found elsewhere: in the village, where the farmer fires his own bricks illegally from fertile clay to build his house. This is where the most important form of urbanization can be found. The countryside absorbs the greater part of the population growth. Illegally constructed buildings can be legalized using a few tricks. The omda or village elder, who is usually from an influential family, ensures that the infrastructure follows incrementally.

Concreting farmland

In this way, three- and four-storey houses are built in a dense, urbanized layout. For instance, a building with a base area of 85 square meters is built on a piece of real estate measuring 110 square meters. Seventy per cent of the informal growth occurs on agricultural land. In the twelve villages that the students investigated, the loss of land over a four-year period amounted to 391 feddan

(0.42 hectares), which corresponds to 280 football pitches. Illegal construction in the countryside is cheaper than buying an apartment in the city. Real estate prices in Egypt have seen annual increase of about 14 per cent over the past years, compared to a global average of only 5 to 7 per cent. In order to compensate for the loss of land, desert territory is made arable, and this too is often done illegally. And even here, there are often ways and means of securing an ownership deed one day. The junior researchers have written down an eight-step formula for doing so. The government's control over the newly developed territory is highly fragmented. The students conclude that while there is a law, there is no order.

There is sufficient water for irrigation, which is available at no cost. In the area under investigation, water consumption in the past years has always been at least ten per cent above the official quota; thus there is no incentive to switch to more efficient irrigation methods. In the urban hinterland of Assiut, sufficient water as well as the possibility of constructing houses and to acquire real estate are important mechanisms for stabilizing the forces arising from the population explosion.

First published on 26 August 2009 in Tages-Anzeiger, p. 28

خصوصية المكان : النيل



THE NILE

AN AUTONOMOUS SPACE

PHYSIOGNOMY OF A LIFELINE

Personification of the Nile
Mystification by the West
Attempts to Restrain the Nile
Islands Integral to the River

LIVING WITH THE NILE

Barrier or Main Street?
The Nile of the People
Fragmented River Space
Prescribed Programs
Places to Escape

ETH Studio Basel
Contemporary City Institute
Michel Frei, Bianca Kummer

Prof. Roger Diener, Prof. Marcel Meili
Mathias Gunz, Rolf Jenni, Milica Topalovic
Christian Mueller Inderbitzin

Spring Semester 2009

THE NILE

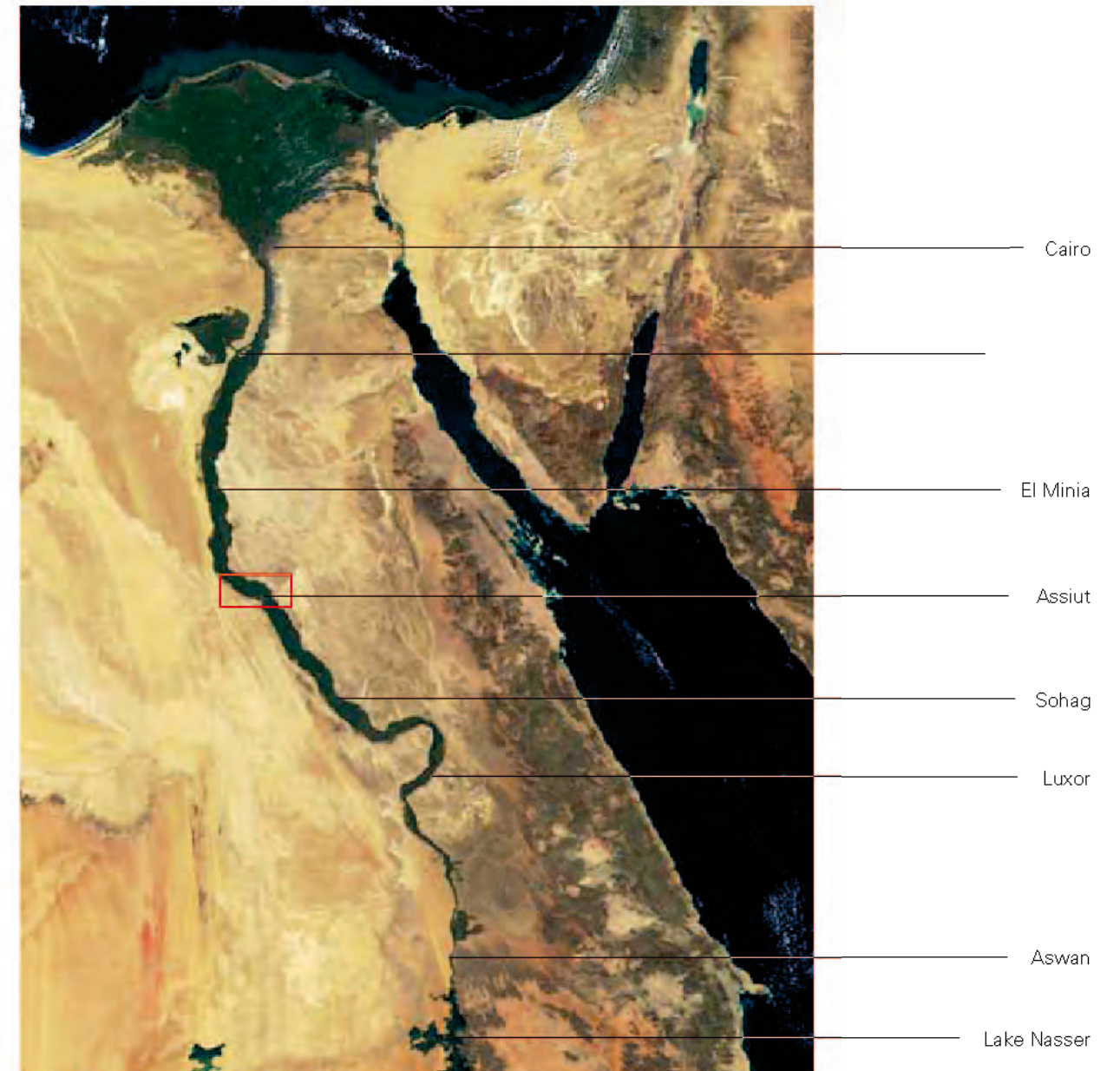
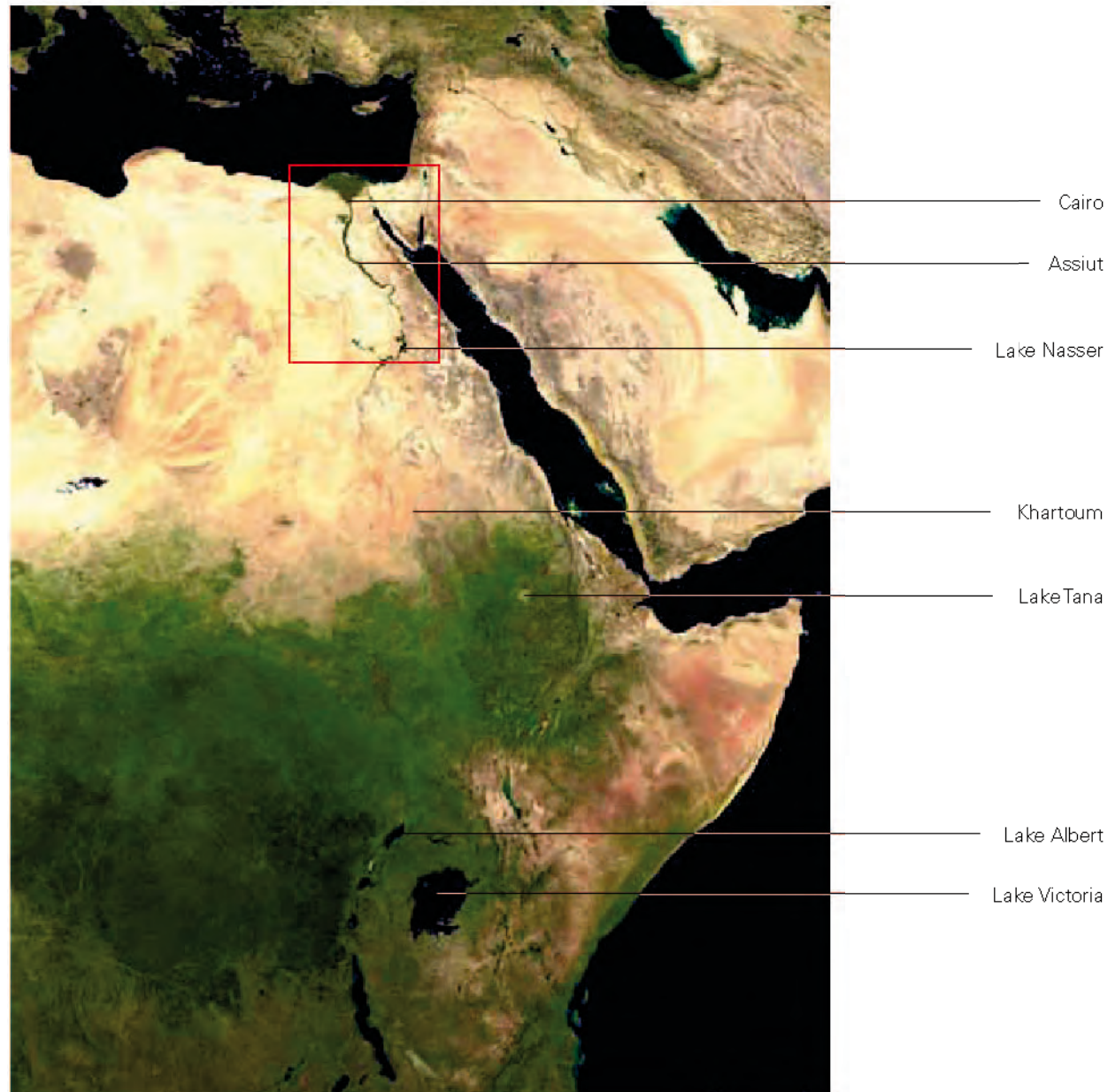
AN AUTONOMOUS SPACE

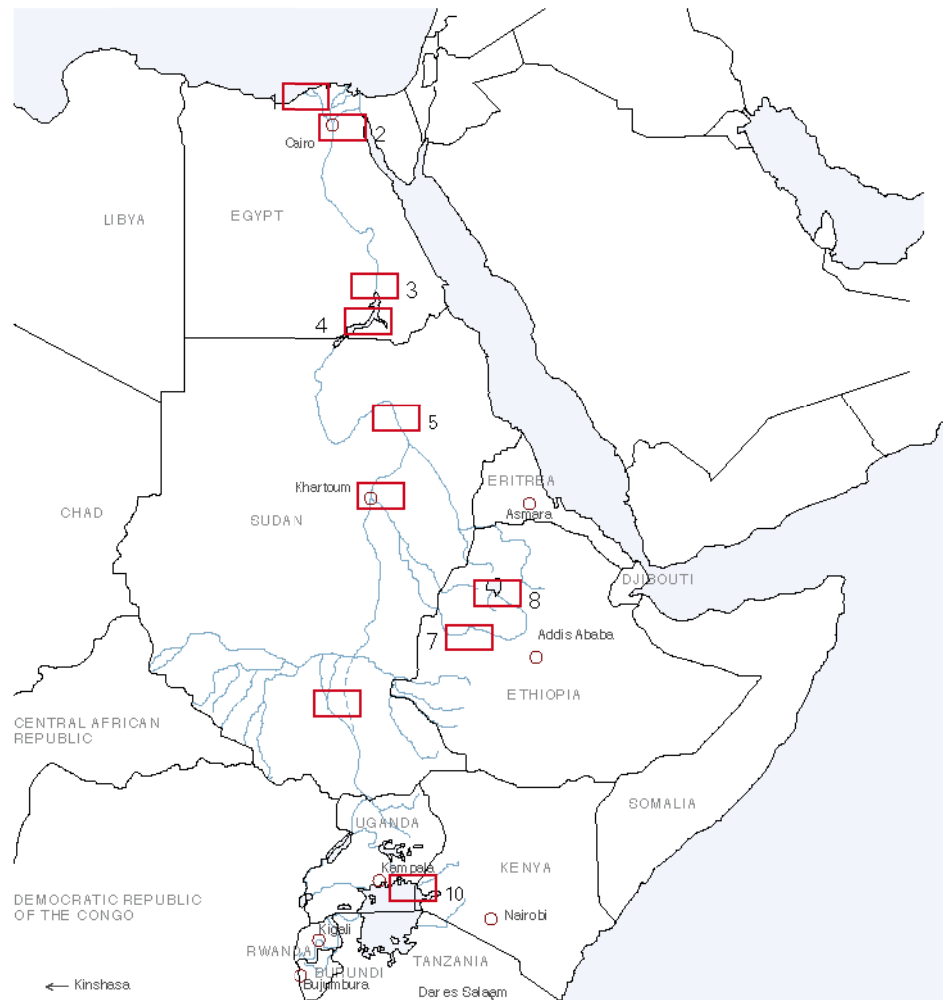
The Nile is a unique river on this planet, a river with its own distinctive face. The Nile covers a distance of over 5000 km by the time it reaches Egypt, a country which owes its existence to this river. Throughout history, the Nile has piqued the imagination of people, and the river's history is closely marked by human attempts to control its waters. In a gradual process, the stream has become more and more constrained by embankments, barrages and dams, but the Nile has not entirely lost its autonomy; the river willfully washes out foundations and erodes riverbanks. Even though humans have altered the appearance of the Nile, it seems that life along its banks has not significantly changed. The river simply continues to flow by. There are, although, tentative attempts to occupy newly available space along the engineered riverbanks. Programs are introduced which turn their orientation more towards the river and thereby integrate themselves as a part of the autonomous space of the Nile.



PHYSIOGNOMY OF A LIFELINE

The Nile is a salient geographical feature of North Africa. It is the only river which is able to carry a portion of Equatorial Africa drainage through the barren and rainless Sahara to the Mediterranean Sea. This feature is the precondition which made possible the evolution of one of the earliest civilizations on our planet. Isolated in the vast desert of the Sahara, the Nile created an autonomous space along this thin lifeline, a space in stark contrast to its barren surroundings. Without the Nile, there would certainly not have been the Egypt we know with its early civilization, culture and monuments. Herodotus, the Greek historian, already recognized Egypt as "the gift of the Nile" (ca. 500 BC). The Roman proverb "aut nilus aut nihil"—"either the Nile or nothing"—accurately renders the unique situation.





- 1 River mouth Rosetta branch
- 2 Cairo
- 3 Aswan
- 4 Lake Nasser
- 5 North of Atbara Sudan
- 6 Khartoum confluence of Blue and White Nile
- 7 Wallaga Blue Nile Ethiopian Highlands
- 8 Lake Tana Ethiopia
- 9 Sudd White Nile
- 10 Lake Victoria Uganda

Biography of the Nile

At its source, the Nile can be characterized as a young child—energetic, wild and unstable. As the river finds its way downstream, it grows up. It becomes an adolescent where the two main tributary arms of the river meet. Here, it seems as if the Nile would have already found its course, but there are still periods of wild uproar, much more powerful than in the upper regions. On its way through the Sudanese desert, the Nile loses much of its force. It reaches the Egyptian border as an adult, already tired and even-tempered. When the Nile discharges into the Mediterranean Sea, it has become an old man, weak and exhausted by its long course and finally loses itself into the vast sea.



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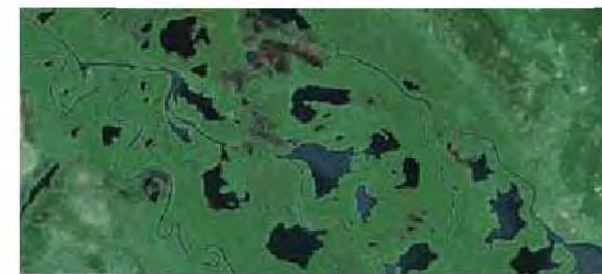
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The Nile

Length.....6671 km

Distance through desert.....2700 km

Catchement area.....2,870,000 km²

Basin area.....3,030,000 km²

Altitude difference.....2,700 m

Average water volume.....White Nile: 33, 9 bn km³
Blue Nile: 51.7 bn km³

Tributary stream.....White Nile
Sobat
Blue Nile
Atbara
Bahr al-Ghazal
Wadi al-Malik
Wadi Howar

Rainfall.....Near Equator: 1600 mm/ year

Riparian states.....Tanzania
Congo
Burundi
Rwanda
Uganda
Kenya
Ethiopia
Sudan
Egypt

Fish species.....1976: 320
1997: 115

The Egyptian Nile

Length.....1550 km

Distance through desert.....1550km

Catchement area.....0 km²

Basin area.....300' 000 km²
9.9% of the total basin area

Altitude difference.....85 m

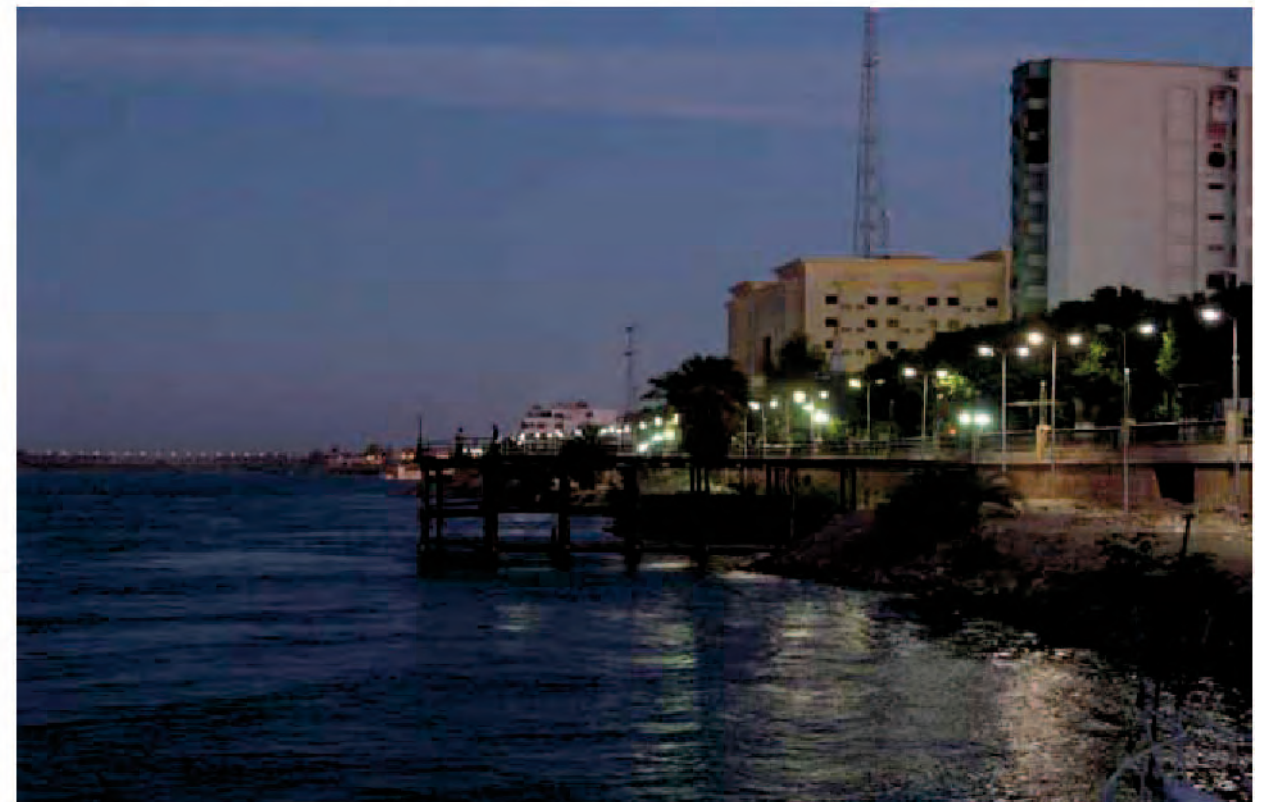
Average water volume.....Aswan: 84 bn km³
River mouth: 15 bn km³

Tributary stream.....0

Rainfall.....South of Cairo: 25-50 mm/ year
Coast: 100 - 200 mm/ year

Riparian states.....Egypt

Fish species.....1948: 47
1998: 74





God Hapi

The life-giving Nile was personified as an obese man with a large paunch and pendulous, sac-like breasts, clad only in a band that covered his genitals—as if to avoid being identified with a specific sex. (Mysliwiec, 2004)

“Hail to thee, O Nile! Who manifests thyself over this land, and comes to give life to Egypt! Mysterious is thy issuing forth from the darkness, on this day whereon it is celebrated! Watering the orchards created by Re, to cause all the cattle to live, you give the earth to drink, inexhaustible one! Path that descends from the sky, loving the bread of Seb and the first-fruits of Nepera, You cause the workshops of Ptah to prosper!” (Hymnus to the Nile, ca. 2100 BC).

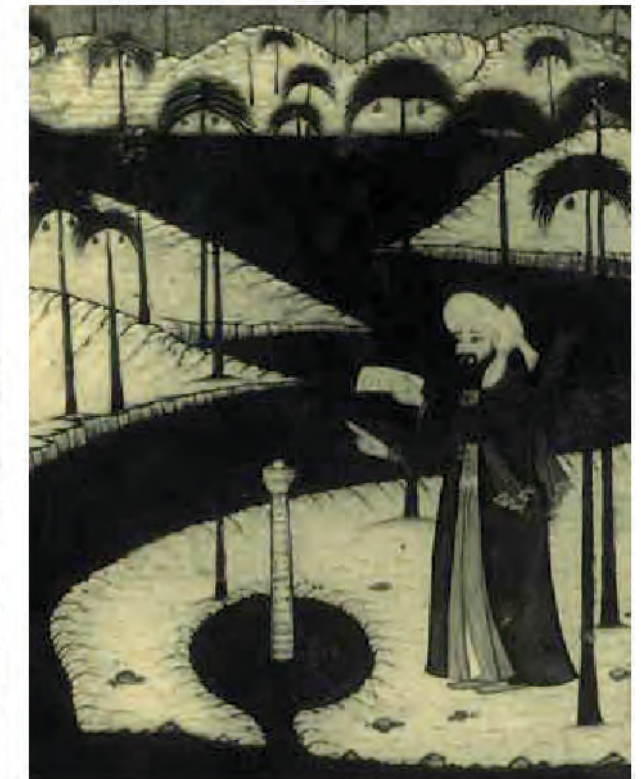
Personification of the Nile

During the Old Kingdom, a nearly human relationship was established between river and society, between a source of life for a fertile plain, and a civilization that was regulated by the rhythm of its waters. The Nile exerted itself as both a blessing and a curse. In their narrow valley, Egyptians experienced the destructive force of nature and became conscious of the conflict between order and chaos, which the gods alone could resolve (Kérisel, 2001). The natural phenomenon of the river became, through a process of cultural codification, an ensouled subject. Historical evidence emphasize the Nile as a subject with an outstanding position in Egyptian culture.



Rhythm of Life

The rising and falling of the Nile had governed life in Egypt for thousands of years. In the Pharaonic period, the year was parted into three seasons: “akhet” (August to October) the time of the flooding, “peret” (October to February) the time of sowing, and “shemou” (February to June) harvest time (Guillou, 1995). The Egyptians believed that the Nile rose out of the ground between two mountains which lay between the Islands of Elephante and the Island of Philae, but they had no exact idea where and how the inundation took place. Therefore, the rise and fall of the river was undoubtedly a genuine mystery to them.



Letter to a River

According to the legend narrated in “Marvels of the Creation,” the people of Egypt were preparing to sacrifice a young woman in order to appease the Nile. The Muslim conqueror of the country (640 AD), ‘Amru b. al-‘Ass, would not allow this because the custom was unacceptable to Islam. Soon afterward, the river nearly ceased to flow. Amru then obtained a letter from Khaifa ‘Umar b. al-Khattab, who ordered the Nile, in the name of God, to renew its flow. ‘Amru delivered the letter to the river and the next morning all could see by the nilometer that the water had reached its highest level. (Erllich, 2000)



Mysterious Sources

On this 1525 map, Africa's outlines are known in detail, while the interior and course of the Nile remain a mystery, which was only solved in the 20th century when Burckhardt Waldecker discovered the real source of the Nile.

Mystification by the West

Over millenia, Egypt had occupied the heart of a world out of which western culture had developed. In common perception, Egypt as a reality is constantly overlayed with fantasies and legends. In the 19th century, the Napoleonic Campaign particularly influenced the image of Egypt; Egypt became fashionable. Romantic, exotic, and unknown, Egyptian mysteries and legends inspired the West.



Le Grand Tour d'Egypte

It was both the Napoleon expedition (1798-1801) and the stringent ruling of Mehmed Ali (1805-1847) which opened Egypt to the West. During this time, the GrandTour of Europe, as a part of the education of a young man of higher standing, was superseded by a journey to the Holy Land or to Egypt. (Humphreys, 2001)



Filling in the Blanks on the Map

Reports of early explorers are characterised by a wild and exotic world. On the image above, a hippo attacks the canoe of Dr. Livingstone, one of Africa's most famous explorers. His fame drove forward an obsession with discovering the sources of the Nile, which culminated the classic period of European geographical discovery and colonial penetration of the African continent. (Guadalupi, 1997)



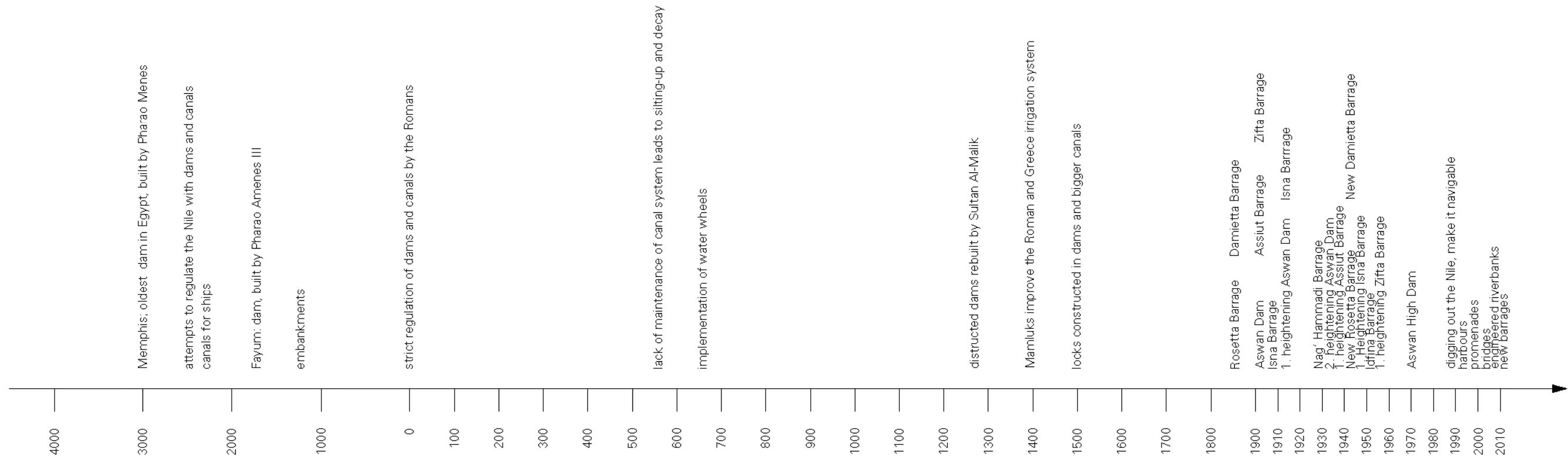
Romantic Adventure

Every autumn when the temperatures fell, dauntless tourists arrived in Alexandria in order to continue south to Cairo where they hired a local guide and chartered a Dahabiya (large sailing boat). The 850 km-journey between Cairo and Aswan took about 6 to 12 weeks. At around 1870, sailing boats were replaced by the first steamers. All of them exclusively belonged to Thomas Cook who thereby introduced package-tourism to the world. After Cook made Nile cruises affordable to a wider public, they became a fixed part of every tour to Egypt. (Humphreys, 2001)



Death on the Nile

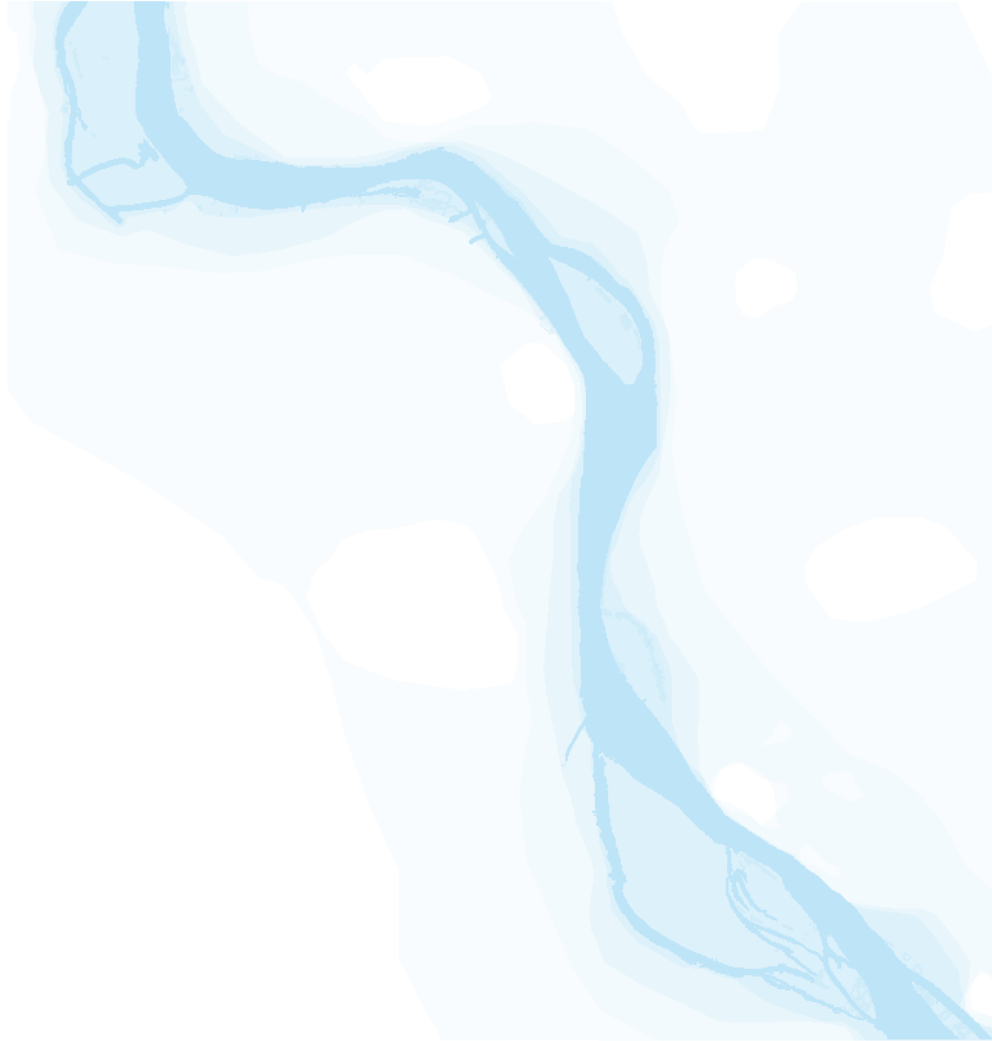
In this famous detective story written by Agatha Christie in 1937, the Nile plays an outstanding role. Most of the plot takes place on a steam cruiser travelling along the Nile. A honeymoon journey on the Nile ends with a mysterious murder. Linette Ridgeway is found shot to death in her sleep. The investigation of Hercule Poirot brings reveals that the steamer has become the meeting place of a group of people carrying hidden secrets. The Nile acts as a history-laden background full of mysteries and old stories, encircling and isolating the steamer with its passengers.



(Source: Knörnschild, 1993)

Attempts to restrain the Nile

Throughout history, attempts have been made to restrain the Nile. On one hand, the Nile is the most predictable of rivers; unlike other great rivers, the date of its flood is rarely capricious. On the other hand, no one can accurately predict how much water the Nile will provide from one year to the next. In the years of low flood, it would not provide sufficient water or deliver nutrients, and the result was famine and death. Years of high flood meant entire fields and villages would be destroyed. All human interventions can be read as a continuous struggle of civilization to reduce the river's autonomy in order to gain control over its utility. Even though the Nile seems to be a controlled system today, it has not entirely lost its autonomy. The Nile still flows along its own course; it removes riverbanks and erodes the riverbed to let bring new islands to surface. Regardless of all the built structures, the Nile is not tamed; it washes out barrages and bridges and takes away the coast. Ultimately, the river prevails.



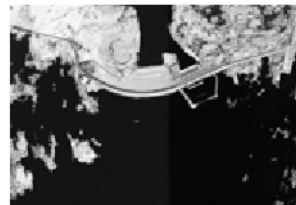
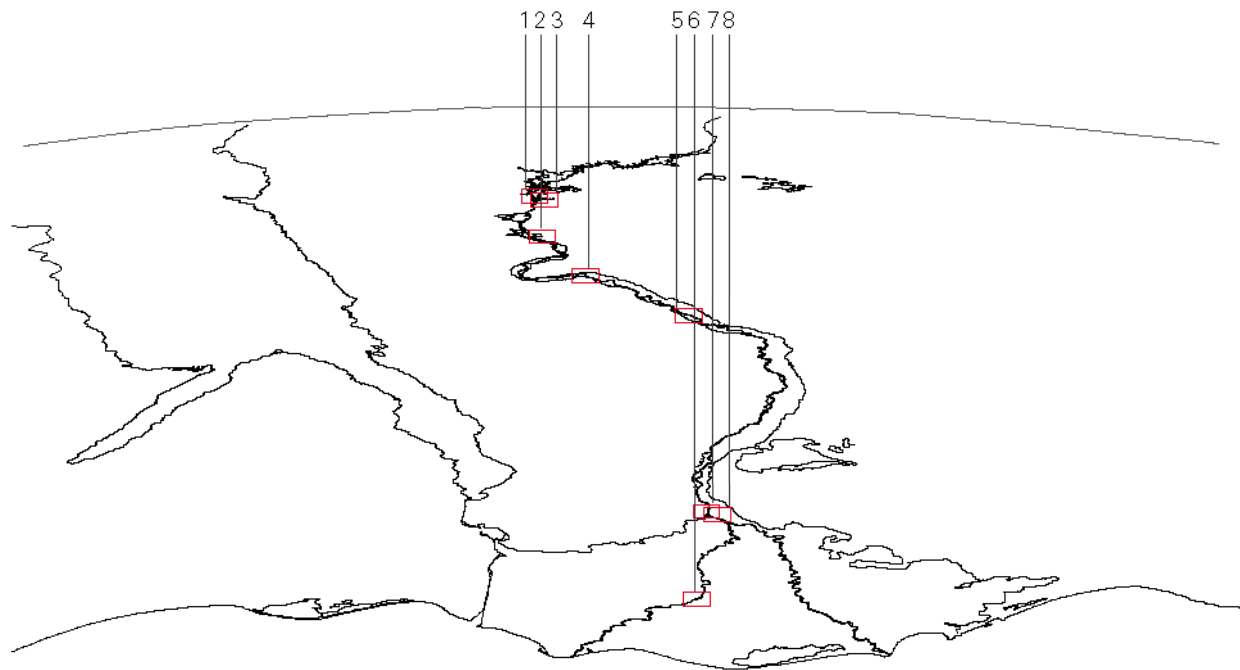
Dynamic Organism

According to Herodotus, “when the Nile overflows, the whole country is converted into a sea, and the towns, which alone remain above water, look like the islands in the Aegean.” (Kérisel, 2001) The river determines whether land can be developed or has to be abandoned. Human settlements followed permanent changes of the valley due to the yearly inundations. (Seidmayer, 2001)



Today's State of Control

Due to increasing constriction, the Nile seems to have found its final course. On one hand, buildings can be built near the river without being endangered by an unexpected flood. On the other hand, all technical solutions attempting to tame the river cause new problems which require other technical intervention. Only the islands continue to exist as what they have always been—a part of the river.



1 Aswan High Dam



2 Isna-barrage



3 Aswan-dam



4 Nag'-Hammadi-barrage



5 Assiut-barrage



6 Sifta-barrage



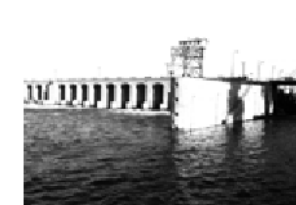
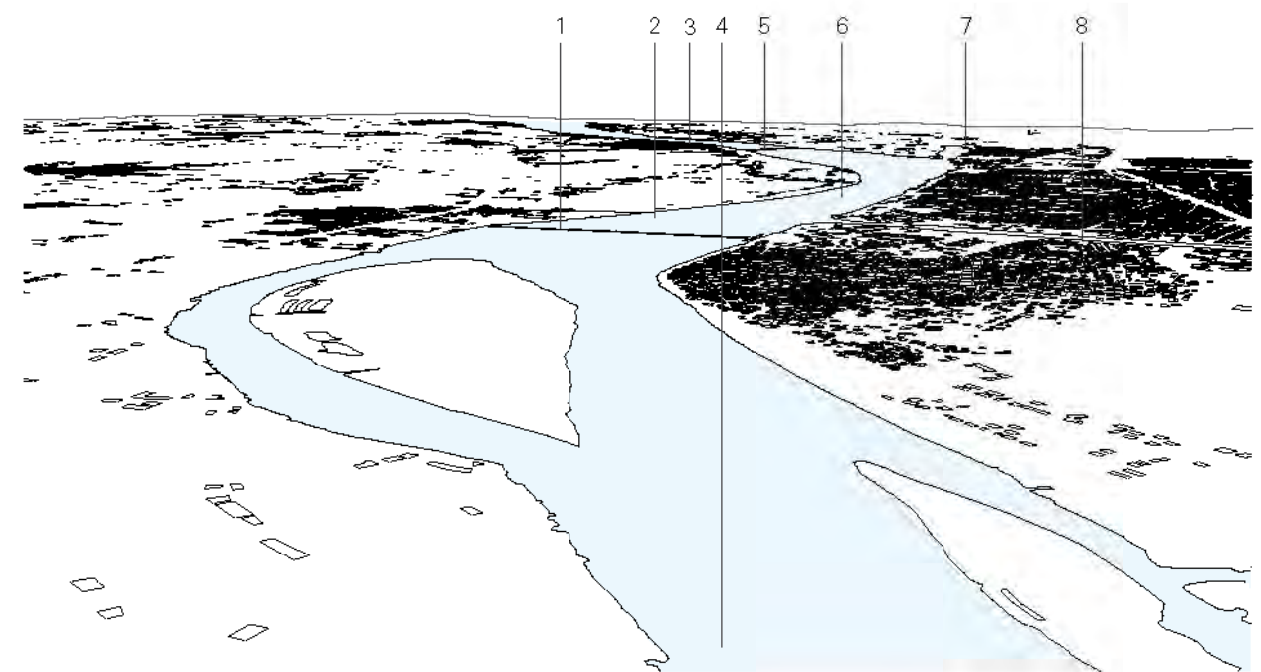
7 Mohammed-Ali-barrage



8 Delta-barrage

Physical Interventions

The impellent force in the attempt of restraining the Nile to the will of humans, is located in Cairo, from where all the interventions are planned. An aim which has driven public endeavor since civilization began. The biggest impact, finally, was triggered by the Aswan High Dam which allowed for more control but has not reached complete domination. Punctual measures and reparations of different scales have to be taken all over the course of the river.



1 Barrage



2 Nile flowers



3 Harbour



4 Engineered riverbanks



5 Bridge



6 Floating dredg



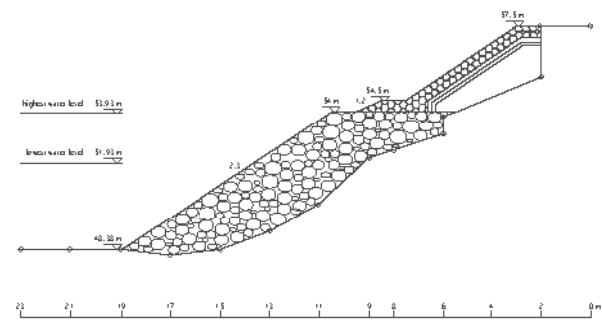
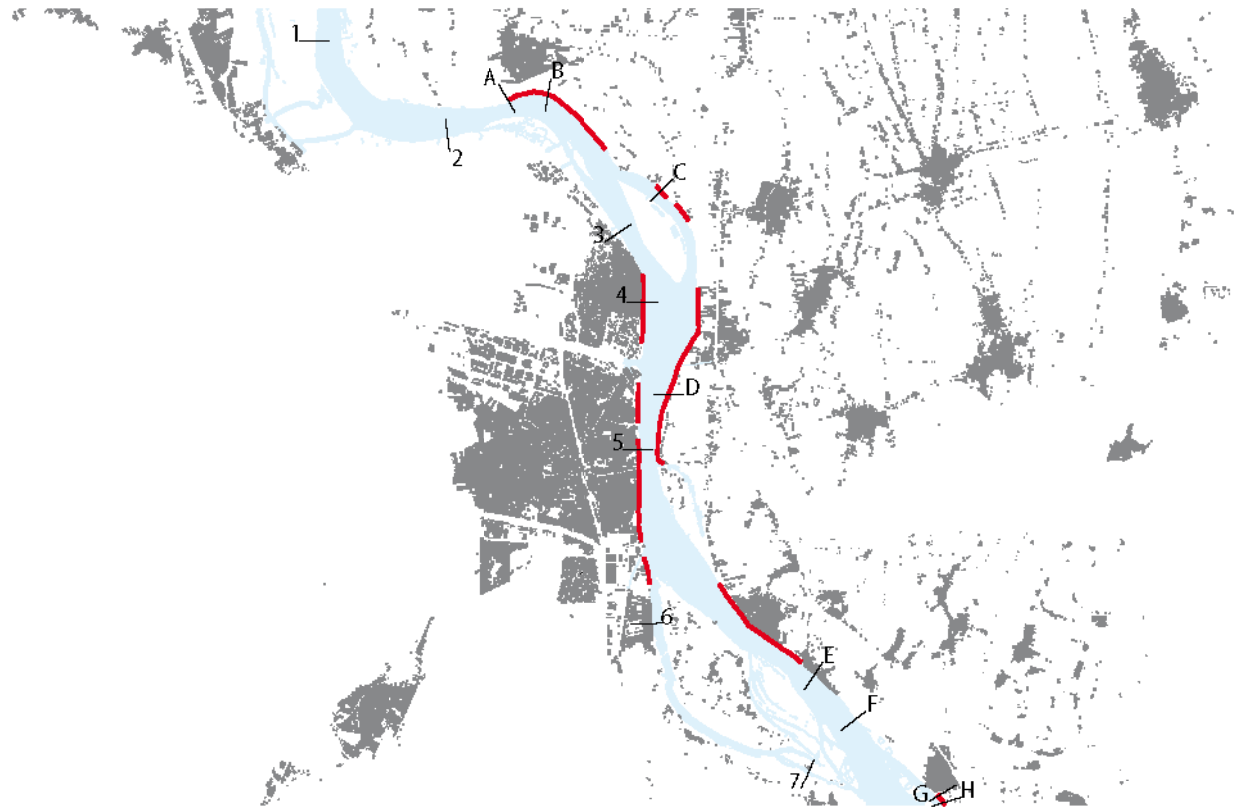
7 Access



8 Canal

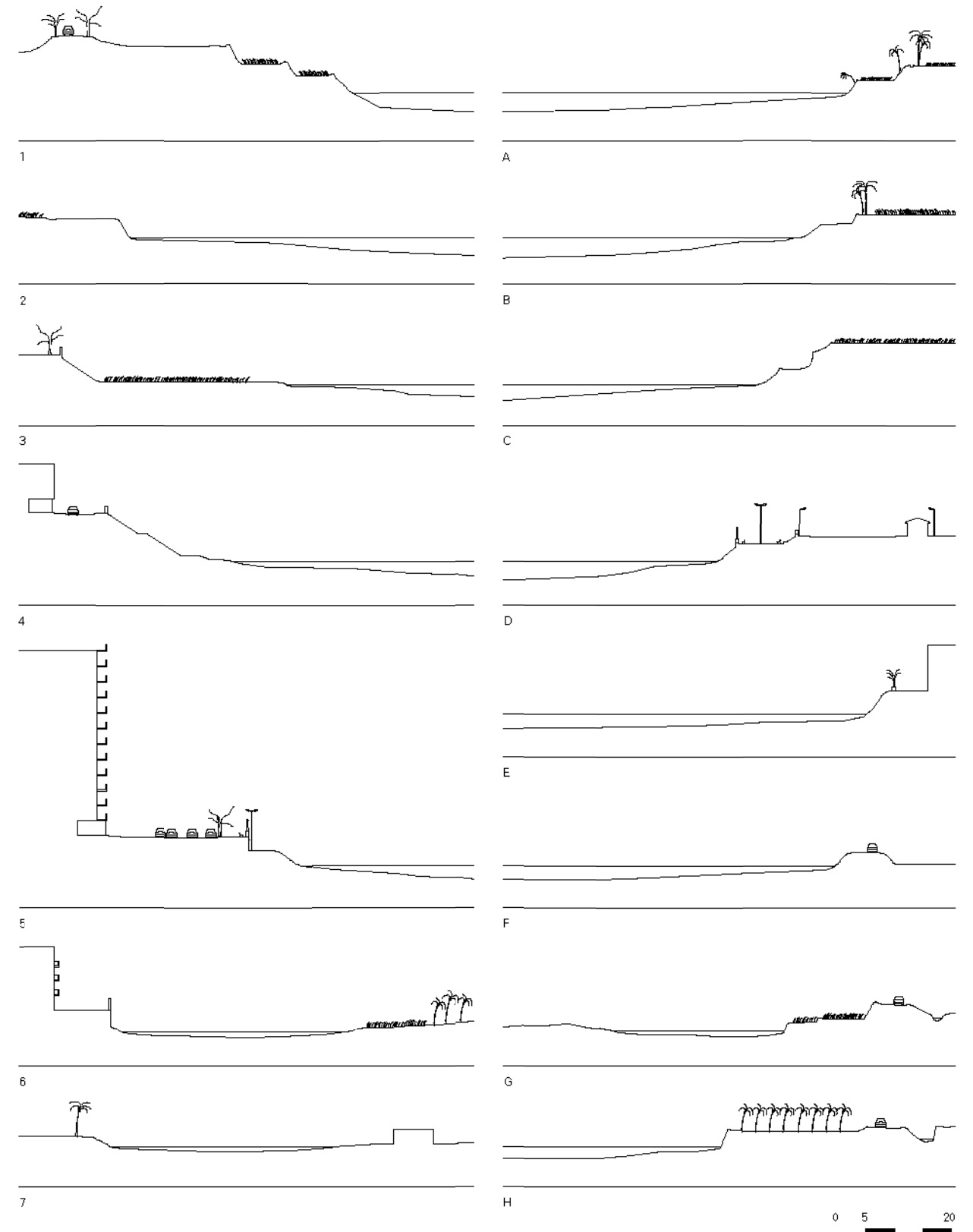
Infrastructural Interventions

There are also interventions in terms of infrastructure. Harbours have ensured that the Nile could have been used as a navigable watercourse since pharaonic times; both, across the river and along its course. In more recent times, bridges have joined the two sides of the river.



Engineered Riverbanks

"We use the same standard cross-profile along the river, which is then modified according to site-specific conditions. The height of the riverbank defines the number of steps the profile has. The uppermost step of the cross section is made out of porous material. This allows groundwater to permeate. Otherwise the retained water would cause the sides of the structure to collapse. The same profile is used regardless if the adjoining land is agricultural land, settlement, or a road." (Interview with River Protection Authority)







Islands Integral to the Nile

Surrounded by water, the islands unite with the Nile. In a gentle slope, the land slides almost seamlessly into the water. The island as a physical body is still shaped by the force of the river. The seasonal inundation of water submerge parts of the islands and alters its banks. Life on the island is just as much influenced by the river, which possibly reveals river interactions with the land before human control.



Seasonal Flooding

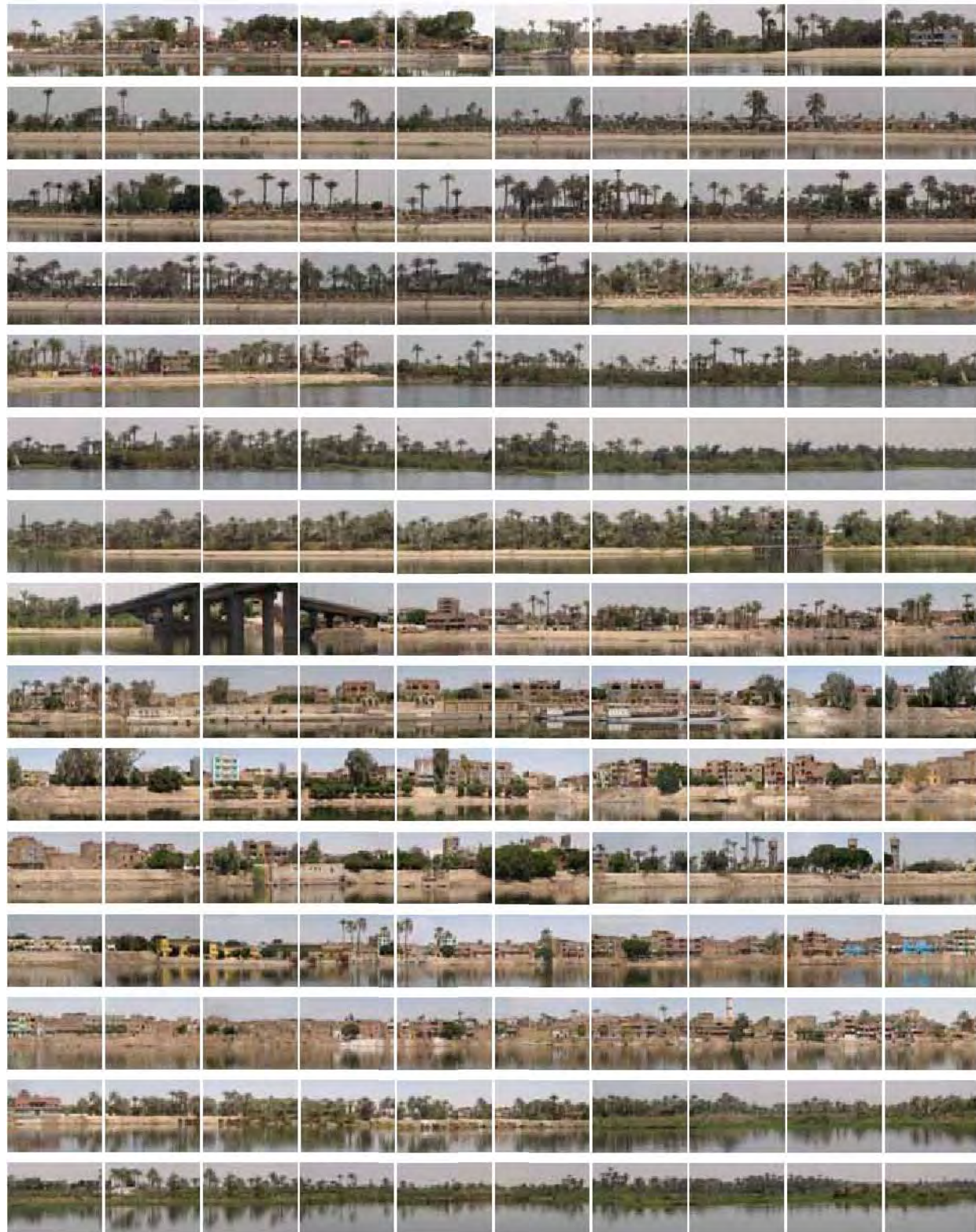
The images compare summer flooding in July 2002, with most fields submerged, to an intact island in winter 2006.

Communal Initiative

People on the islands not only live on the Nile; they live with it too. The main means of transport is each family's rowing boat. As the Ministry of Nile Protection explained, islands are not considered a part of riverbank protection planning. Islanders must deal with the seasonal changes in water level and the occurring erosion by themselves.







East Bank South of Barrage



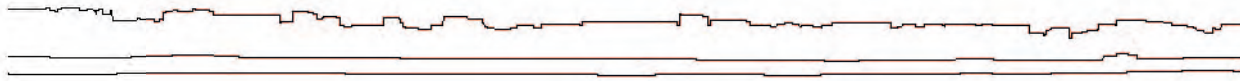
West Bank South of Barrage



Island



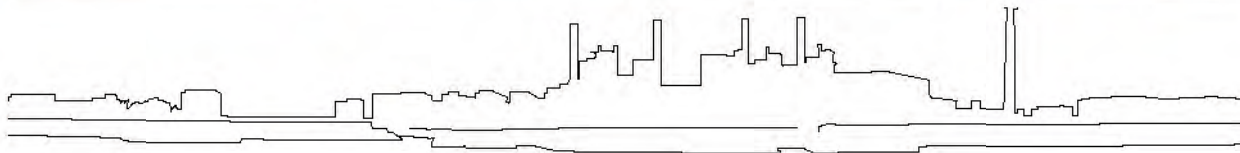
Agriculture



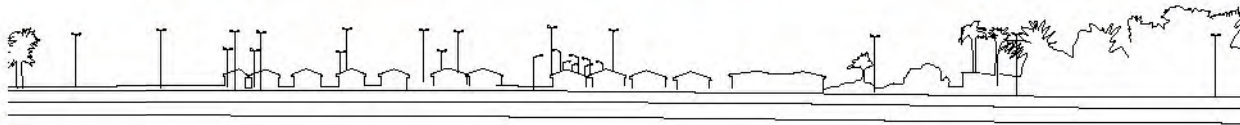
Village

Rural Riverbank Typologies

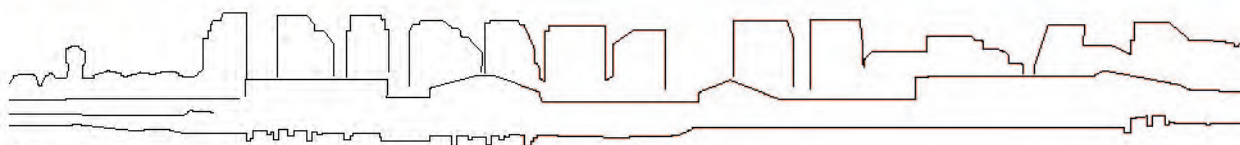




Industry



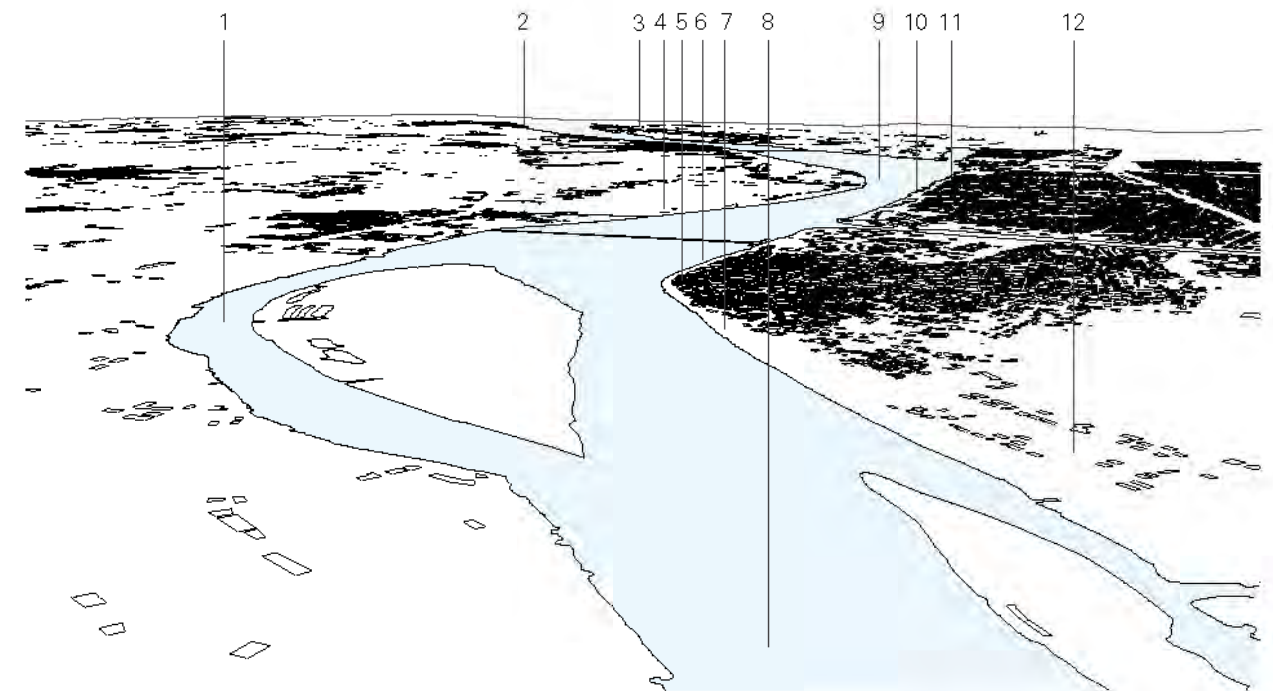
Promenade



City

Urban Riverbank Typologies





1 Transport



2 Lighting



3 Fishing



4 Promenade



5 Riverfront development



6 Swimming



7 Dumping



8 Washing



9 Public transport



10 Riverfront development



11 Clubs



12 Industry

Life On and Along the Nile

The Nile plays many different roles, depending on the actors who occupy its space. Traditional forms of how to make use of the river still seem to be very present. More recent developments like the promenades or the first riverfront restaurant appear as tentative attempts to discover a newly available space. The engineered riverbank created a space which can withstand seasonal changes.



Every dot represents a rowing boat
(Source: Google Earth)

Bridge Substitutes

There are two possibilities to cross the river via built structures; over the barrage or the bridge. Since they are far apart from each other they cannot cope with demand. That is why the traditional way of crossing the river by boat is still very popular. Besides the privately organized transfer by rowing or sailing boats, there are some commuting links run by the governorate, operating across the river.

Barrier or Main Street ?

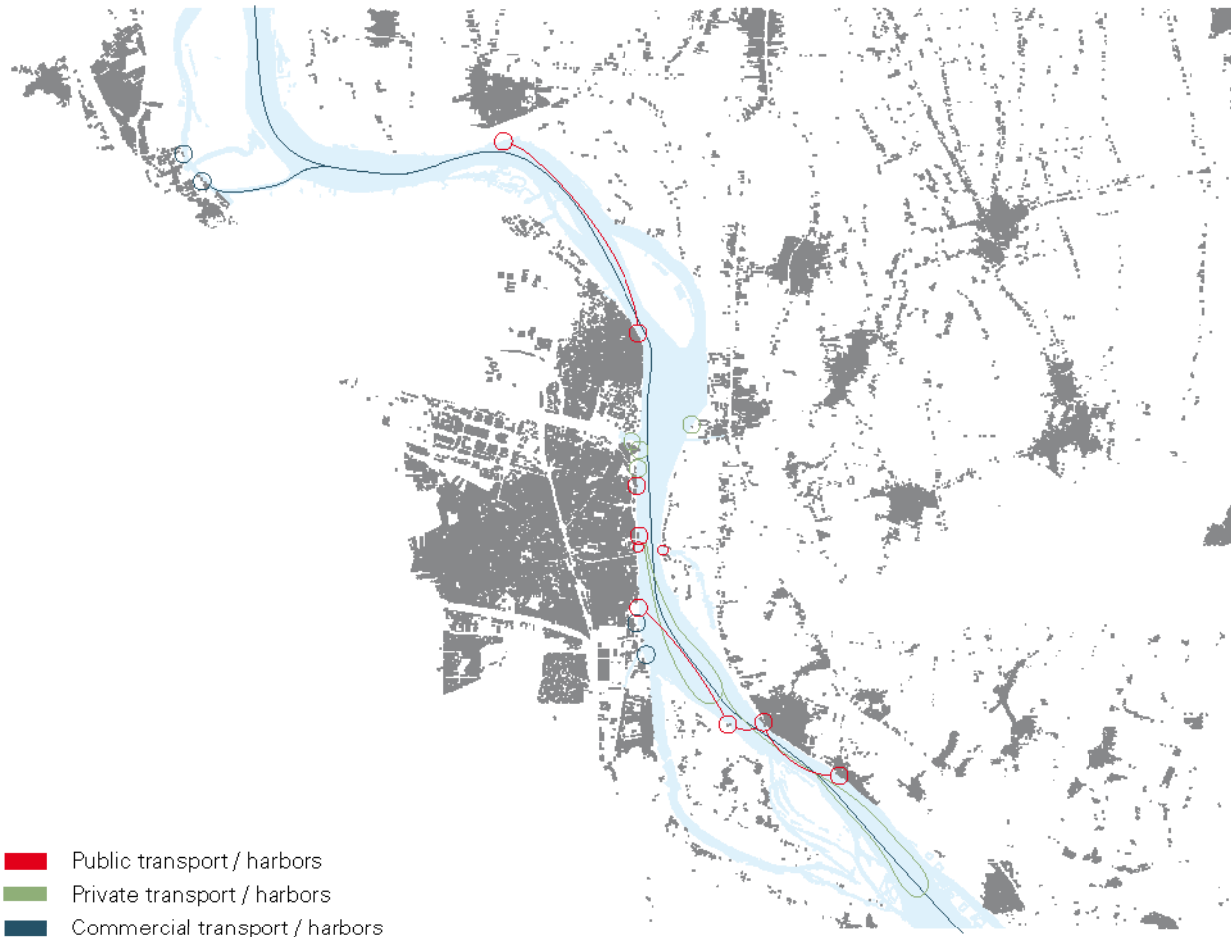
The Nile Valley can be seen as separated into two parts, divided by the Nile. From this point of view, the Nile appears as a physical barrier. On the other hand, the Nile also functions as a main infrastructure line, connecting all the cities throughout Egypt. In this context, infrastructure is understood in a broader sense, to include touristic infrastructure in addition to mere transportation function.



Assiut Shuttle

"I sail from 7 am till sunset. Usually, I cross the river from Assiut Promenade to the opposite side and back, but if required, I can also sail to any other place. People taking this connection go to the city for shopping or school. One way costs 50 piasters. During holidays, there are more people, as they want to visit their relatives in the city. As every Egyptian I love the Nile and therefore also my job."
(Interview with a sailor)





Floating Infrastructure

There are many different kinds of ships on the Nile, from government-run commercial passenger boats to cargo transporters to private feluccas and rowing boats. In Assiut, commercial passenger boat services started in 1979. Today there are 36 public boats operating on the Nile, serving the area between Dairut and Abu Tig on a regular basis. Ships for touristic uses are limited to short excursions, starting either from Assiut Harbour or from "Happy Dolphin" on Assiut Promenade. "The classic Nile cruises were forbidden in 1995 because of security reasons—the only part of the Nile where these cruises are still operating is between Luxor and Aswan." (Interview with Ministry of Tourism)

Dredging a Navigable Channel

A safe navigation criterion for water depth, according to the River Transport Authority, is 2.3m (1.8m draft plus 0.5m clearance). As a minimum, a depth of 1.45m is required (minimum draft of 1.2m plus 0.25m clearance). As the water release from Aswan totals 75 million m³/day, there are 16 to 18 locations between Aswan and the Delta Barrage where the water level in the navigation channel is less than the minimum depth. There is no exclusive release of water from Lake Nasser for navigation. There only is a guaranteed minimum release of 60 million m³/day. Therefore, the shallows that affect the navigation on the Nile have to be removed through dredging. (MWRI, 2005)

Navigating by Instinct

"Every traffic system in the world has signposts and signals. On the Nile there aren't any. And you can't steer based on what you see on the surface. You have to know and anticipate at every point what is underneath. I learned all this from my father. You have to grow up with this knowledge—that way, you grow into it and you acquire an insitinct, a sense for the Nile...I started on cargo boats. At that time, they were used instead of trucks to transport goods up the Nile to villages and provinces. Groceries, cement, wood, you name it. The Nile was like a main street crossed by many boats going upstream and downstream." (Abdel-Sabour, captain, Al-Ahram Weekly, Sept. 2003)



Fishing, a Livelihood?

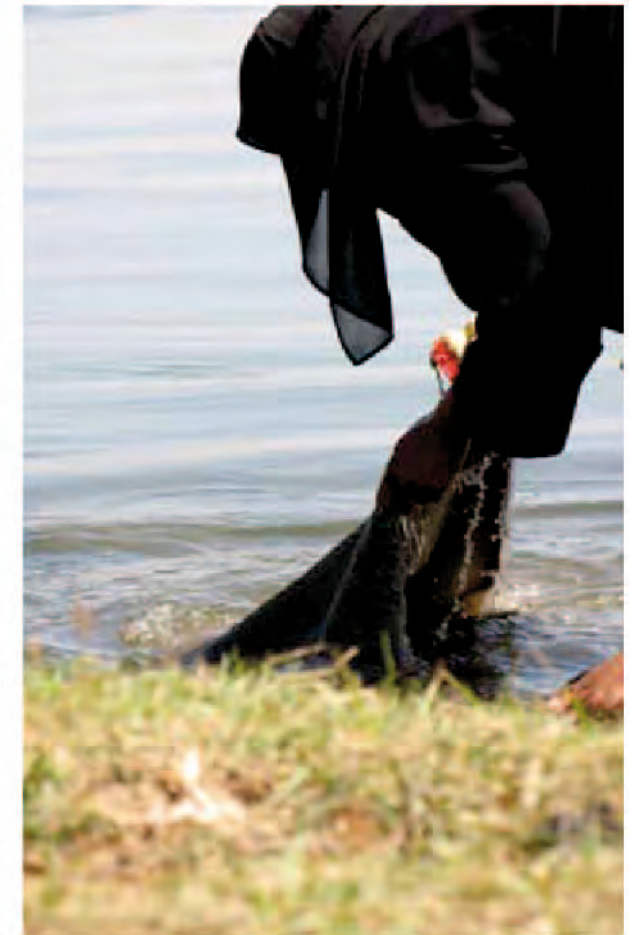
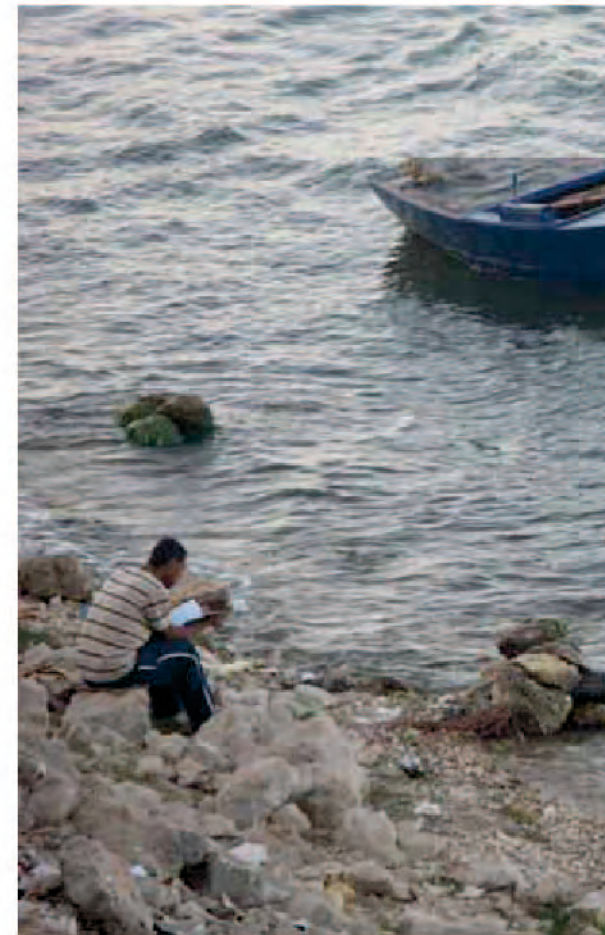
Virtually all Egyptian water bodies are fished to the maximum and some are already overexploited. Large companies are crowding out small, private fishermen who cannot make their living anymore. Not only is the quantity of the catch reduced, but there is also a falloff in quality to be examined. Reported average amounts of heavy metals, organochlorine pesticide residues, and PDB's in fish meat are substantial, and often well above the standards. These high levels indicate an increased health risk for people that consume much inland fish. (MWRI, 2005)

A Place for Contemplation

"A wise man once said: If you are feeling bad and you don't want to talk anymore, you can go either to the grave or to the water" Haj Aayd, 71, hobby fisher, who has been coming to fish at this small island for 35 years.

The Nile of the People

The Nile is so much linked to the very existence of Egypt that its presence is often taken for granted. It just flows by, it seems. People fish in it, as they have done for millenia. They wash their clothes in it, as they have also done for millenia. They sit on its banks to leave their daily sorrows behind and they dump their waste in it as they have done for centuries, although the refuse changes nature over time. These ongoing interactions signify an everyday, almost routine, relationship between people and river.





Purifying Waters?

Considering the significance of the Nile for Egypt, it is hard to understand how much waste is being dumped into the river. In an interview, Dr. Dina Shehayeb explained that there is a historical component to this phenomenon. Waste has been dumped into the river for ages. The difference today is the sheer amount of refuse and its altered composition. In former times, the river was able to deal with the organic matter dumped into its waters, but plastics and metals overburden its self-regulating capacities.



Riverbanks as Disposal Sites

The condition of the riverbanks in terms of pollution varies along the course of the Nile. Apart from the large governmental dumpsite at El-Wilidiya (image on previous page), there are several riverbank disposals throughout El-Wasta (images above). The banks in the other villages do not show a comparable amount of pollution. The image which is shown by the map on the previous page is not a complete picture of the situation in Assiut. Depicted are only the dumping sites along the course of the Nile. Besides these, there are 6 larger landfills in the desert area of Assiut.

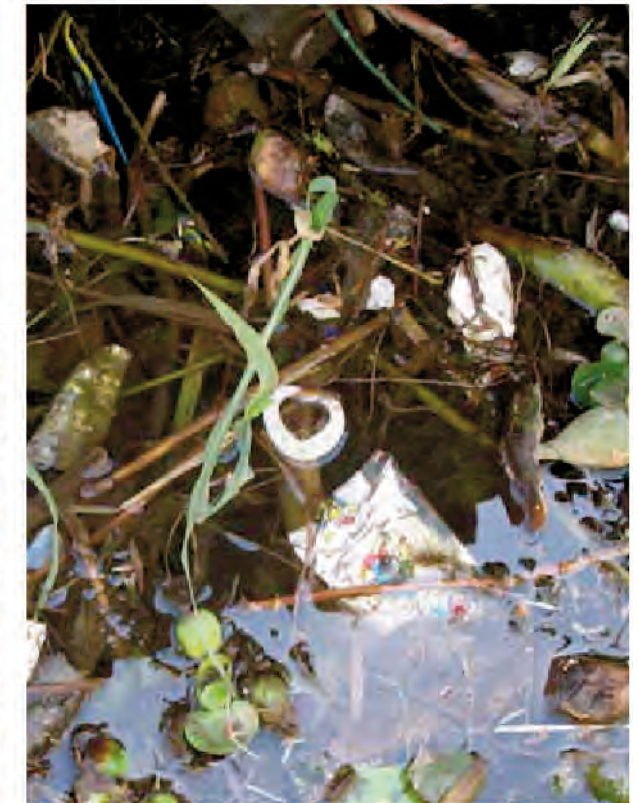
Powerless People

As the sign over the "entrance" to the dump site at El-Walidiya indicates, the land belongs to the Governorate of Assiut. "The situation as it is today has only been for six months. Before, we were living right on riverbank with a garden in front of our house and direct access to the water. One day, the first dumper appeared. No government official ever visited our family to inform us." (Family of Hajl Hassan Abd el-Rahman) Residents of the Walidiya dumping site have attempted to protest the communal waste disposal, but have yet to provoke reaction from the government.



Living on Trash

While environmentally hazardous, the disposal sites are actively used. Goats are led to the dumping sites to feed on bread and other organic refuse. People collect PET bottles and other reusable materials to sell to recycling companies.



A Political Issue

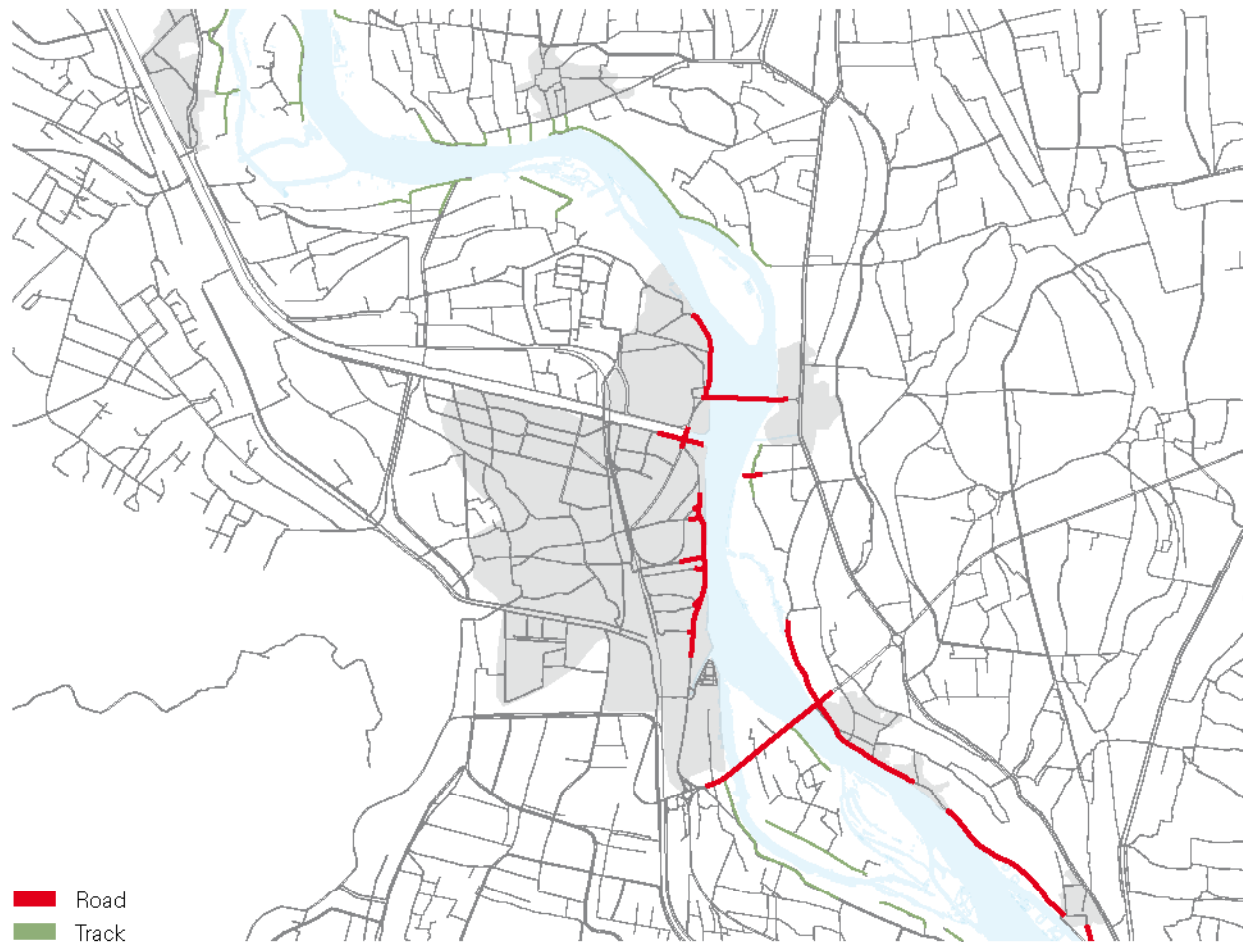
“Let me emphasize that the Nile is the cleanest river in the world, regardless of all the talk about its pollution.” (Mohamed Fathi, Chief Irrigation sector, Irrigation Ministry, June 1998)

“Corruption is one factor that has led to the Nile’s pollution and illegal constructions along its banks. The law is only applied on ordinary citizens, but enforcement turns lax when it comes to organizations or people who consider themselves above the law.” (Gamal Zahran, Member of Parliament, Sept. 2007)

“Even just two years ago, nobody in Egypt really gave the environment much thought. Now, however, we are getting a lot of political support, and the environment is firmly on the political agenda.” (Nadia Makram Ebeid, Minister of Environmental Affairs, Interview Al-Ahram, June 1999)

Polluted Lifeline

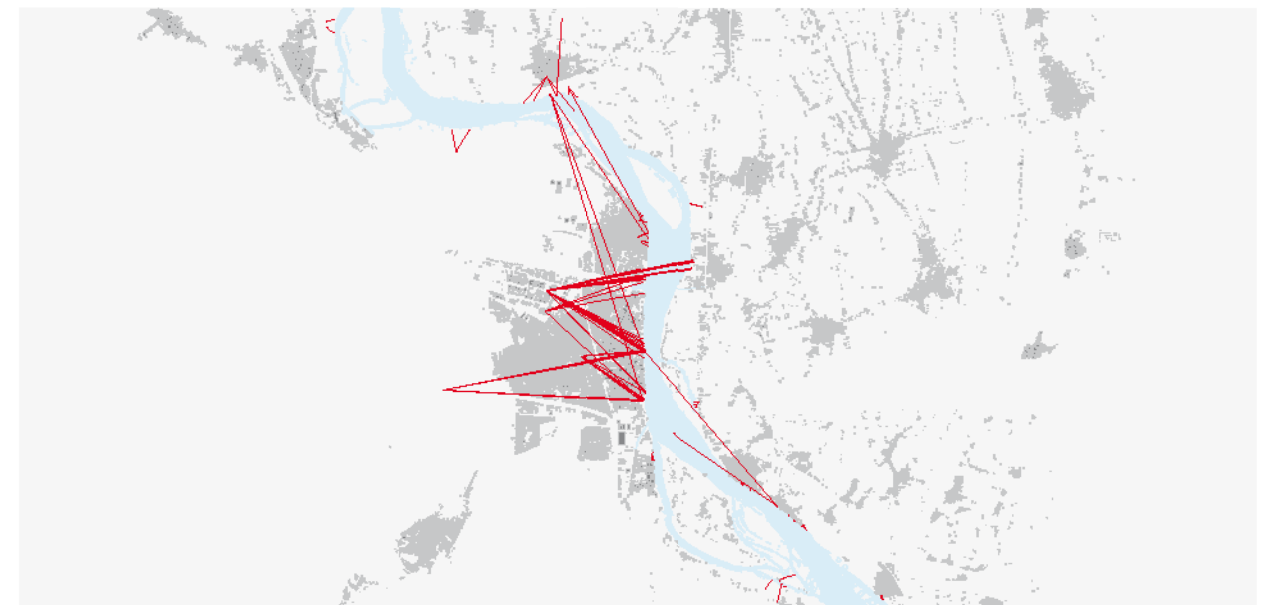
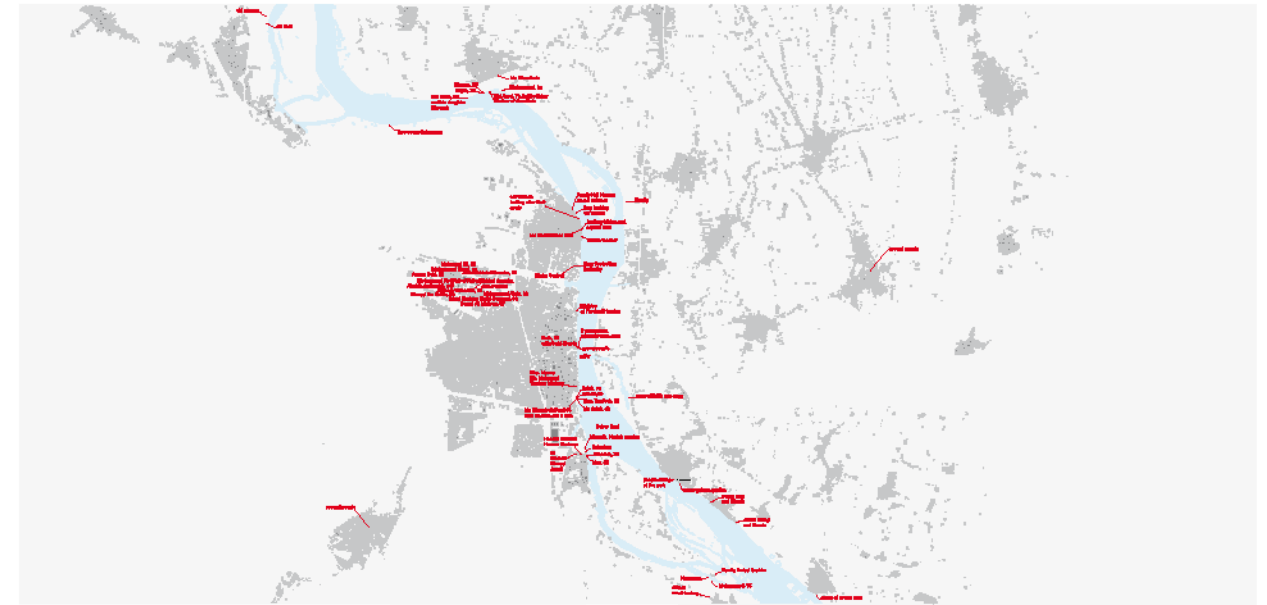
The Nile water quality is affected by agricultural drainage water and effluents from Upper Egypt settlements. 50% of the urban population has access to sewage services, while less than 10% rural areas have access. Domestic and municipal wastewater collection and treatment facilities are limited to main urban centers. In 2000, 23% of the population was connected to a sewage system. Industrial areas directly affecting the water quality included the fertilizer plants at Assiut, where no current data is available. In 1998, the government initiated a program to reduce industrial wastewater discharges. By 2006, a total of 91 installations either ceased discharging their effluents to the Nile or complied with the regulatory standards. The discharge volume from these 91 installations constituted 99.64% of the total industrial discharge volume. (EEAA, 2008)



█ Road
█ Track

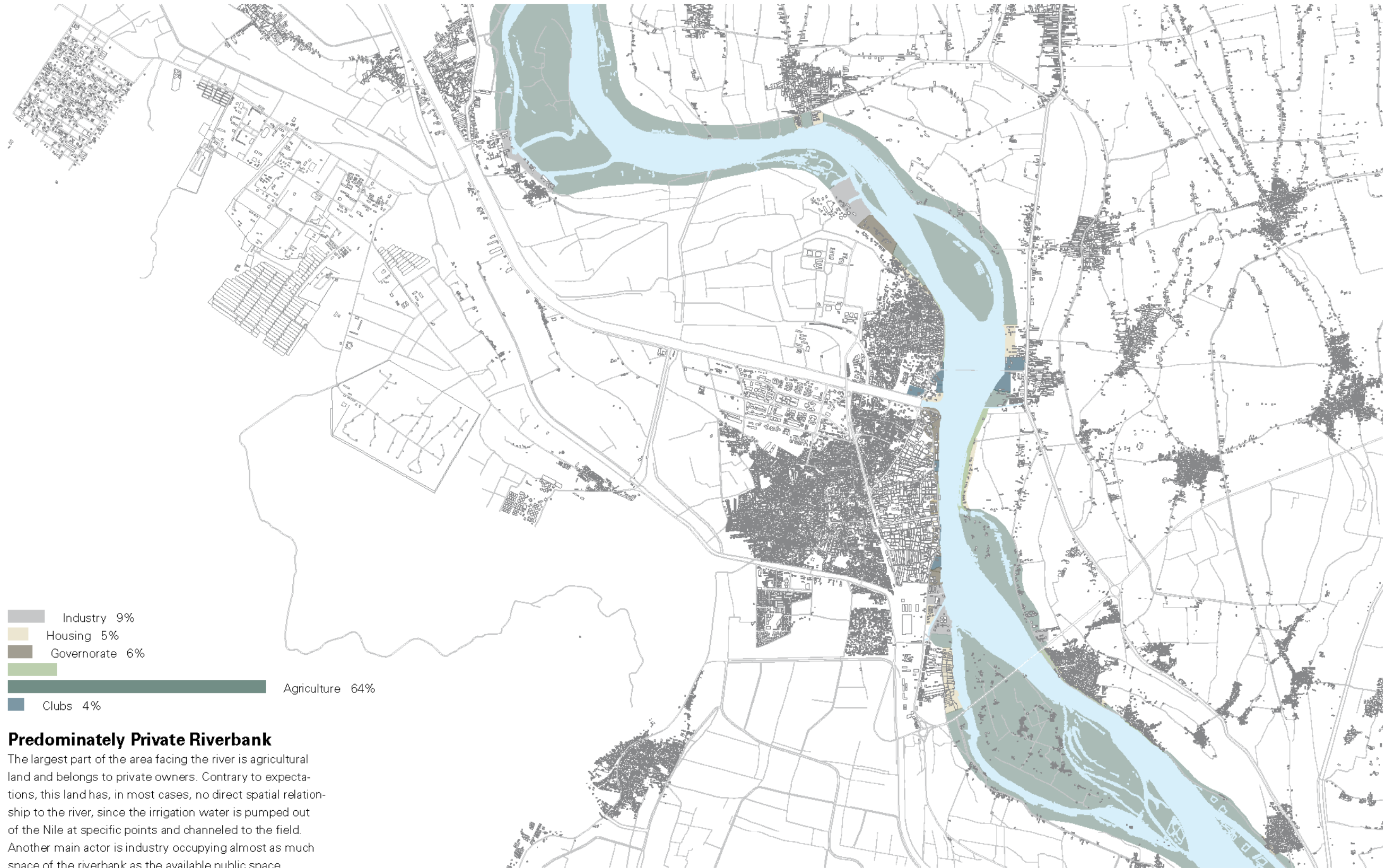
Fragmented River Space

The map on top shows that there are no longer stretches of continuous roads along the river. Roads following the course of the river are usually constructed on ancient dams. North of the barrage, access to the river is almost exclusively by unpaved tracks, many areas are not accessible at all, leading to a fragmented image of the river. On the level of actors occupying the riverbank, one can see that a rather large part of the riverbanks is privately owned and that there is no continuous public space.



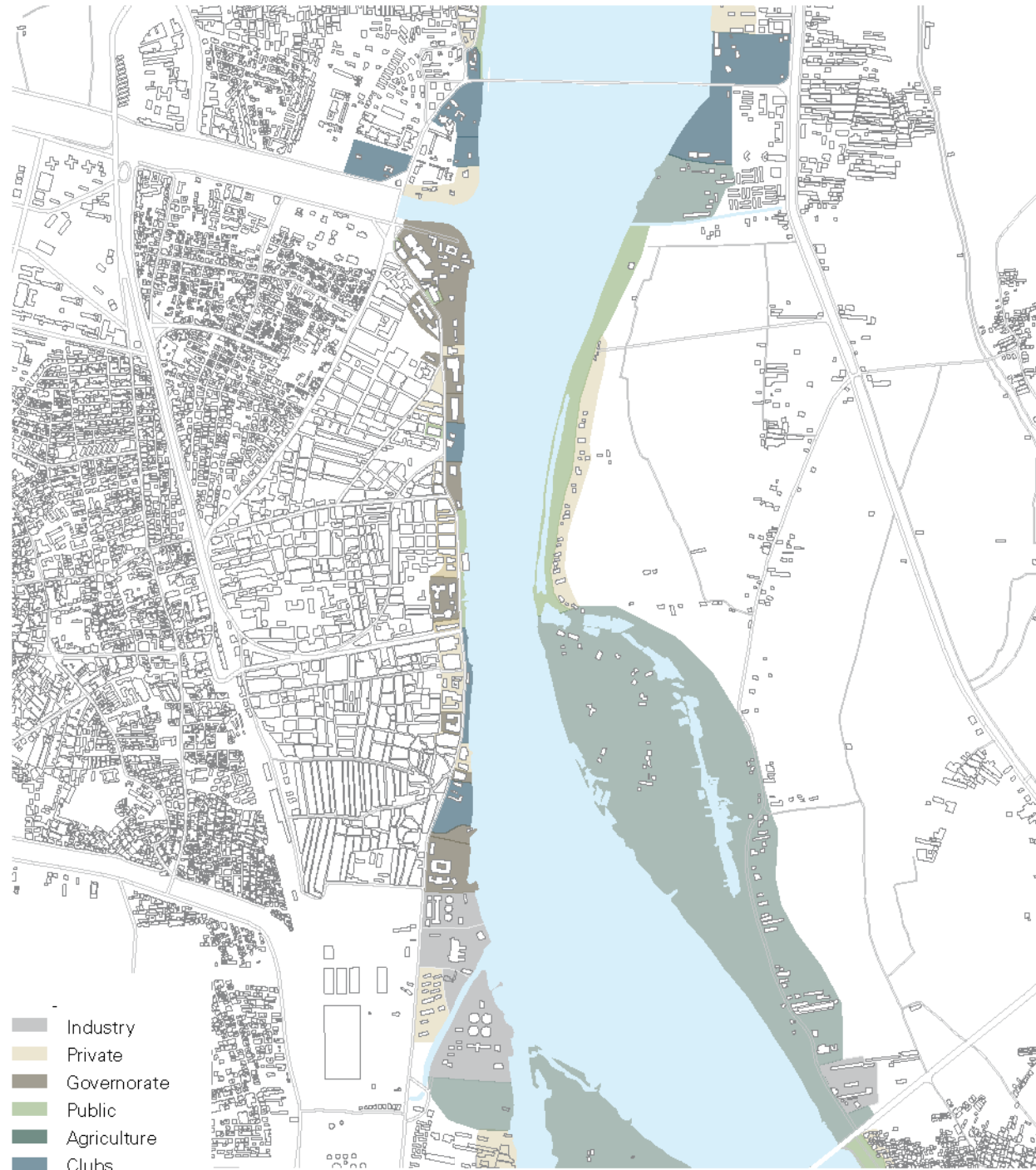
Where do you go on the Nile?

The graphics indicate the location of our interview subjects, their home, and frequented places at the Nile. People living in villages away from the river do not go to the Nile. Villagers next to the Nile prefer to sit in front of their houses rather than visit the river. People in Assiut city are regular club visitors. All interviewees said that their visits to the Nile are club-only occasions. People frequent the same places, without intent to discover new locations. The quietness of the river, as a place to think and relax, was the most mentioned reason for why people go to the Nile.



Predominately Private Riverbank

The largest part of the area facing the river is agricultural land and belongs to private owners. Contrary to expectations, this land has, in most cases, no direct spatial relationship to the river, since the irrigation water is pumped out of the Nile at specific points and channeled to the field. Another main actor is industry occupying almost as much space of the riverbank as the available public space.



Continuous Public Space?

In comparison to the large agricultural areas, a more fragmented zoning structure is found in the city. There is no continuous public zone along the river since the promenade is often interrupted by governmental estates and clubs.



Fragmented Riverfront



Prescribed Programs

While the Nile is in most parts characterised by agricultural land, it seems transformed into a “city river” where it flows through Assiut. But somehow, these interventions are only attempts to cultivate a newly available space. Engineers created something which has not existed in this form for a long time; a permanent riverbank. Riverside clubs and recently developed promenades offer socially formalized public spaces. Although different in nature, they are both in their essence prescribed programs.

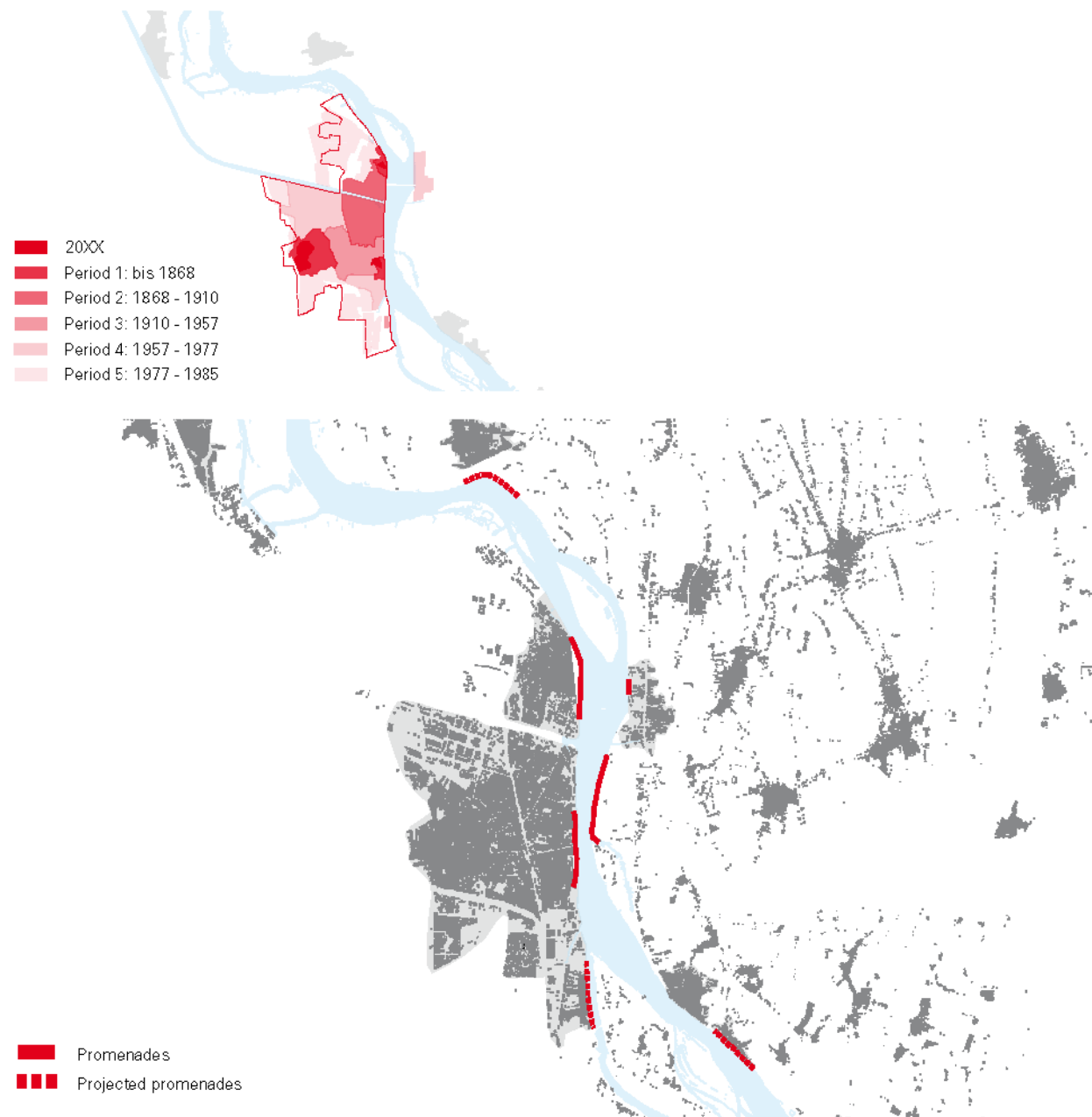


Privatized Public Space

Fourteen social clubs for different audiences gather along the river at Assiut. All are encircled by a wall—a privatized public program detached from the surrounding city, oriented towards the river. The concept is reminiscent of British inspiration, introduced in the colonial period.

Encapsulated Space

According to interviews, clubs can be described as an encapsulated space. Compared to the street, the club is a place not directly supervised by the police, which are otherwise omnipresent in Assiut. Also, the club offers an opportunity for women to leave the household and be in public.



Imported Concept

Historically, Assiut is not a city on the water. The development of a riverfront results from city expansion and securing the riverbank by engineered structures. The Assiut Promenade is a recently established space, offering basic public infrastructure. Riverfronts in the villages like El-Walidiya or El-Wasta have also followed suit. People use the promenade to sit, smoke shisha, and socialize. Although restaurants are found along promenades, they do not have an explicit physical relationship to the river.

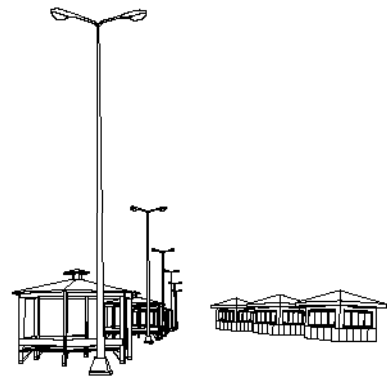


“Cleanliness is a civilized behavior.”

Certainly, cleanliness is related to the physical state of a tidy public space, but it could also be read as a general directive of “how” one is intended to use this space. The promenade is a socially formalized and controlled environment which belongs to the city, not to the river. There is no physical relationship between water and promenade; a clear line separates river from city.

Dreaming of a Promenade?

In many interviews, people expressed the wish to have promenades established in their villages. Some, like the four men in Nazlet, complained about the existing earthen riverbank, which is polluted and dirty. A promenade in contrast would be a clean and safe place to sit at the Nile. But mostly, the visions remained unclear about the benefits of such an investment. Assumably, they were dreaming of the crowded promenades in Cairo, with restaurants and shisha bars. But, is there a public which would activate it?

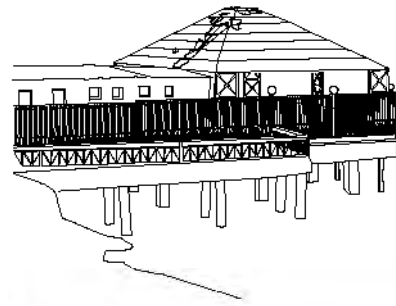


Infrastructure First

Following the Governor's directive, a few years ago, Wasta Promenade was built on the opposite side of Assiut. With no nearby settlement, and no public access, one must drive to get there. This is why the restaurants built along the promenade are still vacant and already in disrepair. (Interview with Ministry of Physical Planning) Similarly, in the south of Assiut, an extension to "Heaven Park" was built 5 years ago, including an open air screen with a bar, following a governmental decision. "Plans to use the screen for public cinema events are still nonexistent...The bar is not in use at all—they are still waiting for someone to rent and run it." (Interview with Ministry of Tourism)



Ornamentation or Control?



Hovering over the Water

The first commercial riverfront restaurant was established only a few years ago at Assiut Promenade, the "Happy Dolphin." It was built on piles, standing in the river. This physical feature already includes it much more as a space of the river than all the other phenomena along the banks.

Places to Escape

Our narrative about "Living with the Nile" began on the water, moved up the riverbanks, crossed the promenade, and now returns to the river on the riverfront restaurant "Happy Dolphin" and partyboats on the Nile. The narrative tells not only about the physical relation to the Nile but also about an underlying, mental relationship. Compared to the club or the promenade, partyboats are less formalized or defined in program. With own rules and, to a certain extent, autonomous features, partyboats can be seen as part of the space of the Nile—a space with its own rules within a larger framework.



The Place to Be

It is not just the physical appearance which brings the "Happy Dolphin" closer to the river, it is its program which is more open and less defined. A place to dine, to smoke a shisha, as well as to celebrate private parties, the riverfront restaurant has its own rules within the larger society.



Trial Balloon

The "Happy Dolphin" initially was built by the Government with the aim to introduce a new concept on the riverfront. After its completion the place has been rented out to a private investor who is still running the restaurant. After the "Happy Dolphin Concept" turned out to be a success, the Government is now about to realise a follow-up right next to the "Dolphin". A defunct fecal pumping station is transforming into a new riverfront restaurant.



Party on the Water

Somehow strange: one sits at the Nile, enjoying the scenery and suddenly, a boat around the riverbend approaches; ear-splitting sounds and party-lighting, a scene that seems out of place in Assiut. Yet, when talking to students, it appears that everyone has his or her own story of a Partyboat experience. An old tradition, going back to historical times when pharaohs escaped the boredom of their palaces via boats, this escape is still available today. An escape from the city and the rules of society, the boat becomes part of the Nile and thereby part of its autonomy.

Heterotopia

Brothels and colonies are two extreme types of heterotopia, and if we think, after all, that the boat is a floating piece of space, a place without a place, that exists by itself, that is closed in on itself and at the same time is given over to the infinity of the sea and that, from port to port, from tack to tack, from brothel to brothel, it goes as far as the colonies in search of the most precious treasures they conceal in their gardens, you will understand why the boat has not only been for our civilization, from the sixteenth century until the present, the great instrument of economic development (I have not been speaking of that today), but has been simultaneously the greatest reserve of the imagination.

The ship is the heterotopia par excellence. In civilizations without boats, dreams dry up, espionage takes the place of adventure, and the police take the place of pirates. (Michel Foucault, 1967)

Twenty Virgins for the Pharaoh

The pharaohs prided themselves on their pleasure boats with multiple decks containing cabins, kitchens, dining rooms and lounges. The attraction may not have been the journey itself but rather the atmosphere. When in the "Story of the Green Jewel" Snofru was bored, his advisor suggested a boat trip: "... twenty virgins fair to behold went into the boat, and they rowed with oars of ebony decorated with gold. His Majesty took pleasure in the outing, and the gloom passed from his heart as the boat went hither and thither, and the girls sang together with sweet voices." (Westcar Papyrus, Middle Kingdom)

Escape from the City

"Partyboats are used by everybody—for student parties, for weddings, for birthday celebrations... Basically, everybody can rent a partyboat... One reason for celebrating on the Nile is the loud music. It's no problem when people are loud on the river. You could not do this in the City. If you party on the river there is no problem with the police — within the city one could call the police because of noise disturbances." (Interview with Ministry of Tourism)



Adrift on the Nile

Written in 1966 by Nagib Mahfouz, the story describes life in an Egypt that allows only limited outlets; politically, culturally, sexually. Most of the the plot happens on a houseboat, adrift on the Nile where some friends have their meeting place. They fool around, smoke kif (hashish) and have intimate relationships. It offers a permissive island, a getaway from real life. The boat and all the events taking place on it seem to be much more part of the river than part of the city or society.

THE NILE: COMMENTARY

The Nile River has always signified more than just a linear waterway. A complex and ever-changing body of water, it permeates the entire Nile Valley to the point of becoming synonymous with it. Over millennia, civilizations have attempted to tame this body of water for more efficient use. Yet, not even the Aswan High Dam has completely integrated the river into the man-made environment. Of course, as the provider of water and therewith life in the Nile Valley, the river is used to its maximal limits. But efforts to occupy the river spatially have remained marginal compared to its size, with the traditional farmer uninterested in developing the Nile as a “space”. Governmental attempts to produce waterfront promenades along its newly engineered banks are ineffectual attempts to make this complex entity part of the city. The Nile cannot be made an element in the vocabulary of Nile Valley urbanization because it derives incontestable sovereignty from its significance as a natural element and environmental factor. Today, the river’s territory is still only to a limited extent subject to the social and political regulations of Egyptian society. The Nile remains an autonomous space.

إدارة الثروة المائية. بناء على سطح مائع



WATER MANAGEMENT BUILDING ON FLUID AVAILABILITY

IRRIGATION

The Art of Irrigation

Canal Structures and Pump Systems

A Regional Control Point

An International Chain of Water Users

DRINKING WATER

The Nile Becomes Potable

Village Drinking Water Distribution

WASTE WATER MEETS DRAINAGE

Waste Water: Turning Into a Resource

Drainage

A SHRINKING MARGIN OF STABILITY

Passing the Resource Through a Control Vacuum

Finding a New Balance

ETH Studio Basel

Contemporary City Institute

Isabelle Maassen, Samuel P. Smith

Prof. Roger Diener, Prof. Marcel Meili

Mathias Gunz, Rolf Jenni, Milica Topalovic

Christian Mueller Inderbitzin

Spring Semester 2009

WATER MANAGEMENT BUILDING ON FLUID AVAILABILITY

The dry climate of the Nile Valley makes civilization dependent on the availability of water. It has nourished society, agriculture, and industry for millennia. Structures built to distribute the water shape the landscape from the banks of the Nile to the desert, influencing all major practices connected to water use. The distribution of Egypt's water resources are administered on the state level while its actual use in the field occurs practically unsupervised. The growing population and expanding use of water puts the system under pressure, and projects on different scales seek to realize maximum potential.

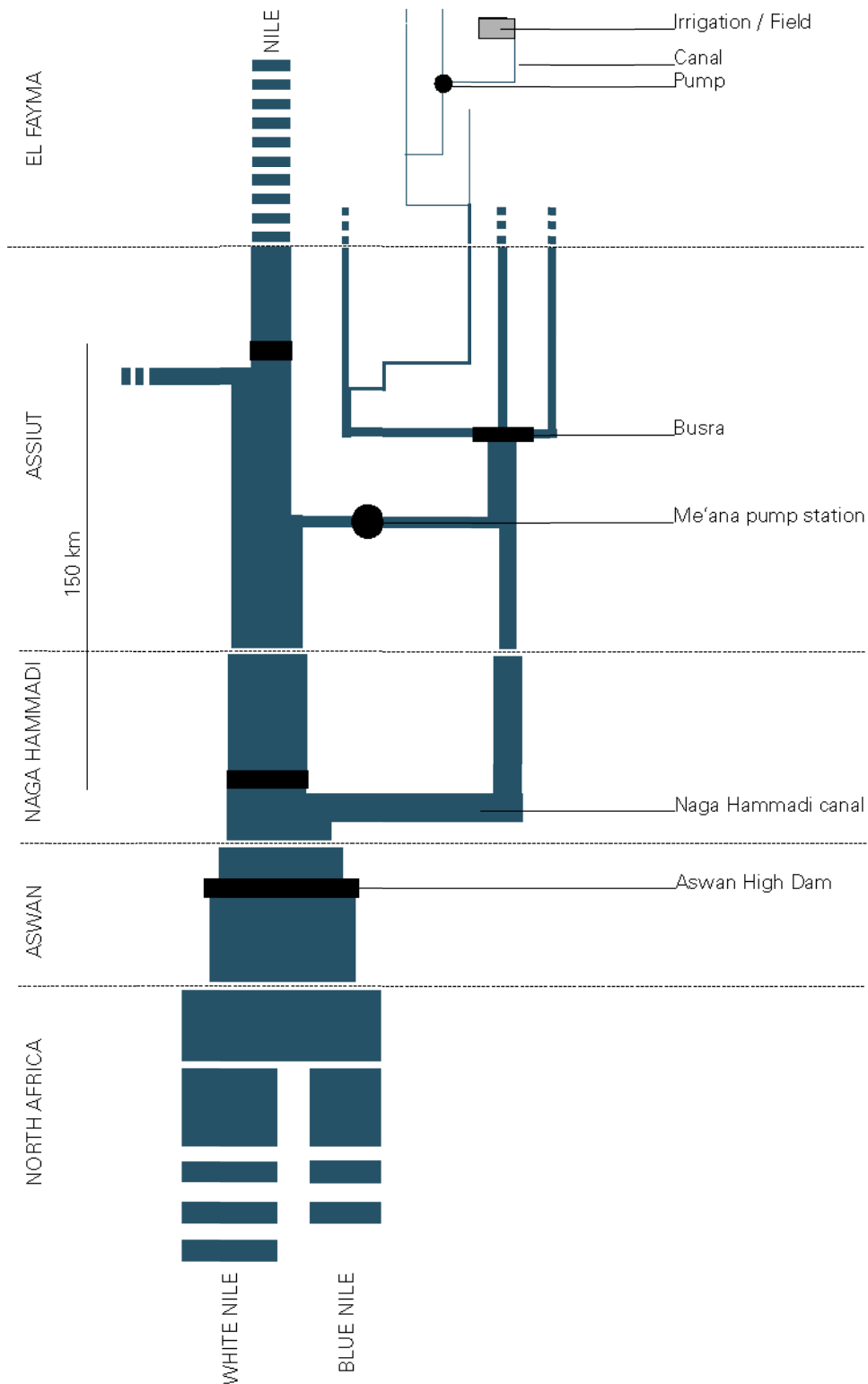


IRRIGATION

Typical for Egypt, Assiut has one day of rain per year; thus, any vegetation must be sustained by irrigation. With agriculture consuming 95% of water resources, the control of irrigation water is of great importance. The State successfully makes water available free or charge to farmers. The Aswan High Dam marks the point in the Nile's course below which the Egyptian government has complete control over the Nile water, which it allots dependent on demand and the natural inflow into Lake Nasser.







A Maze of Branching Points



A Pump Owner's Work

"... I own 4 pumps in the surroundings of El Fayma. With my big Nile water pump, which is 50 years old, I deliver water to 10 farmers. They pay me 10 pounds per feddan [1 feddan = 4200m²] ... The machine runs nearly every day from 8 am to 4 pm. My own feddans are cultivated by paid workers ...The big pump irrigates 40 feddans, the other 2 medium pumps 10 and the smallest only 3 feddans ..."

Yusif Khalaf, El Fayma



1



2



3

1. The great majority of fields (92-95%) is irrigated by the traditional method of surface irrigation, i.e. flooding of the fields every 5 to 20 days, depending on the crop and the season. Its efficiency (water actually used by the plant divided by total water applied) is 65-70%.

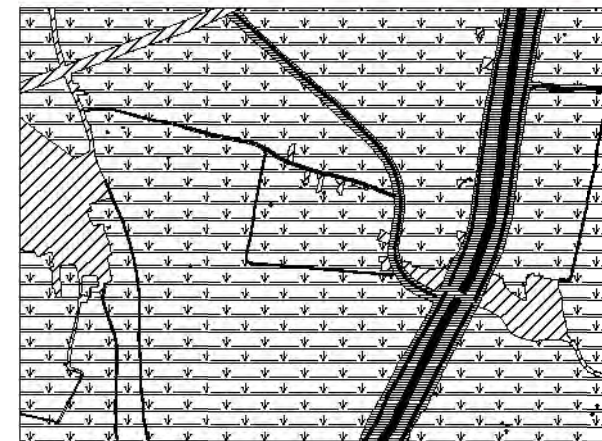
2. + 3. In reclaimed lands, only sprinkler and drip irrigation are allowed because of their higher efficiency (80-85% and 95%, respectively); they require, however, a greater initial investment.

The Art of Irrigation

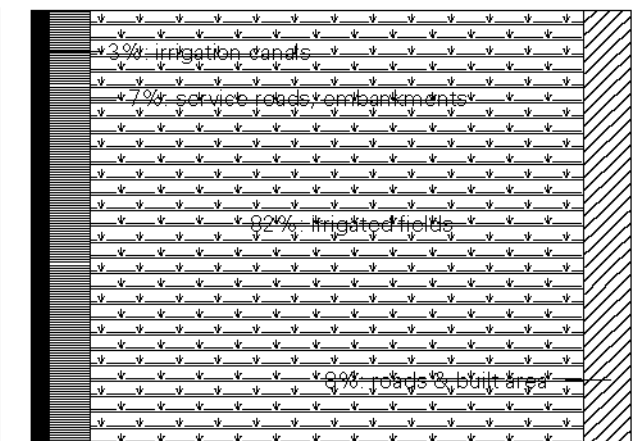
Bringing the water to the plants is done in several ways. Before the Aswan High Dam, the Nile rose every spring, covering the fields and depositing fertile mud. The ability nowadays to irrigate year-round demands a greater effort of water control but theoretically makes complete use of Nile water possible. The water needed for irrigation is the amount that the plant absorbs and gives off to the air through evapotranspiration, plus an additional amount that seeps or drains to maintain normal salinity of the soil. In cooperation with the Ministry of Water Resources and Irrigation, the universities' research improve irrigation methods and offer free lectures of efficient water use to farmers.



1



2



3

Sacrificing Land for Canals

Through the choice of open canals for transporting the irrigation water, a sizable part of agricultural land is given up for canals. In the above area selected from the fields around Assiut (1,2), roughly one tenth of the surface area is taken up by irrigation canals and the maintenance space they require (3).



Canal Structures and Pump Systems

The private canals from farmers' pumps to the field strongly influence the appearance of the agricultural landscape. The farmers choose how they construct these waterways. To guide the water through the canal labyrinth to the appropriate field, they plug up or unplug openings in their canal with mud or stones. The pumps were often bought second-hand and imported from India, Europe or neighboring countries, sometimes almost a century ago; they run on gasoline or diesel.



1

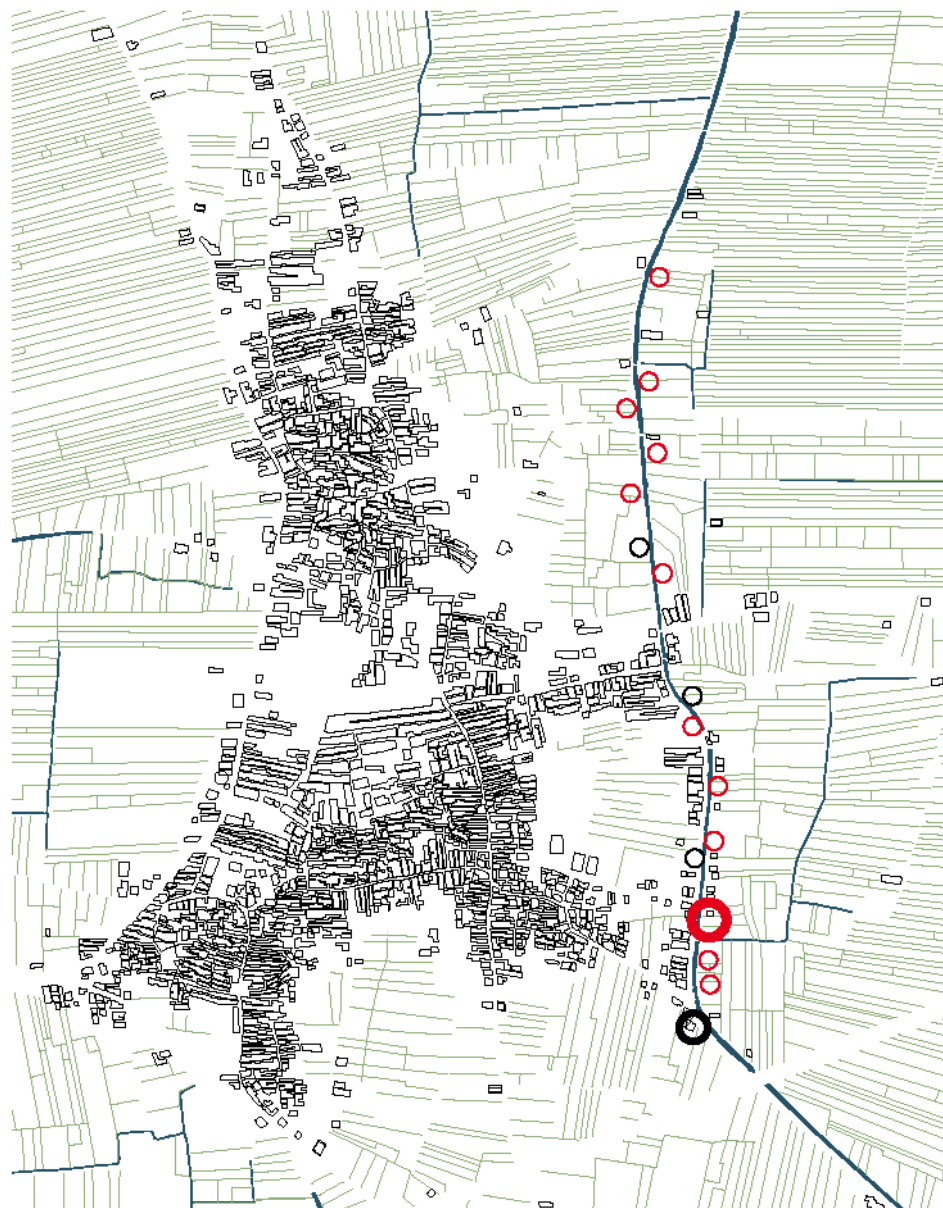


Material Variation

- 1. Concrete canal
- 2. Earth canal
- 3. Stone canal



3



- Mobile pump
- Fixed pump
- Shared groundwater pump
- Shared Nile water pump

A Mix of Pumps in El Fayma

Irrigation pumps draw water from the canals or from groundwater wells; they can be fixed, or mobile if the owner's fields are dispersed. Large pumps are often shared in their use. The pumps gush water into stone troughs from where the water flows to the fields.



1



2



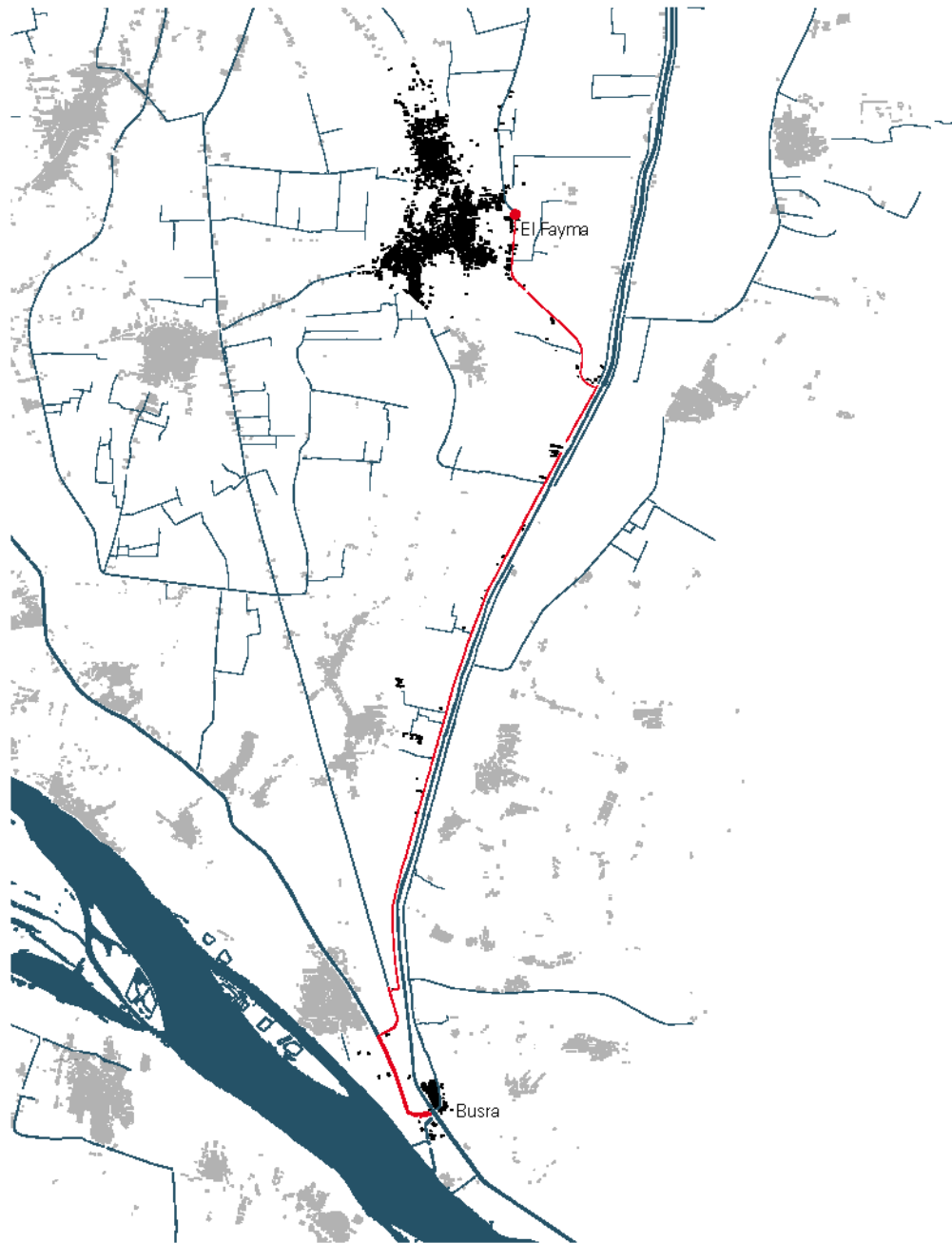
3



4

Menagerie of Machines

1. Groundwater pump: Anyone is allowed to drill for water on his land. The depth of the water source varies from 30 to 80 m. Because of the high cost of construction, large groundwater pumps are often shared by family members.
2. Farmers with few feddans often use fixed shared pumps.
3. Mobile private pump: The farmers move their small machines between their fields in different locations.
4. Fixed individual pump: This pump always irrigates the same set of fields; the capacity is comparable to that of mobile private pumps.



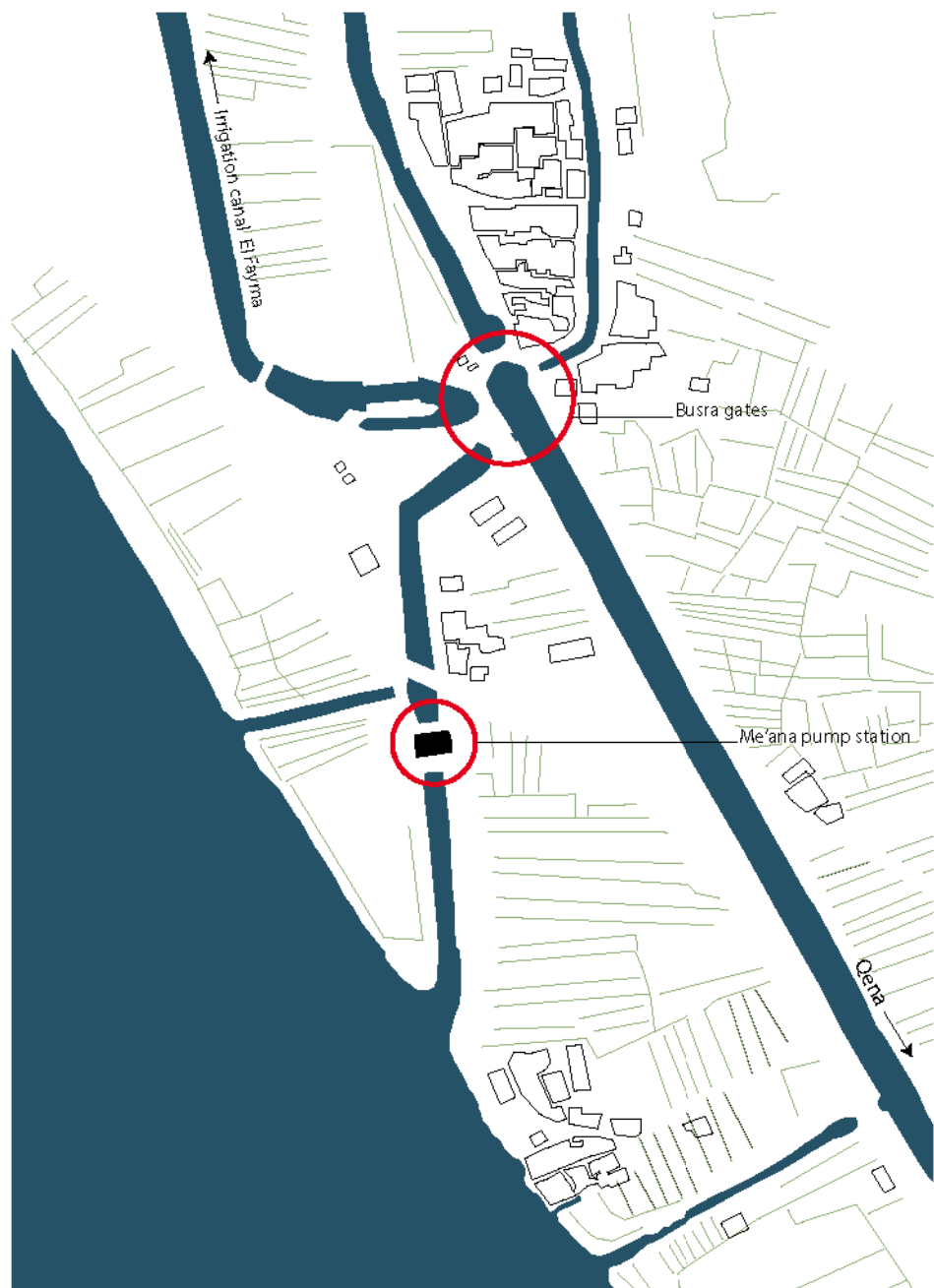
Tracing the Origin of the Water

The nearest major control point to the fields in El Fayma is the distribution point in Busra. The Eastern Naga Hammadi canal brings water diverted from the Nile 150 km upstream; the Me'ana pump station adds more water from the Nile before the canal parts into three directions.



Three Hierarchies

Carrier canals transport water over long distances and, like the Nile, must not be used as a source of irrigation water. Farmers are only permitted to take water from branch (or distribution) canals and mesqa canals (the lowest level canal that brings the water from the branch canals to the fields).



A Regional Control Point

Being one of three stations in Assiut Governorate, the Me'ana pump station pushes Nile water about 3 m up into the Naga Hammadi Canal with five electrical units with a capacity of 5 m³/s each (only one or two are usually running at any time). It was built in 1994 by Italian design and is operated under the direction of the Ministry Water Resources and Irrigation in Assiut. At Busra, three gate workers control the flow of the Naga Hammadi Canal splitting into three directions, manually opening and closing the gates according to schedule.



1



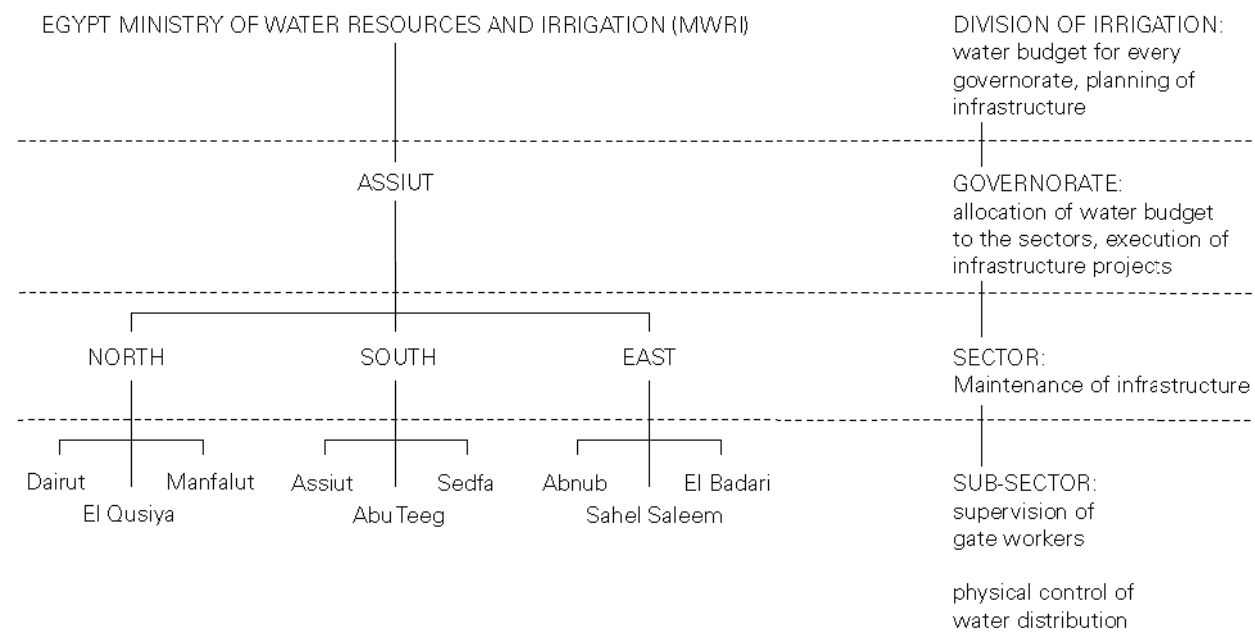
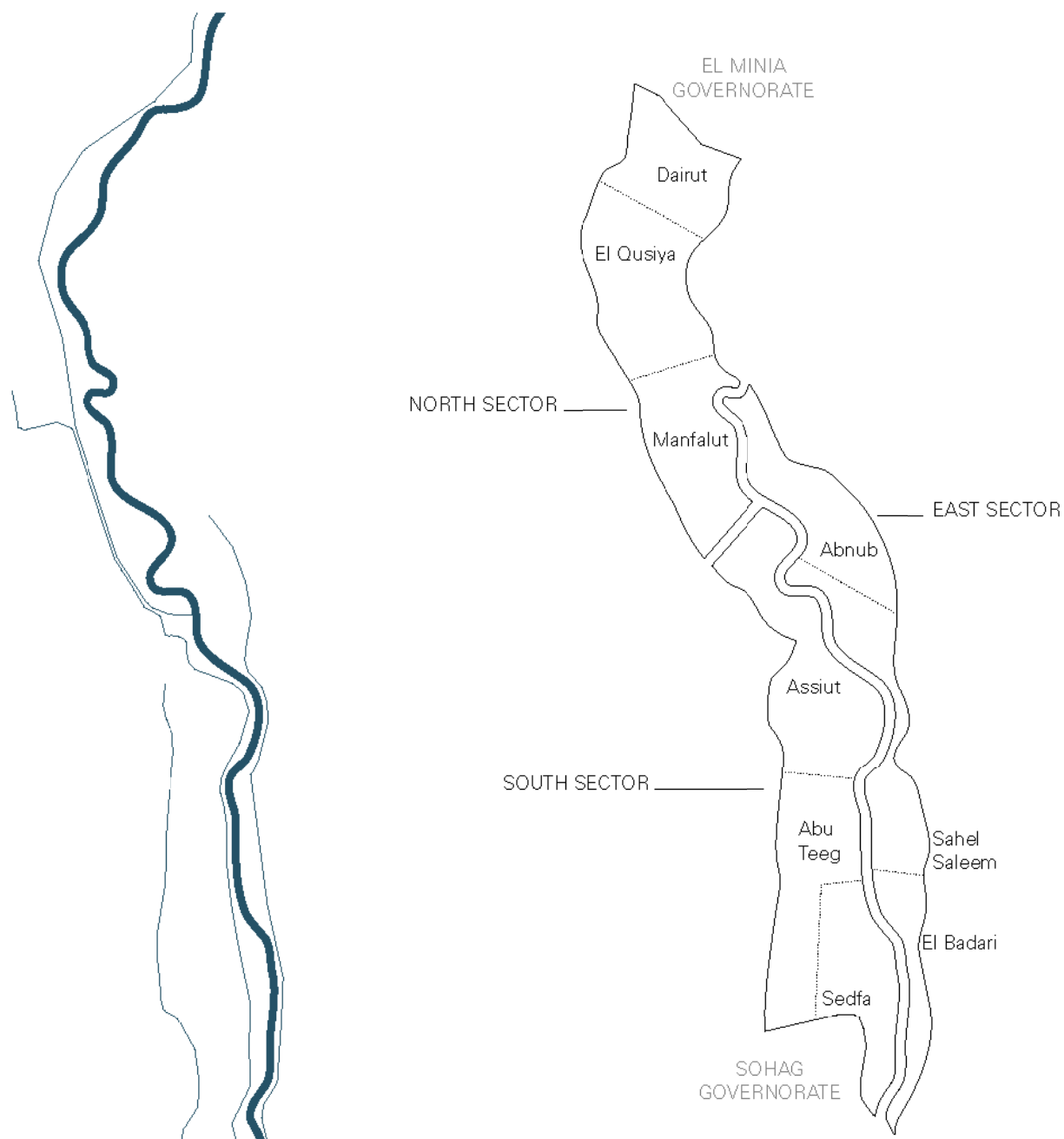
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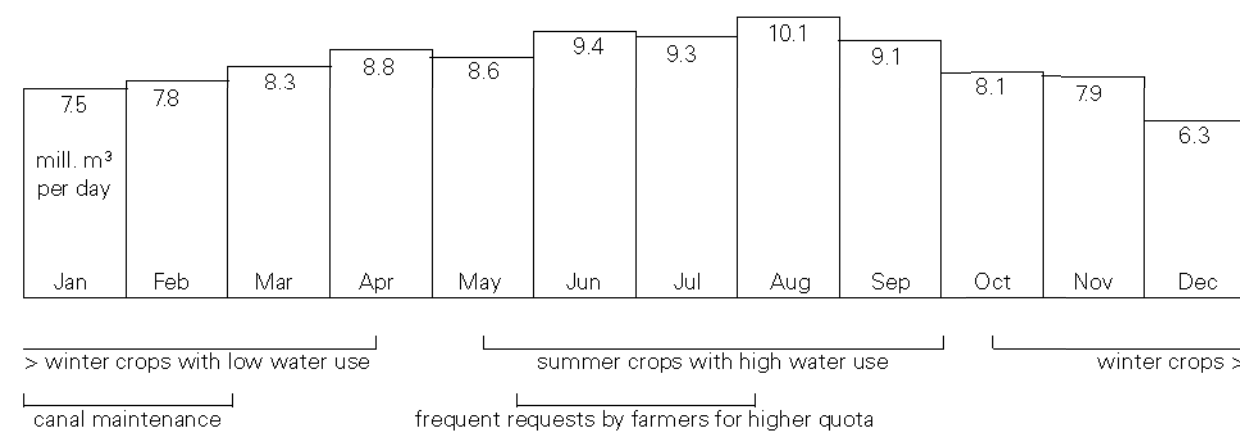
The Control Systems

1. The national standard for measuring water use is meters above sea level. So-called Nilometers located on both sides of the gates allow an estimate of flow.
2. Electronic Nilometers transmit directly to the Ministry of Water Resources and Irrigation in Cairo.
3. Two gates control the incoming Nile water flow, supporting the irrigation canal coming from Qena.



Division of Competencies

The power of planning water infrastructure and allotting quotas resides with the national ministry in Cairo (MWRI). The ministries in the governorates are merely the representatives of the national authority on site.

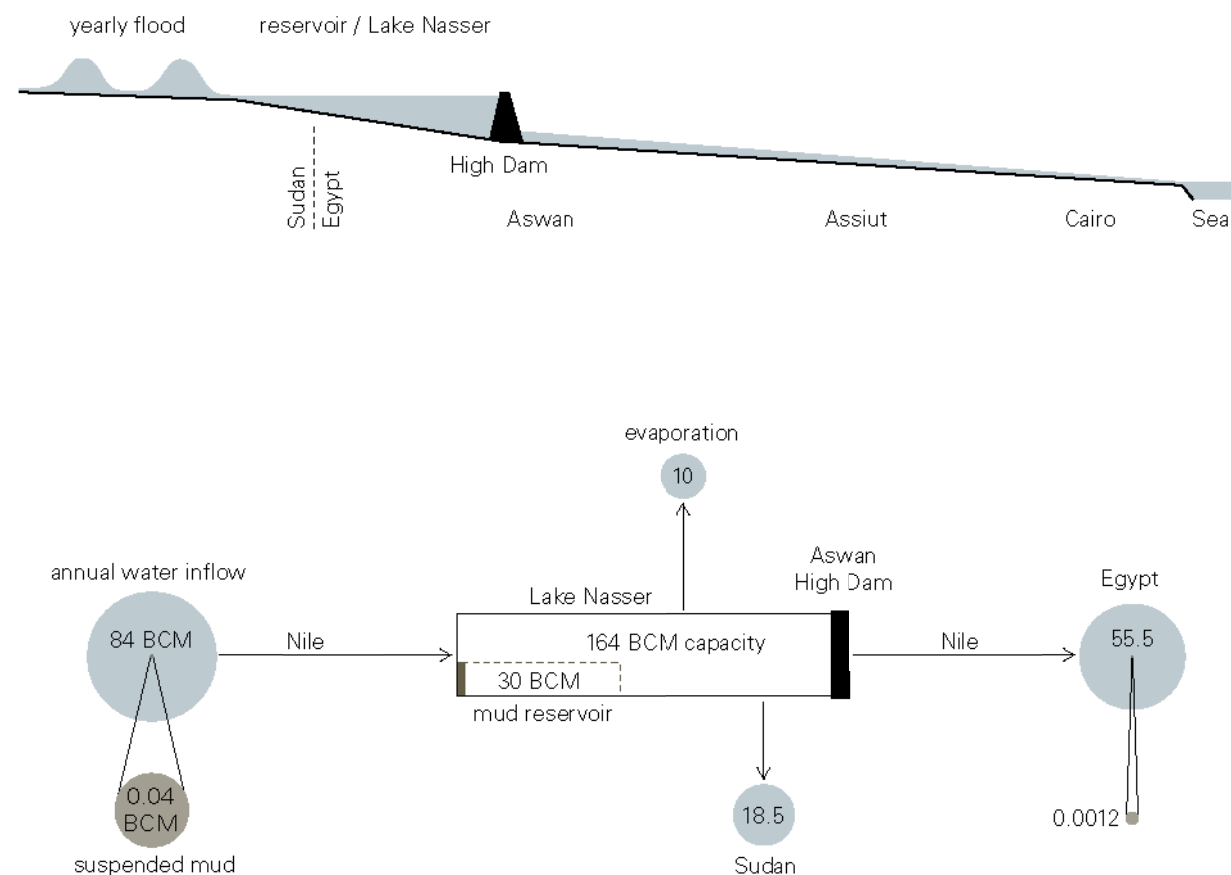


Daily Budgets

The Ministry of Water Resources and Irrigation in Cairo fixes a daily water quota for every governorate; Assiut is allotted 2.8 BCM (billion cubic meters) per year. The quota can fluctuate widely, however, as the figures above (here for 2006/07) add up to 3.1 BCM per year.

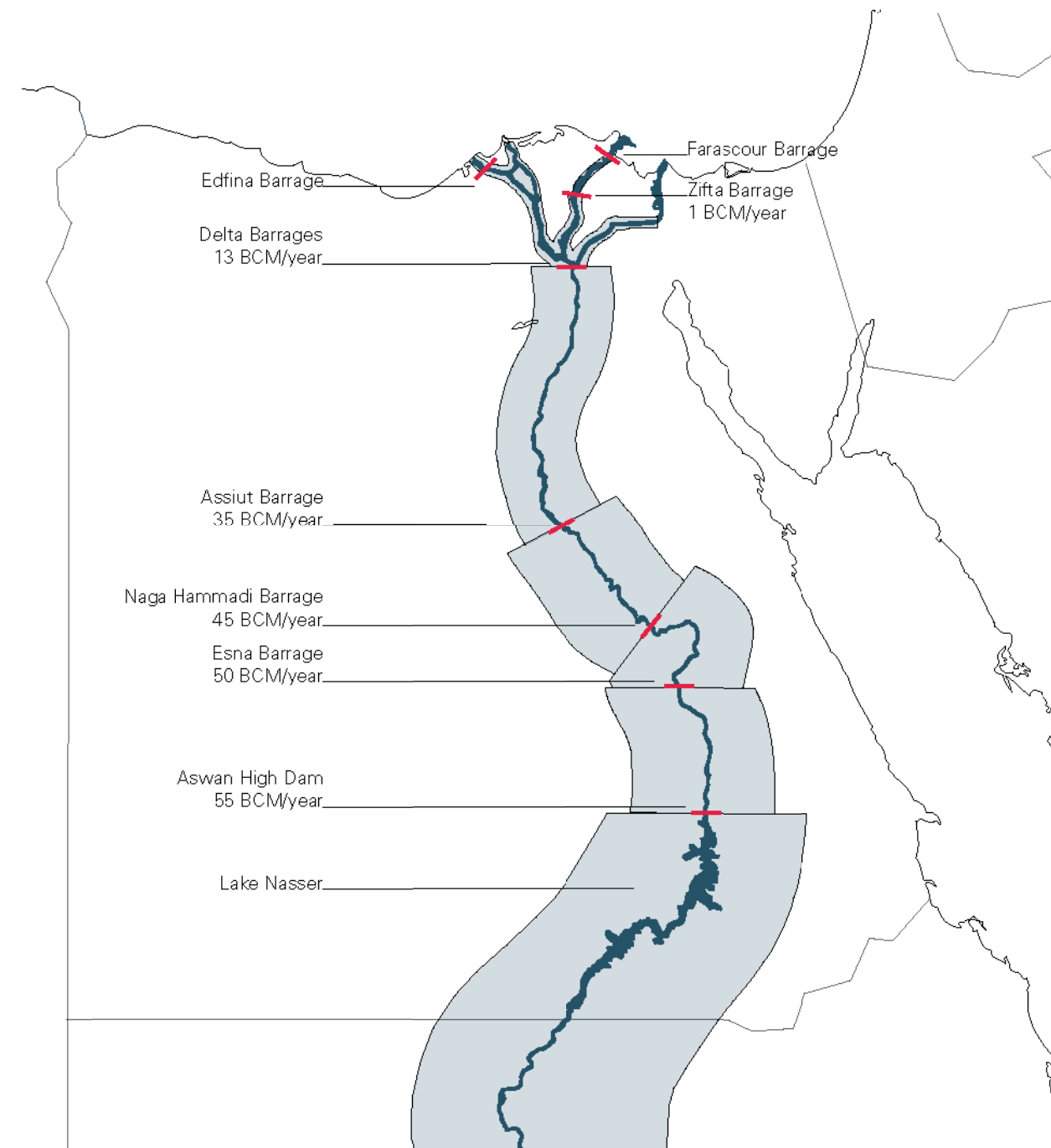
An Interconnected Strip, Segmented

The supply of irrigation water flows through the carrier canals that run along the Nile for hundreds of kilometers, passing through several governorates. Roughly 75% of the 328,000 feddans of agricultural land in Assiut governorate receive water that left the Nile in Sohag governorate or above. The actual distribution of water through 1800 km of canals is then administered in three sectors with three sub-sectors each.



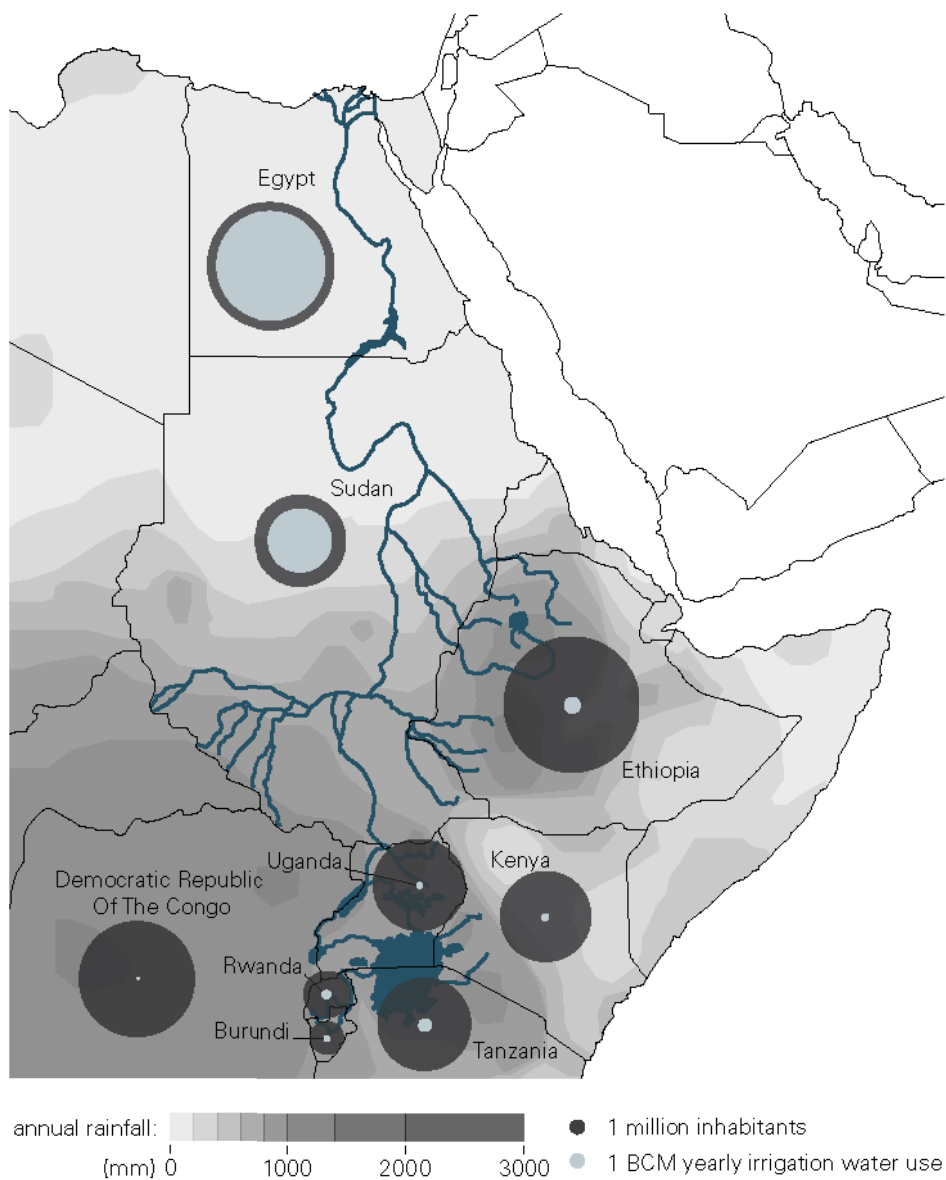
An International Chain of Water Users

Egypt is the last in a line of ten countries that share the Nile, and, since it has almost no rainfall, acutely depends on the Nile for water. The Aswan High Dam represents the nexus between Egypt and the upstream riparian states. Built from 1960 to 1970, it allows complete regulation of the Nile's waters. By enabling multiple planting cycles per year, this forceful act upon the river produced a paradigmatic shift in Nile water use.



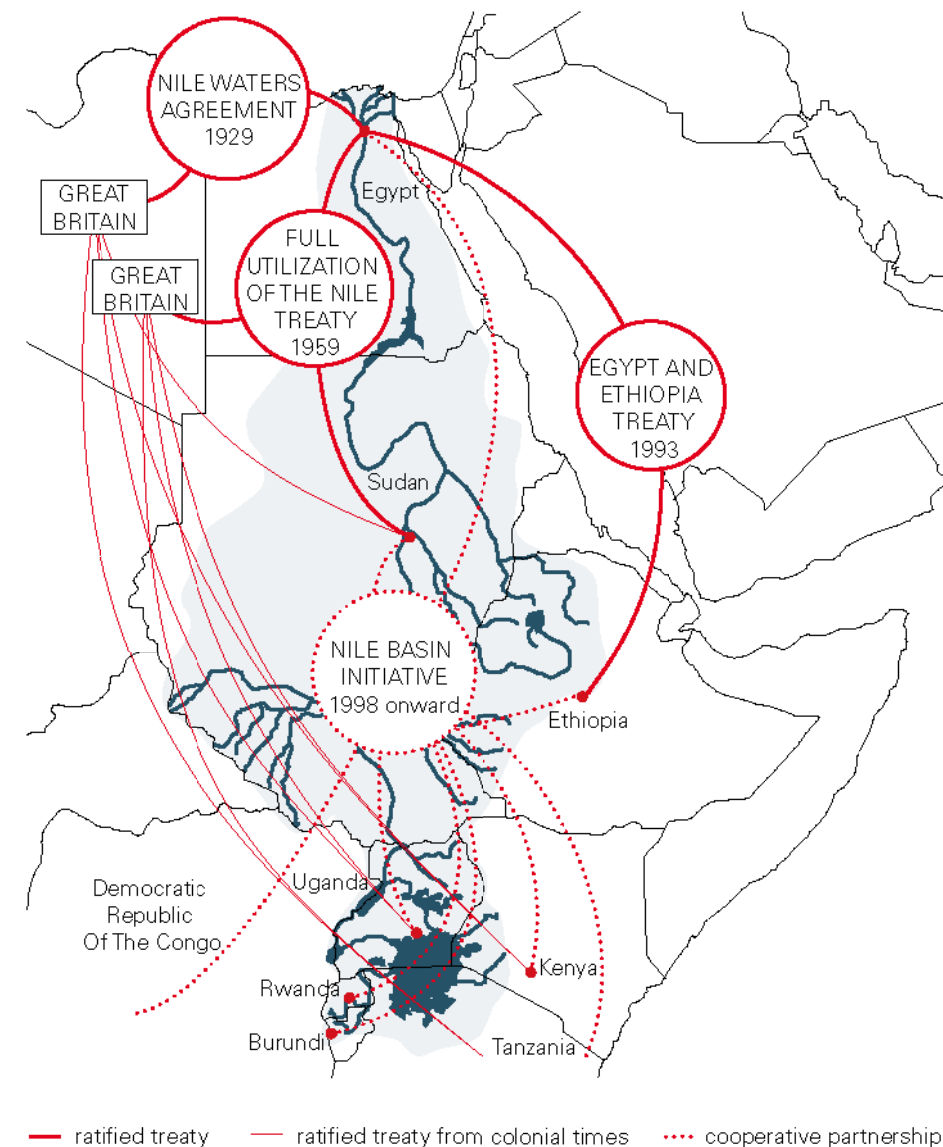
Reduced to a Trickle

The amount of water flowing in the Nile from the Aswan High Dam downward is systematically diminished at several dams along the Nile where carrier canals divert irrigation water, which is fully utilized by agriculture.



Farming by Rain vs. Irrigation

High rainfall in the tropical zone of Ethiopian highlands and the Equatorial Lakes permits rain-based agriculture and produces the abundant water that is drained by the Nile. Thousands of kilometers north, this water is used for irrigation in Sudan and Egypt, where the dry climate demands artificial watering.

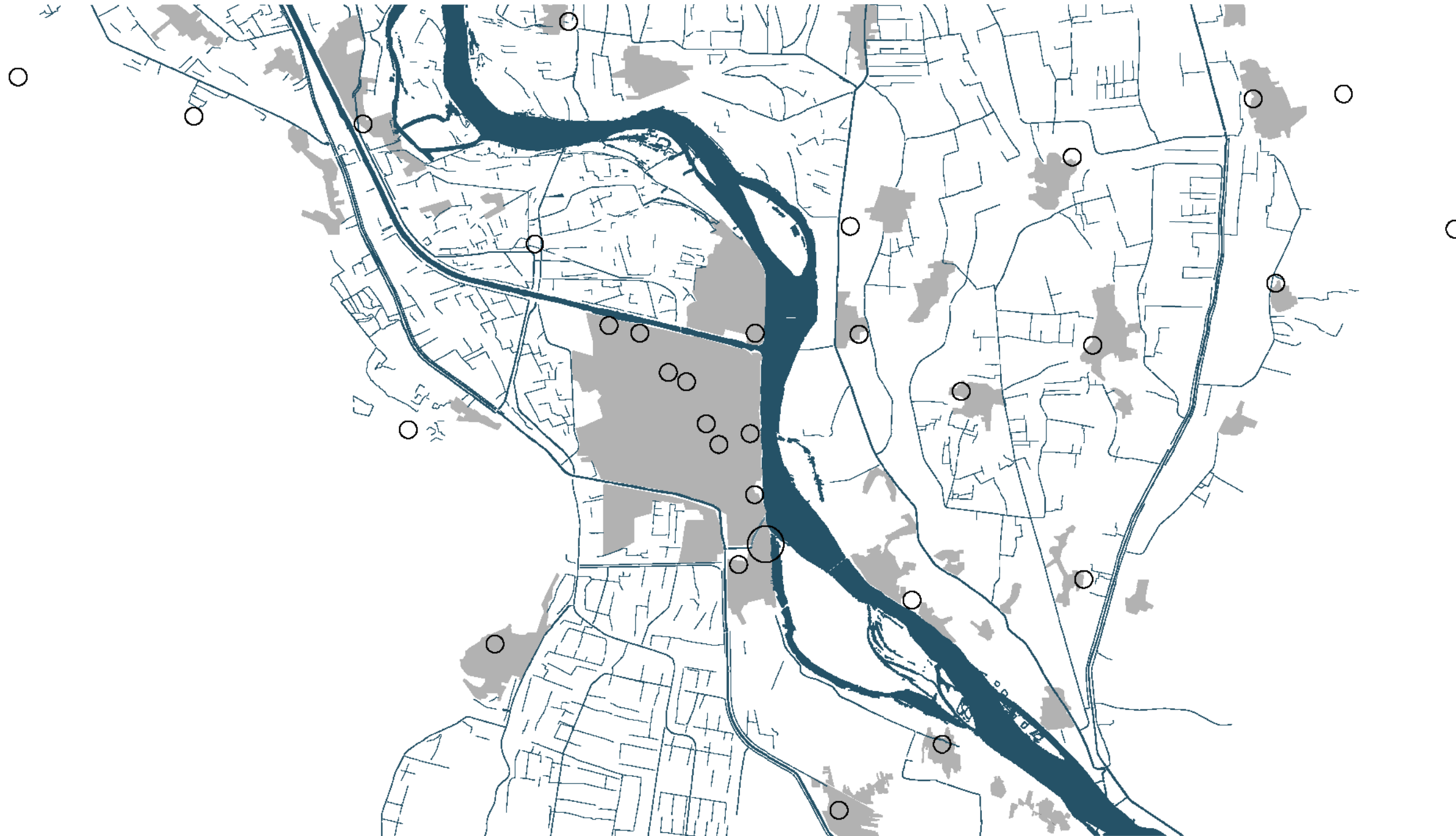


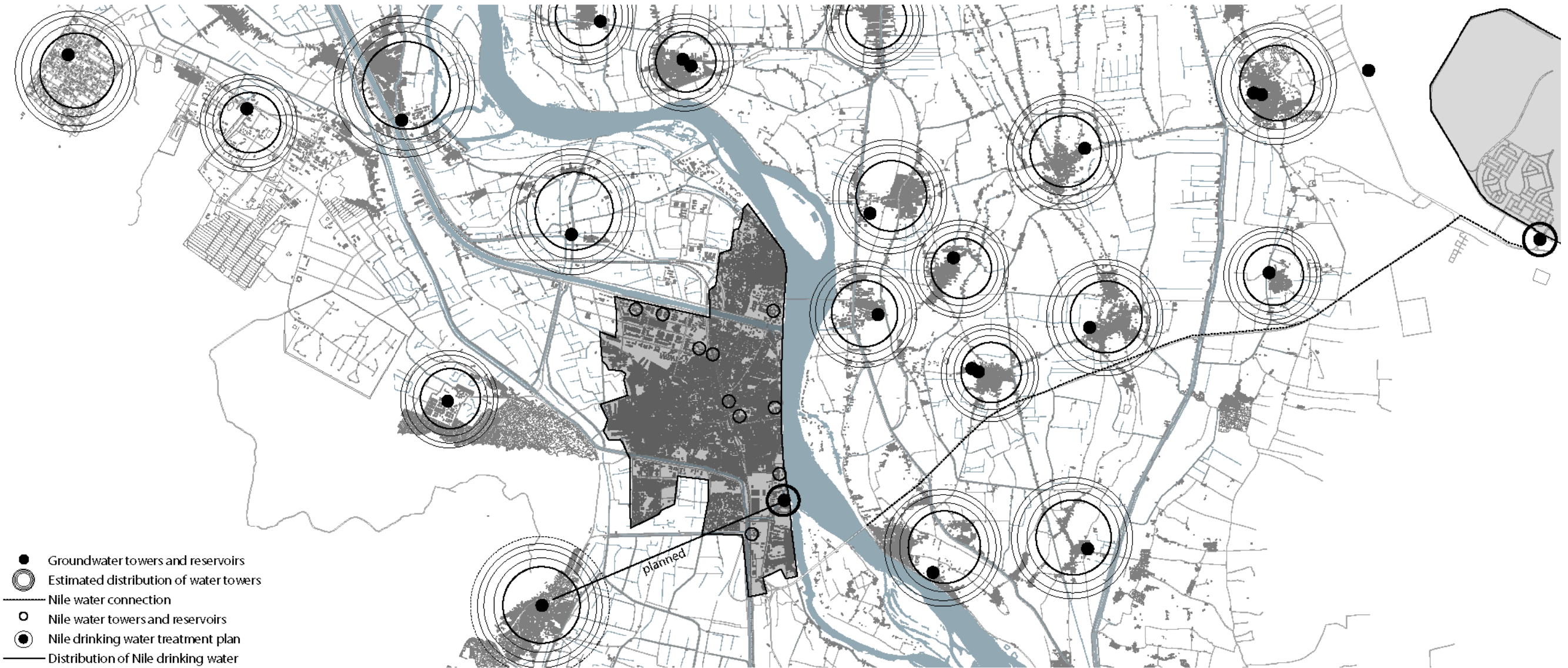
Nile Water Treaties

As the region's dominant power, Egypt has aggressively secured water rights from upstream riparian countries. The 1959 treaty grants Egypt the right to veto any upriver project that would reduce the water arriving at Aswan. The Nile Basin Initiative seeks to establish a cooperative approach to solving the challenges of the Nile Basin.

DRINKING WATER

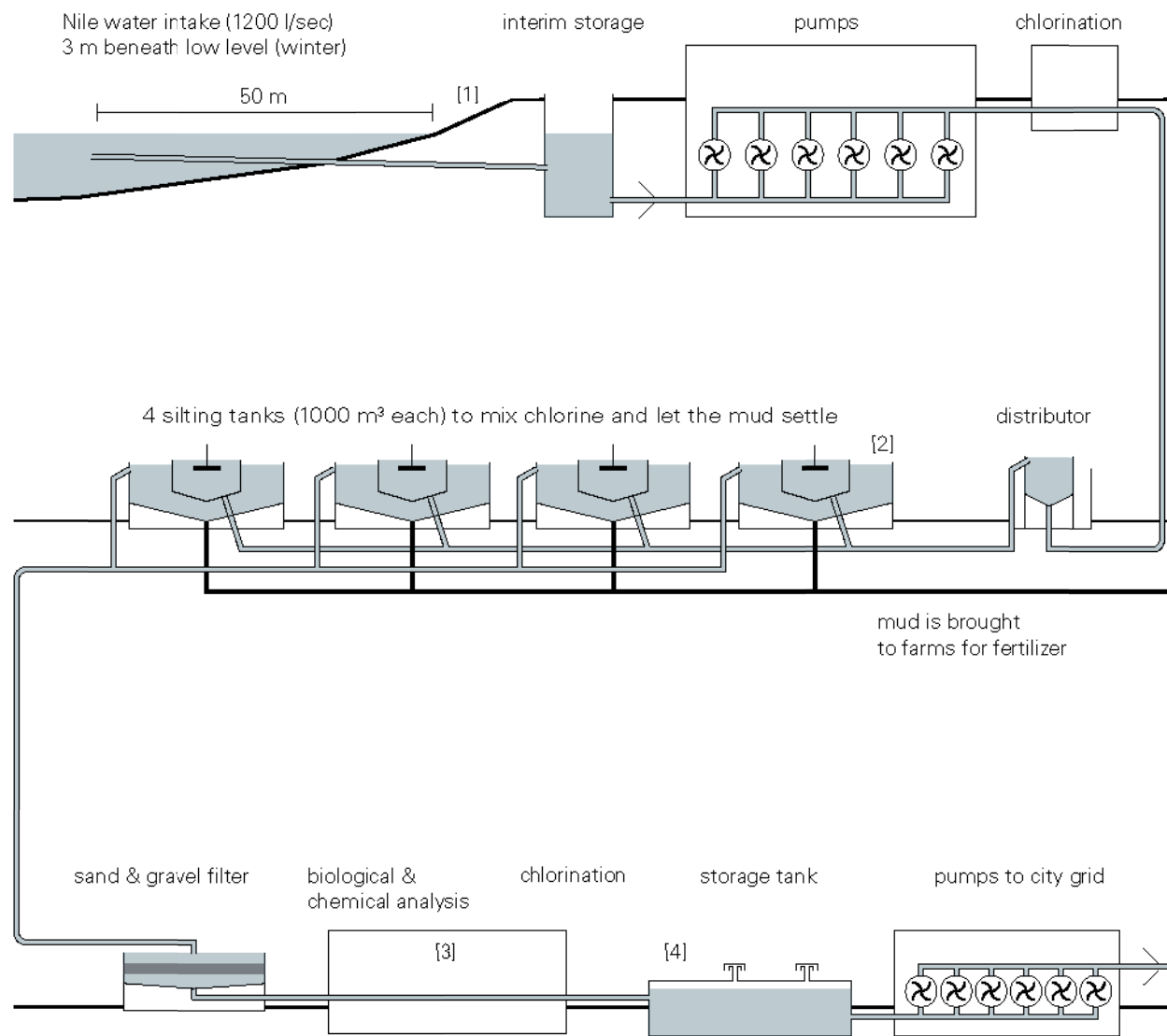
Autonomous networks of production and distribution ensure the availability of drinking water. Extracted groundwater is the most common source of drinking water in the villages. Because of its scale, the city of Assiut responds to its needs by tapping the Nile directly and converting it into drinking water through an industrial process.





The Water Supply in Assiut

Assiut City is supplied with drinking water by an extensive network of pipes from its Nile water treatment plant. In the villages, however, groundwater is pumped to municipal water towers by a system of pipes often subject to informal extensions. Some houses pump their own groundwater.



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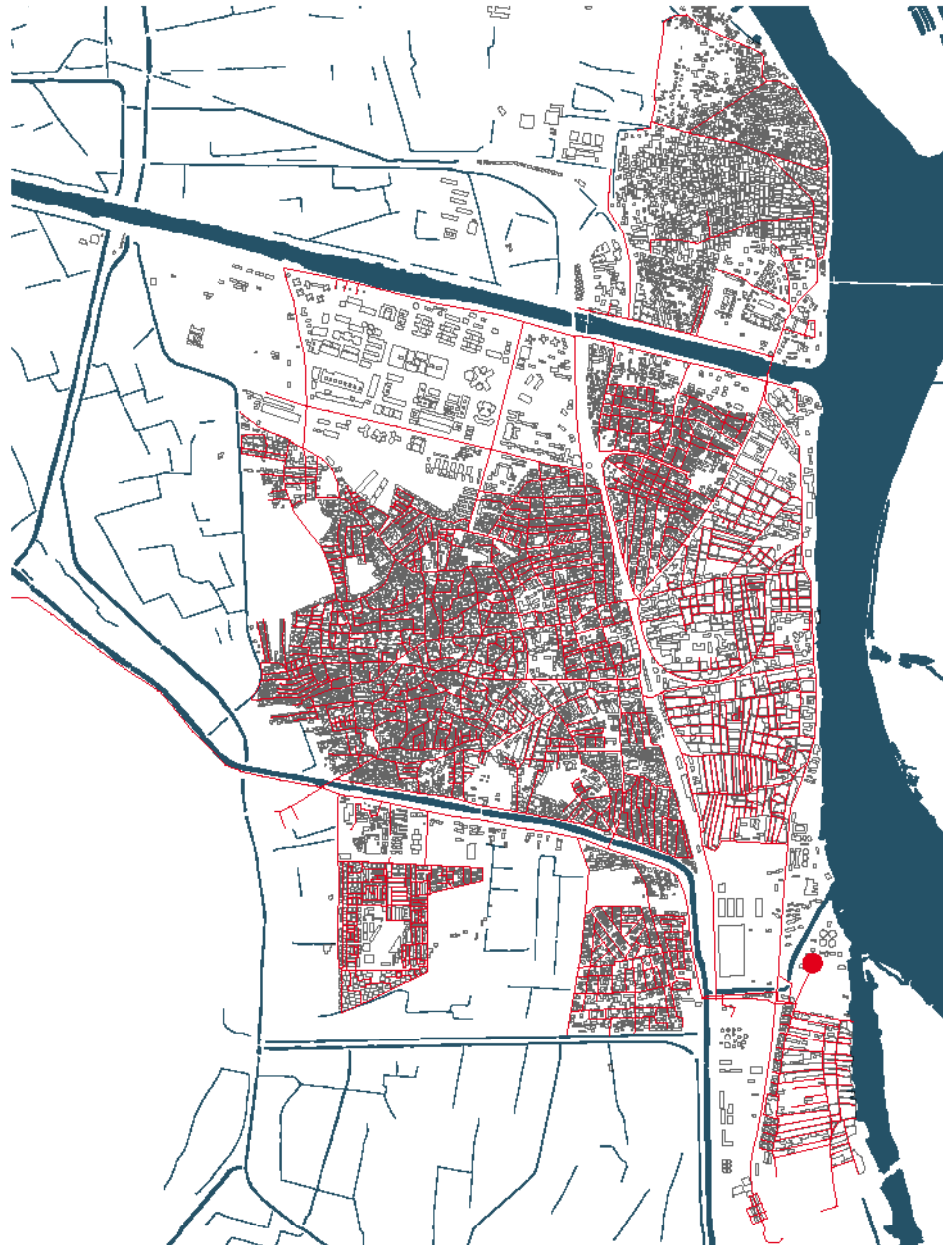
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Scenes from the Treatment Plant

- 1. Nile water intake with maintenance boats
- 2. Silting tanks
- 3. Filter control room
- 4. Ventilated final storage tanks

The Nile Becomes Potable

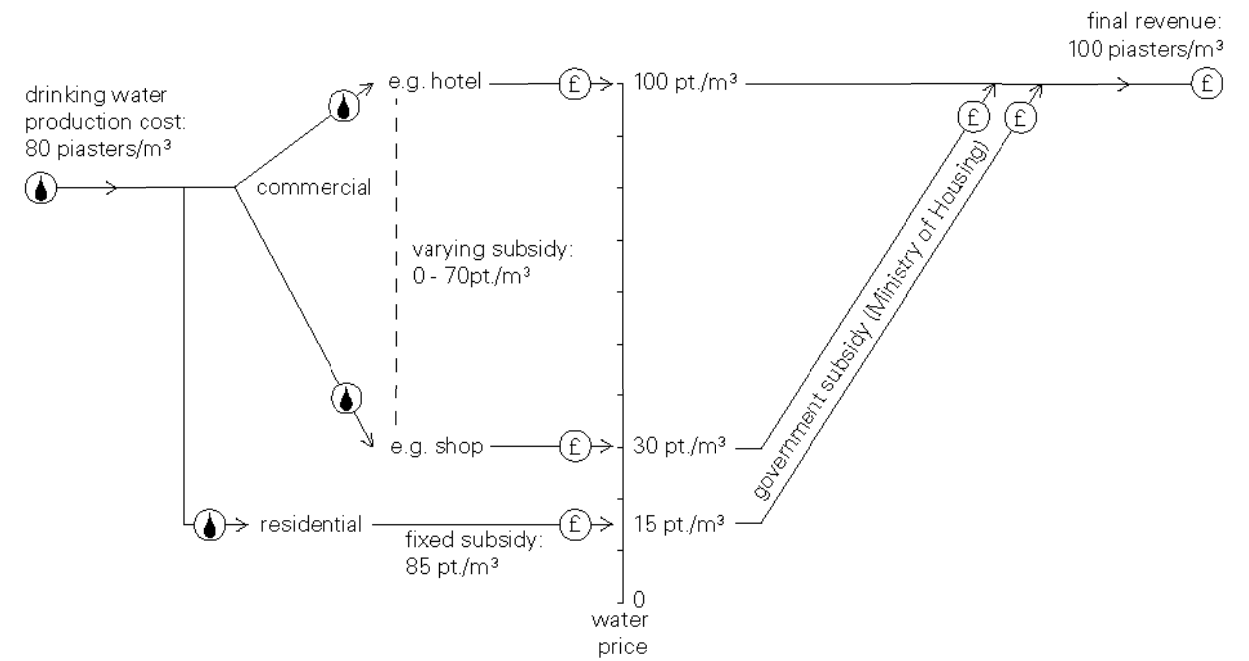
Assiut's current drinking water station was built in 2002 (expanded in 2008) and converts 100,000m³ of Nile water into drinking water per day. Located just upriver from Assiut, it takes in the cleanest water possible.



- drinking water treatment plant
- underground pipes

A Dense Web of Municipal Pipes

Drinking water pipes run underneath the streets of Assiut City. The diameter of the pipes varies from 1200mm (at the water treatment plant) to 25mm (distribution to households).



A Diversity of Water Prices

The Assiut drinking water company offers its water at different prices. In Assiut City, roughly 80,000 water meters in half a million households measure water use in the network connected to the drinking water facility. Every two months the users pay their bill, subsidized to varying degree by the government. (100 piasters = 1 LE)



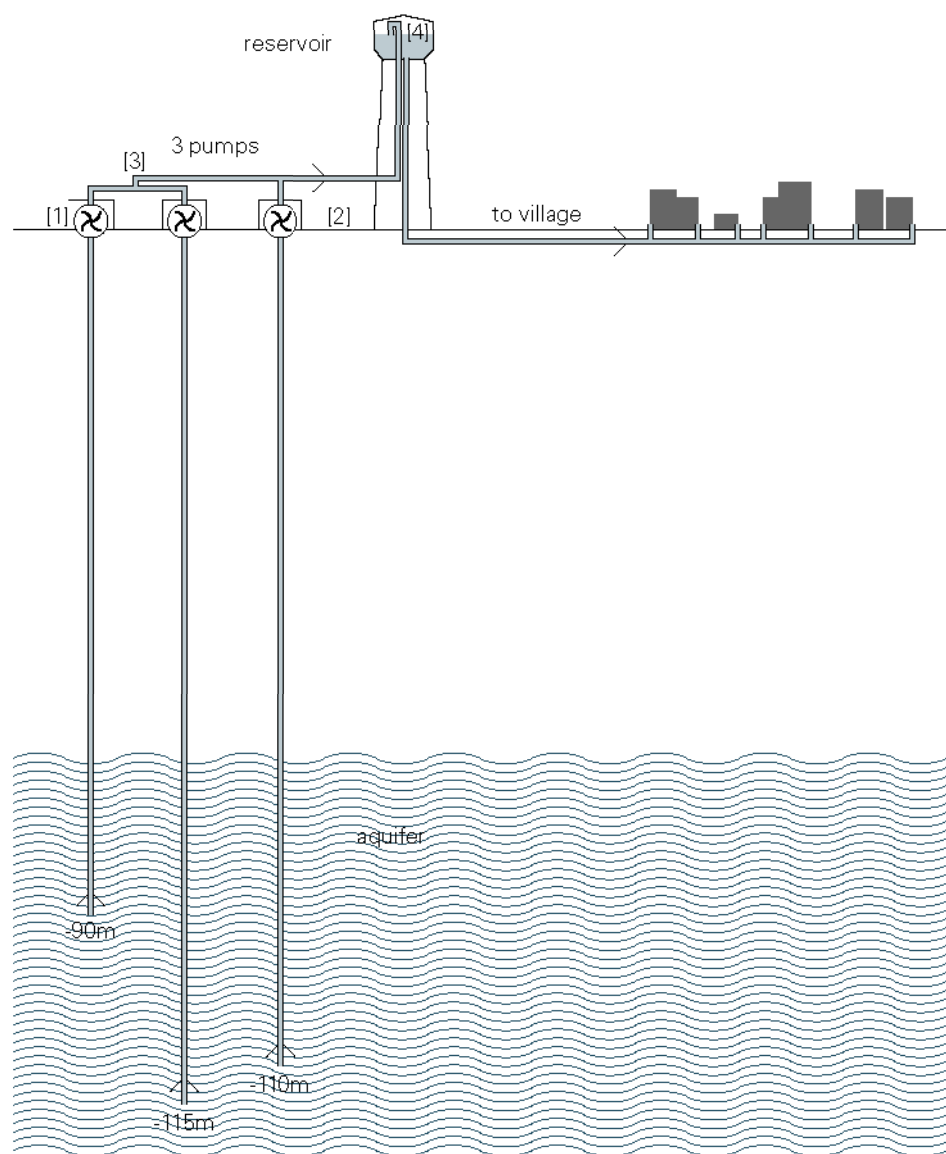
Nile Extension to New Assiut

The new desert city is served by a supply system isolated from its surroundings. A station at the Nile pumps water to the treatment plant just outside of New Assiut. Where it crosses an irrigation canal, the pipe emerges above ground.



A Water Tower for Every Village

Extracting groundwater is the most frequent method of rural supply. Autonomous systems of groundwater wells connected to a water tower exist for nearly every village.



Village Drinking Water Distribution

The three wells of this 7-year old station west of Assiut pumps groundwater from different depths to the elevated reservoir, alternating for two hours each. The extraction per day reaches 200 - 300m³. From the water tower, the water flows to the c. 5 000 water meters in the distribution network. The same company that operates the treatment plant in Assiut owns this station and all others in Assiut governorate.



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Water Tower Treatment

1. One of the three electrical pumps
2. Pump house
3. Y-connector of two pipes leading to tower
4. Outlet into the tank in the top of the tower



Private Groundwater Pumps

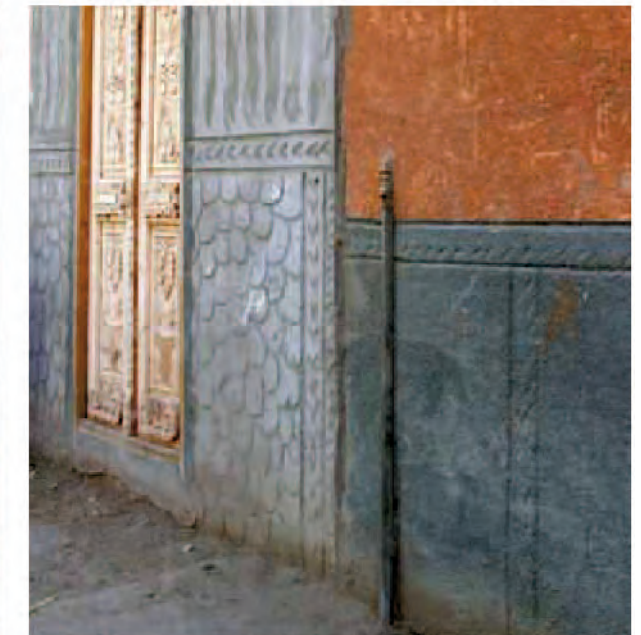
Some households use their individual groundwater pump for drinking water. The reason is not always due to lack of infrastructure, but often an old habit.



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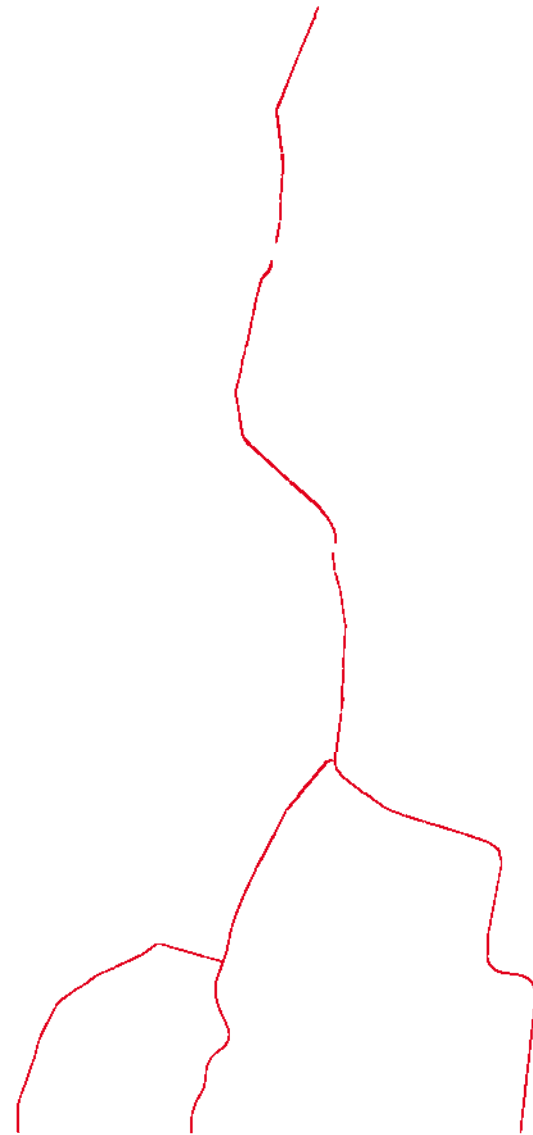
Old and New Water Dispensers

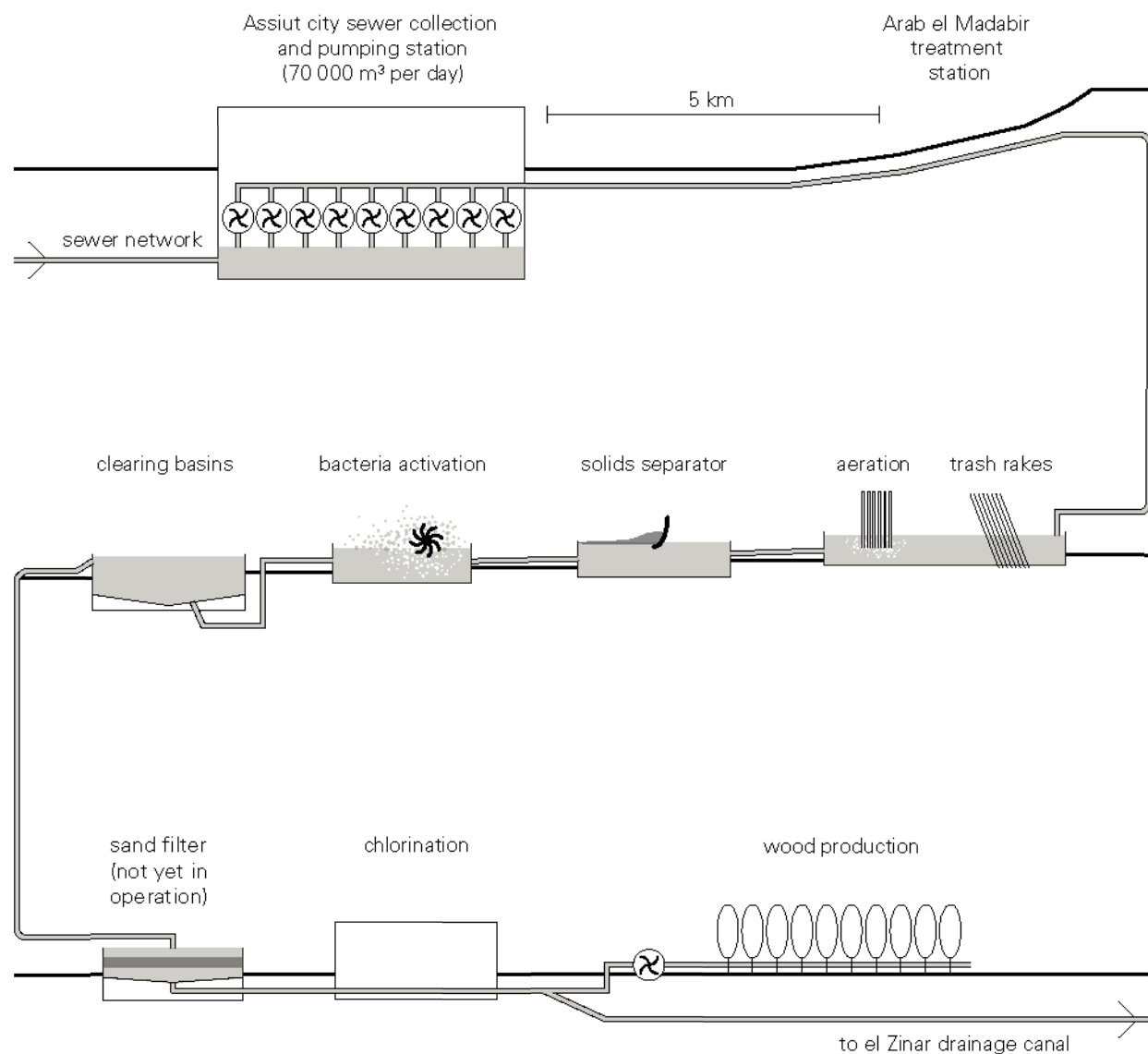
In villages and on the fields, drinking water is offered by different methods.

1. The Ziir are old Egyptian clay pots to clean drinking water and offer it to passers-by.
2. A modern interpretation of the Ziir are these "fridges."
3. Drinking water enters a dwelling on the outside wall.

WASTE WATER MEETS DRAINAGE

Generally, waste water from the villages reaches a treatment station or a dump by donkey cart. Only Assiut City and the industrial area to the west have comprehensive systems of waste water collection and treatment. Yet, they are not entirely closed circuits, and, in the canals that drain the fields from excess irrigation water, different kinds of effluents and waste come together.





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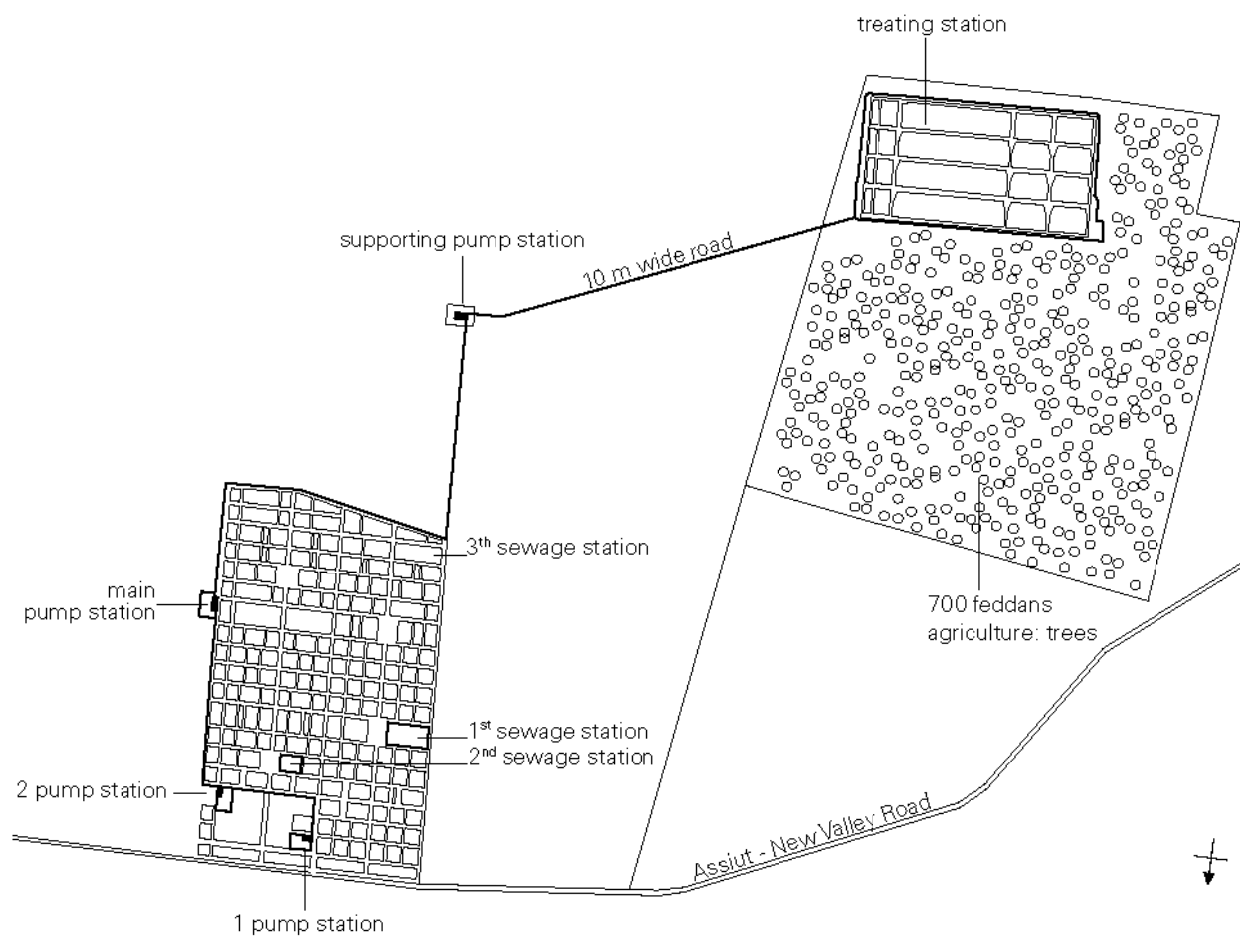
Treatment in Arab el Madabir

Collecting from two subsidiary pumps, the central waste water station (built in 1960 and expanded in 1990) pumps 70 000 m³ of sewage daily to the mountainside treatment plant in Arab el Madabir. After treatment, a portion of the waste water is used to irrigate a tree grove of 75 feddans for wood production; the rest is channeled into the Zinar drainage canal, where it reaches the Nile.

1. Conveyor belt for solid waste removal
2. Distributing pool for the 4 clearing basins
3. Fan-wheels mix the liquid with air to accelerate decomposition of organic substances by bacteria
4. The sand filters, the last step, will be operational in a few months

Waste Water: Turning into a Resource

Waste water was formerly pumped out into the desert to prevent it from polluting the inhabited areas. Nowadays, treatment facilities extract water for irrigation from sewage. By law, treated waste water can only be used for irrigating trees. Ironically, New Assiut disposes of its waste water the old way, pumping it out to disappear into the sand.



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An Immense Site in the Desert

Pipes about 1/2m in diameter carry sewage to the plant.
 1. One of 4 large stone-lined basins under construction
 2. Formwork for the supporting pump station

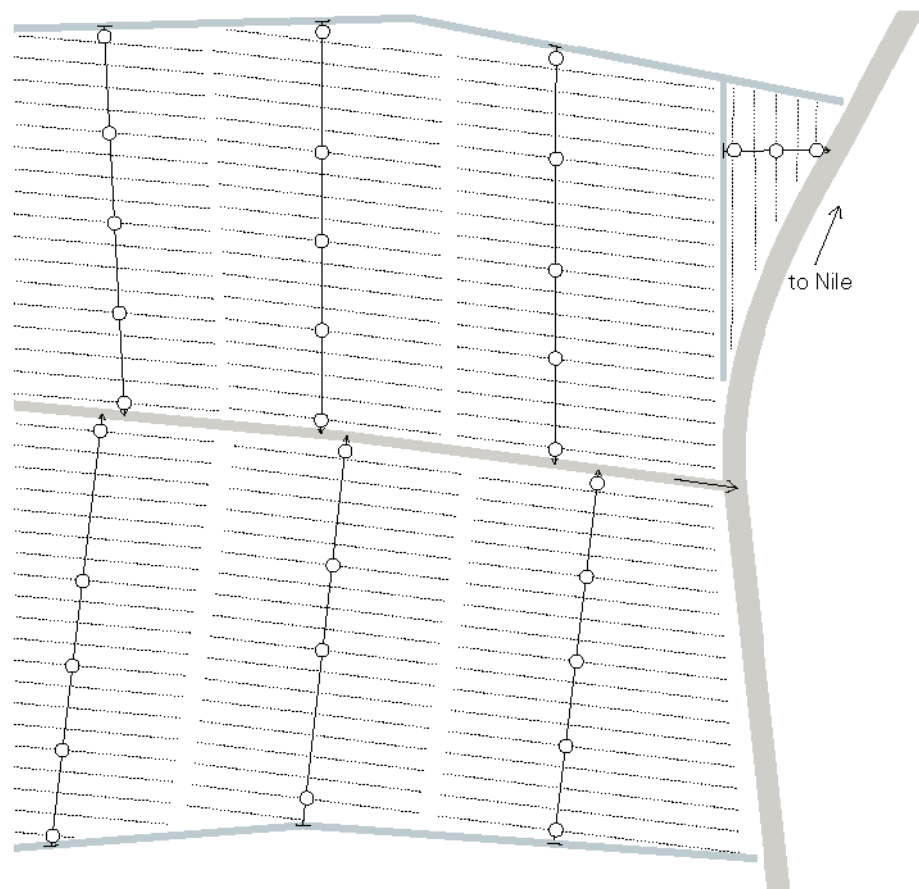
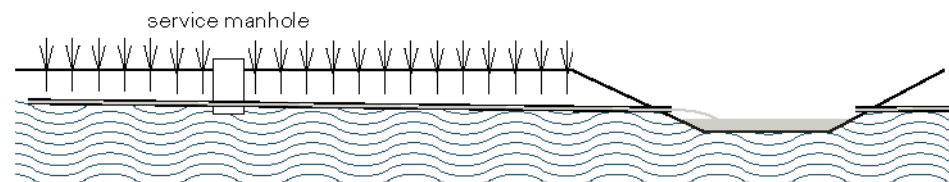
Industrial Waste Water Wood

At the Bani Ghalib industrial area, a waste water treatment plant is under construction. Four pumps will transport sewage to the treatment plant, located 7 km into the desert. Construction began in 2003 and the start of operation is expected for 2010. The waste water will be treated in four separate circuits of 5 basins each, open to air and sun. The plant occupies an area of 200 feddans. After passing 1 1/2 km of cleaning steps in 2 to 3 days, the water will irrigate a tree grove of 700 feddans for wood production.



Drainage

Year-round irrigation made possible by the Aswan High Dam caused the groundwater table to rise into the root zone of cultivated crops, making drainage of the fields necessary. Construction of a drainage system for the agricultural areas started in the mid 1970's and will be completed where needed in the next 5 years. The drainage canals flow into the Nile, usually downstream of cities.



- lateral pipe — collector ○ service manhole
- ⊠ intake of fresh water for cleaning —○ outlet into drainage canal

A Rational Layout

The underground network of drainage pipes runs in a quasi-orthogonal arrangement irrespective of the property lines that divide the fields. Farmers pay 2200 LE per feddan for the installation of the drainage system and are compensated for land given up for the open drains.

Evenly spaced and perforated lateral pipes, 80mm in diameter, lie 1.2 to 2 m under the ground and 30 to 60m apart. Collectors, 20 to 45cm in diameter, connect the laterals to an open drain. The open canals have 3 hierarchical levels.



Drainage Collector Outlet

The largest part of the drainage system lies buried under the surface of the earth, accessible for maintenance through manholes. The visible components of the drainage system are the open canals.



Mouth of El Zinar Drainage Canal

Completed in 1976 and 22.5 km long, El Zinar canal drains nearly 37,000 feddans of agricultural land. As an unofficial recipient of trash and sewage, it reaches the Nile brownish and filthy. Nonetheless, irrigation pumps draw water from it all the way to the outlet of the drainage canal.



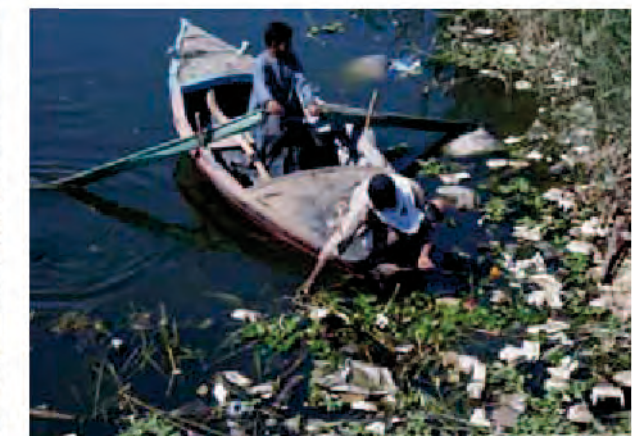
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Secondary Environments

The appearance of El Zinar drainage canal changes distinctly as it passes fields and human settlements. Surprisingly, birds find food in every stretch of the canal, indicating that the water manages to stay alive despite the pollution.

1. Fertilizer runoff causes thick growth in some sections
2. The outlet into the Nile is at the same time a trash dump
3. Along the way, a pair of sewage dumpers pour waste from rural homes onto the embankment
4. Unconcerned by trash, fishermen check their nets



Irrigation Water Crossing Drainage

Officially, it is not allowed to use drainage water for irrigation. Irrigation canals that were severed by the construction of the drainage canal are restored with steel pipe siphons that cross the drainage canal to make irrigation water available on the other side.

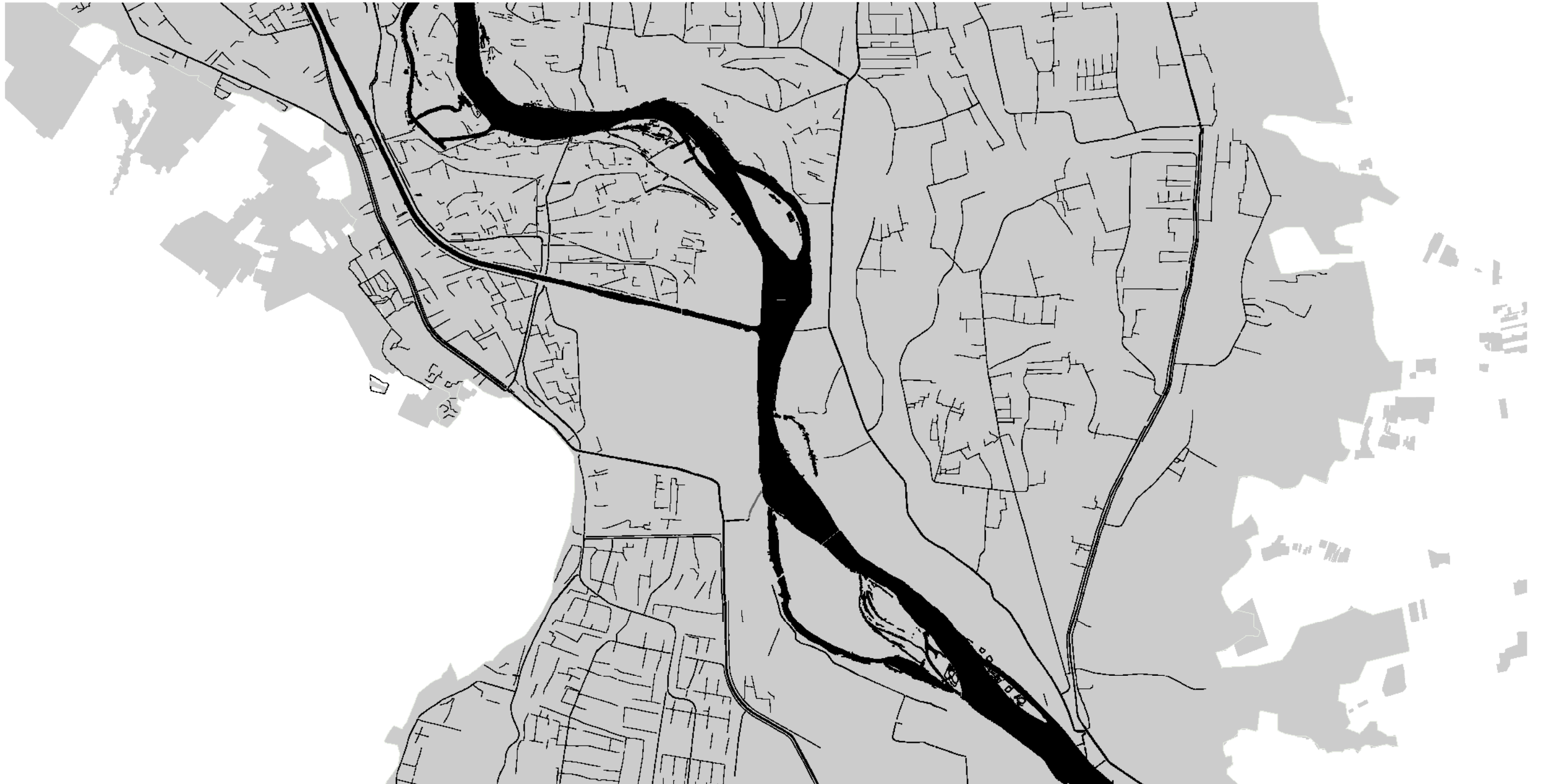


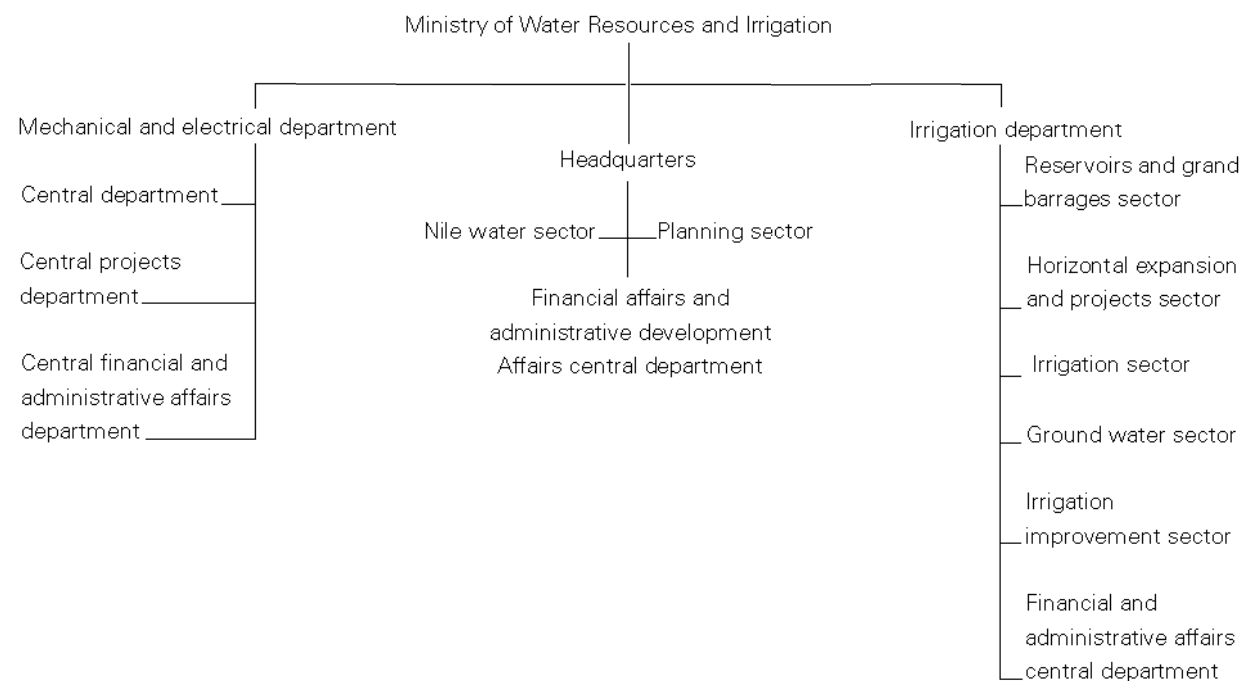
Waste Water Meets Drainage

West of Assiut, 2.3 km before El Zinar canal drains into the Nile, foamy waste water enters the canal. A sequence of large siphons along the drainage canal pointing to the mountains suggests that it is excess waste water from the treatment plant in Arab el Madabir where the grove only requires a fraction of treated water. Instead, the water travels nearly 3.7 km under ground till it reaches the drainage canal. The farmers complain about the deterioration of the water quality and its negative effect on fish. They sent a representative to the Ministry to complain about the situation, but he was dismissed.

A SHRINKING MARGIN OF STABILITY

The continued existence of civilization in the Nile Valley depends crucially on successful handling of water resources. So far, enormous government efforts have built up a mechanism of complete control in delivering the national resource to the population. However, the practices of its use, for the most part, have hardly evolved. How have these two ways of dealing with water coexisted without friction?





Passing the Resource through a Control Vacuum

The system of irrigation is determined by the actions of two completely different entities. On the distribution side, the government allocates water to governorates, irrigation sectors, sub-sectors, and individual canals in a top down fashion. On the usage side, farmers take the amount that is appropriate for their fields. The two sides have no means of directly influencing each other. However, the established water use by farmers tacitly influences the quotas that the government dictates for every area, and the government, theoretically, has the power to shut off the supply.



"It is not a problem if I accidentally irrigate a few hours more than necessary."



"I take as much water from the irrigation canal as I need."



"No one told me about lectures to increase my production."



"My water comes from the pump station 5 km from here."

Diverging Perceptions

Many farmers we spoke to seemed unaware of the major national effort of making water available on the fields. Has the government stepped into the role of a distant Nature, providing water steadily but ultimately not within the farmer's sphere of influence?

Finding a New Balance

As it stands, the government effectively implements a regime controlling all flows from Aswan to the Mediterranean Sea. This control, however, governs merely the distribution of water into the network of canals that sustains the land. On the other hand, actual usage hinges solely upon users' decision to consume water to fulfill their needs. The logic of use operates independently of the logic of supply.

There exists no convention, legal or otherwise, that authorizes the government to influence agricultural water use. Naturally, agriculture's aim is not simply to use water but to apply it to plants in sensible amounts, and so, the usage has remained within a range of predictability. So far, the two systems have coexisted peacefully thanks to an oversupply of water that permits ad hoc adjustments of the top-down quota due to bottom-up demands.

Reclamation projects are expanding the area of irrigated land; exploration is making new water resources accessible; research and new technologies are pushing irrigation efficiency ever farther. Meanwhile, the yearly water supply disposable at Aswan remains unchanged. For all technical development, curiously, nobody has initiated comprehensive improvements in the use of water by Egypt's biggest consumer, agriculture—so far goes the indifference for controlling usage that the government doesn't even demand a price for the irrigation water.

The premise underlying the rapidly growing Egyptian society seems that agriculture is its natural livelihood; as a rule, more farming will mean more water use. The two autonomous systems, of distribution and of consumption, are creeping towards each other; will there come a moment of scarcity that reveals their mutual incompatibility? The enormous efforts of the past keep Egypt alive. The future will tell whether or not the current system is poised for adaptation.



WATER MANAGEMENT: COMMENTARY

An astonishing feature of the Nile Valley is its relative stability in light of enormous demographic and economic strain. This stability is enabled by, amongst other things, a highly refined system of water management that guarantees area-wide distribution of water, assuring a minimal level of agrarian self-sufficiency throughout the valley. Although farming is no longer the dominant source of income, this state-guaranteed agrarian fundament levels the landscape of opportunity within Egypt. The mechanisms of distribution result from of an age-old empirical balance translated into a numeric “Water-budget” for every governorate, district, and commune — constantly fine-tuned and enforced by a central bureaucracy in Cairo. Surprisingly, the individual farmer is largely disconnected from this process which does not support a direct link between supply and demand. The farmers view the highly technical, multi-layered, Cairo-controlled water network with the fatalism of encountering a natural phenomena. Meanwhile, constant expansion of farmland exerts enormous pressure on this system. Various buffers, such as fossil ground water, have been exploited to preserve the politically important network, but solutions for long-time

consolidation are still unclear. What is apparent, however, is that any disturbance of the water network will dramatically alter living conditions and patterns of urbanization in the Nile Valley and threaten the entire political and social system in Egypt and the Nile Basin.

الأراضي الزراعية و النمو العمراني



AGRICULTURE

SKIN OF THE URBAN ORGANISM

FRAGMENTED FIELDSTRUCTURE

Comparison of Agricultural Indicators

LAND AND ACTORS

Fragmentation through Inheritance
Fragmentation through Politics
Holding Typologies
Urbanization on Agricultural Land

SUPPLY

Cultivation
Livestock Husbandry
Trading Opportunities for Farmers
Indicators of Internal Trade
Negative Trade Balance in Agriculture
Low Self-sufficiency of Wheat
Sanctions to Increase Yield
Expansion of Cultivated Area
Prospect

ETH Studio Basel
Contemporary City Institute
Esther Götz, Katharina Kiesbauer
Prof. Roger Diener, Prof. Marcel Meili
Mathias Gunz, Rolf Jenni, Milica Topalovic
Christian Mueller Inderbitzin

Spring Semester 2009

AGRICULTURE SKIN OF THE URBAN ORGANISM

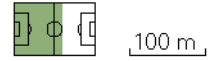
The agricultural area of Egypt is like a skin which constitutes a matrix for the growing urban network. Fertile agricultural land in the Nile Valley is bordered by the desert and occupied by settlements. Agriculture is an important economic sector in Egypt and has a low productivity because it is divided into small sections. Inheritance modes of acquisition leads to the continuing fragmentation of the area, and the resulting small parcels constitute the substructure of urbanisation. The fast-growing population causes an expansion of villages onto agricultural area. Land reclamation is a compensation for lost agricultural land and increasing population, which is however limited through natural resources.



FRAGMENTED FIELDSTRUCTURE

The agricultural surface is divided into small parcels, and the small holdings are again subdivided into fields of different cultivations like wheat, clover, vegetables and fruit. Characteristic are the narrow, long fields, which stretch between infrastructure of streets and watercanals. A few generations before, the fields were large, but increasing population and subsequent inheritances to many sons of farmers divided the land into fragmented fieldstructure.





Feddan Size

1 feddan = 4201 m²
 60% of a soccer field
 FIFA Norm 105x68 m



Egypt

Assiut
 Agricultural Area:
 3.5%
 %GDP of Agriculture:
 14.1%
 Agricultural Labor Force:
 30%
 Average Holding Size:
 2 feddans

Switzerland

Solothurn
 37%
 1.3%
 3.8%
 28 feddans

Germany

Sachsen-Anhalt
 49%
 0.9%
 2.2%
 96 feddans

USA

Kansas
 45%
 1.2%
 0.6%
 425 feddans

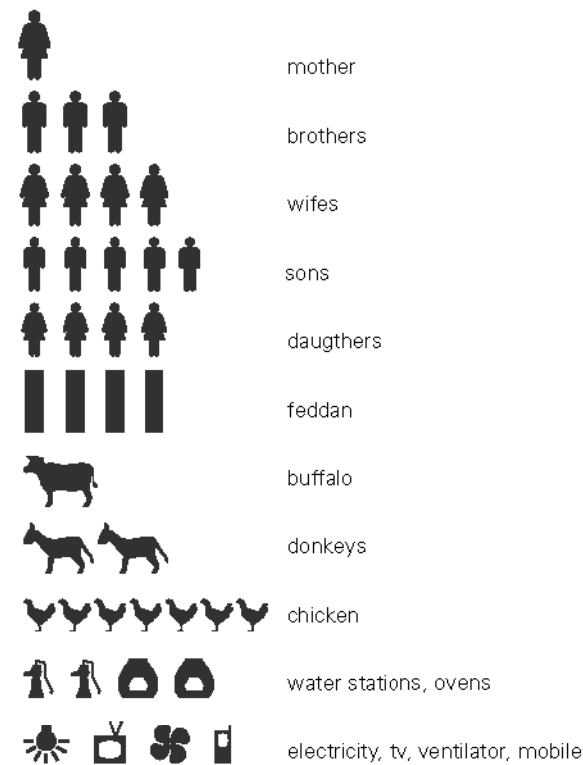
Comparison of Agricultural Indicators

The small scale of Nile Valley fields becomes apparent in comparison with other countries. Egypt has less agricultural area, a large percentage of GDP devoted to agriculture, and 30% of its labor force is agricultural-related. These contrasting figures illustrates the low productivity of labor in this sector.



LAND AND ACTORS

Small fieldstructure shows that agricultural land bordered by the desert is owned by many peasants. In the past and today, politics and inheritance have influenced the development of ownership and holding distribution. Policies showed different approaches and sanctions on how to handle problems of land distribution. One example is the field fragmentation into small parcels which results from inheritance. Another problem is the agricultural land lost to settlements on still arable land. The main task for the future to resolve fragmentation and limitation of agricultural land.



Samir Hammam, El Fayma farmer

Samir Hammam, 40-years-old, lives with his large family in the old house of his father. Their fields are on the other side of the street, where they plant wheat, corn, clover, onions, garlic, potatoes, and tomatos. In the courtyard, they cultivate a nebeg fruit tree and salad. They do fieldwork by hand and work every day from 7 am until 3 pm. Sometimes they rent machines for the harvest from other farmers in the village. The family sells 90% of their wheat to the cooperative, where they buy seed and fertiliser. They consume the other 10% of wheat, along with the fruits and vegetables, and also produce bread and cheese in their house.



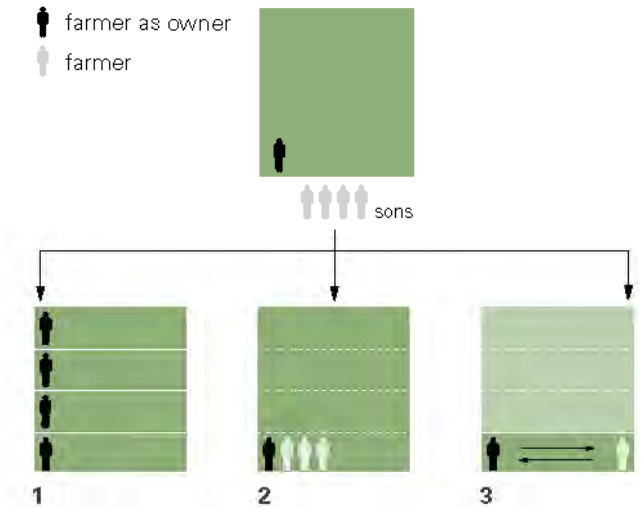


Samir Hammam, 40-years-old, farmer

“My three brothers and I inherited 4 feddans of agricultural land from our father, who inherited it from his father. Our family has lived many generations in El Fayma as farmers. I’m documented as the owner now, but we share the land and the fieldwork in the family. We don’t have much money. Abd El Basit, one of my brothers, went to Alexandria and works in a water company. His wife and children don’t want to live in our village. He comes every year for ten days and helps us with the harvest.”

Fragmentation through Inheritance

Farmers pass on land to their sons, who can choose how they want to administrate the heritage. Inheritance over generations produces many small fields. What results are problems with supply; farmers are forced to supplement their earnings with a second profession or go work in the cities.



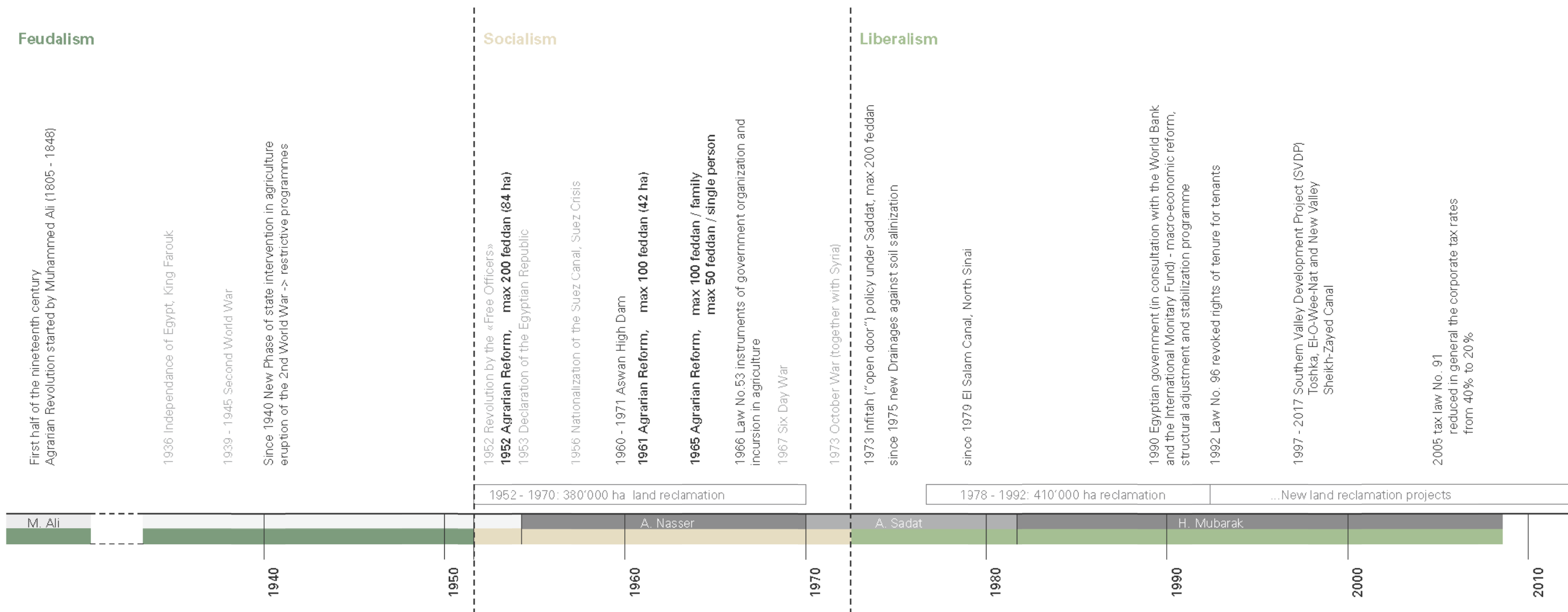
Inheritance Process

1. Sons divide the land and each of them is registered as owner of his part and cultivates it alone.
2. Sons cultivate the land of their father together and only one of them is registered as owner.
3. Sons rent/sell their part of the heritage to other farmers.



Holding Card

Once a year, every farmer is required to go to the cooperative which issues/updates a holding card describing the farmer’s inventory, including amount of land and crop species. Not only an ownership licence, a holding card must be filled by tenants as well. The government enacted the use of holding cards in 1966 to control land and production.

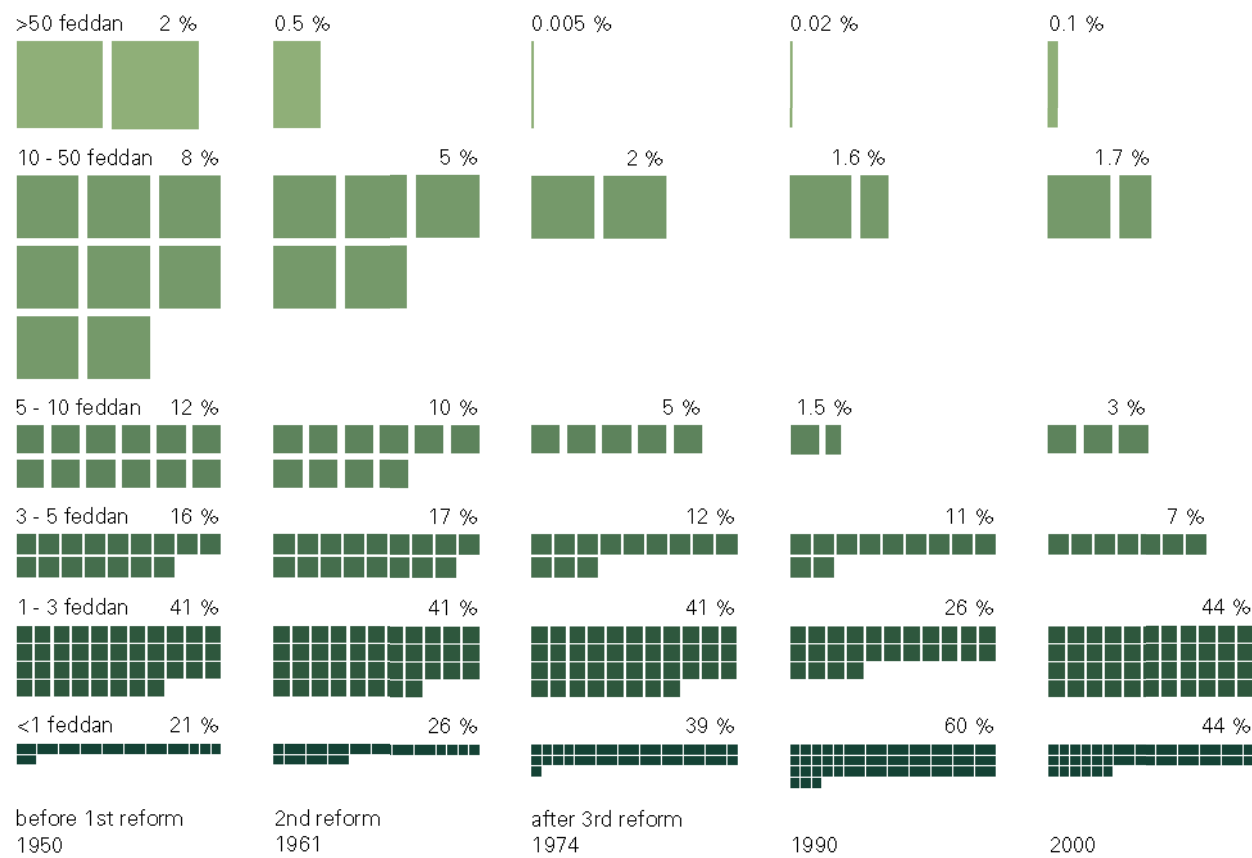
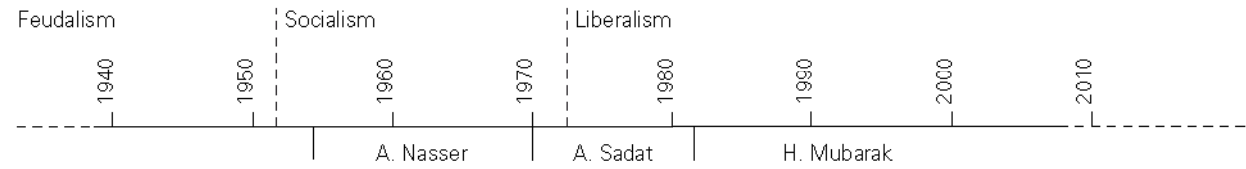


Fragmentation through Politics

FEUDALISM: In the 19th century, a select few people owned large estates and exerted political and economic power. The majority of farmers had to rent land and were dependent on the landowners. The owner could evict the tenants without security or chance for the farmers to stay. During this period, private property rights in land were consolidated and permanent irrigation was extended.

SOCIALISM: 1952 the "Free Officers" revolted against the social and political situation. They started the first Agrarian Reform, which regulated tenancy agreements and limited land ownership. Law No. 178 also fixed the land rate for unlimited tenure. In this time, cooperatives were created as an intermediary between the government and farmers, and they started with reclamation projects. In 1971, under President Nasser, the Aswan High Dam was built, which stopped the annual flood and made a permanent irrigation possible. The land could be better used, but the natural fertilisation from flooded soil was lost, thus resulting in large consequences for agriculture and urbanization.

LIBERALISM. President Sadat reduced governmental influence on the economy with the 1973 "Open Door" policy. He opened Egypt economically to the West. In the late 80s reclamation projects started in North Sinai and in other regions at the edges of traditional land. President Mubarak purposed a combination policies from Nasser and Sadat. He continues the liberalism of Sadat and slows the retirement of state control. But the 1992-issued Law No. 96 revoked the rights of open-ended tenure and permanent land tax for tenants. Landowners supported this law, because it gives them the possibility to sell their land at market price. The tenures, in contrast, called it "the law for throwing out tenants from their land," because the rent increased more than threefold. Many farmers lost their rented land and their house on it. The government put down the farmer rebellion against this tenure insecurity. An ambitious intention of Mubarak is the Southern Valley Development Project (till 2017). It starts with large land reclamation by the Toshka Lake and will create a second valley through the oases.



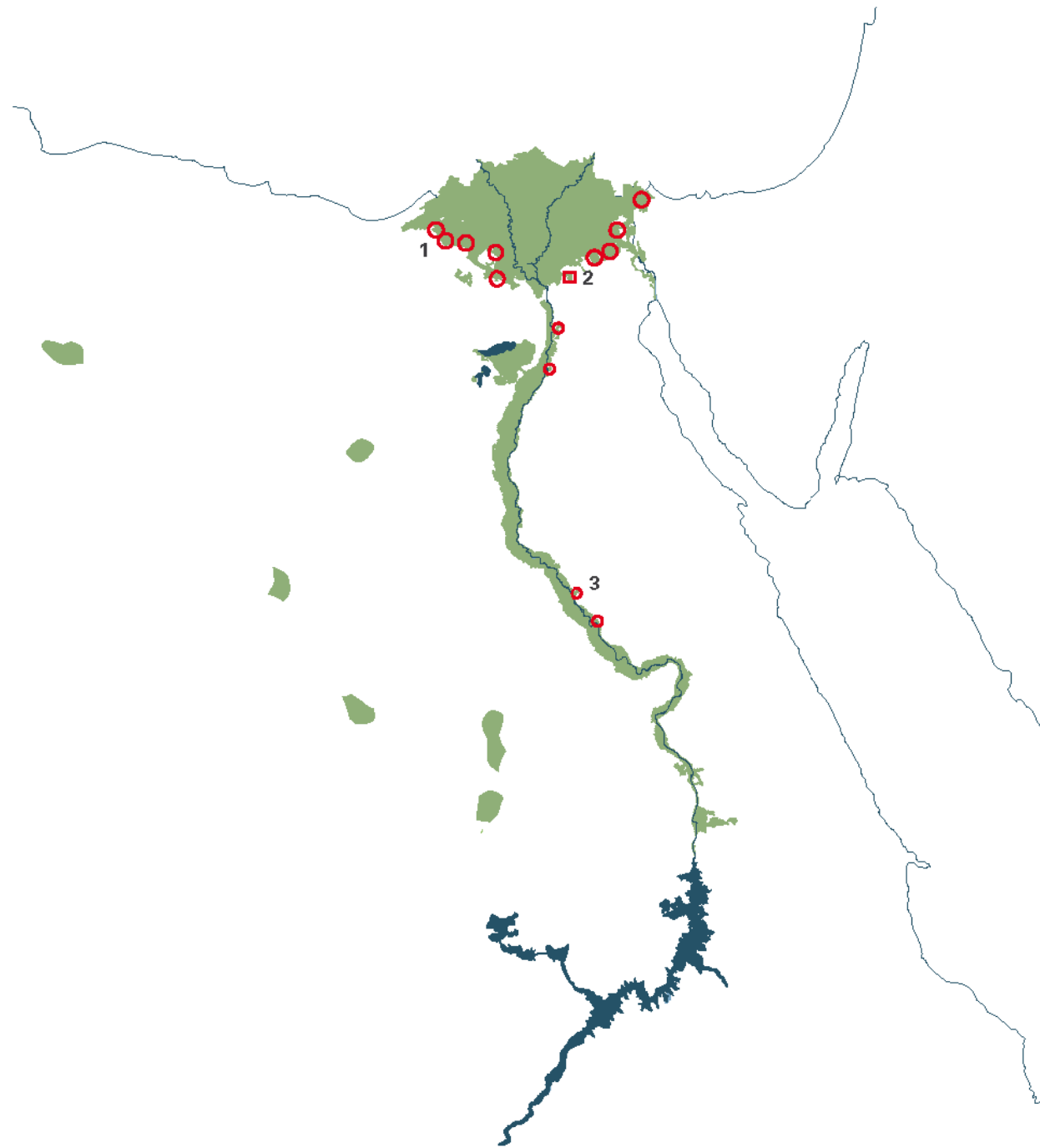
Development of Holding Distribution

One result of the agrarian reforms under President Nasser was the decrease in the number of medium and large holdings. The small holdings also increased because of inheritance. Since the enactment of liberal policy, large holdings increased again; Sadat enlarged the maximum holding size to 200 feddan per holding. Today, 95% of the holdings consist of less than 5 feddans.



Portraits of Presidents

Images of Nasser and Sadat hang on a wall in a farmer's living room next to a picture of his grandfather.



Holding Typologies

Large farms from private investors or from the government can be found in reclamation areas at the borders along traditional land. Large holdings are characterized by constructed, geometrical fields with modern irrigation technology. In the traditional old land, holdings are much smaller and the field structure fragmented over generations.



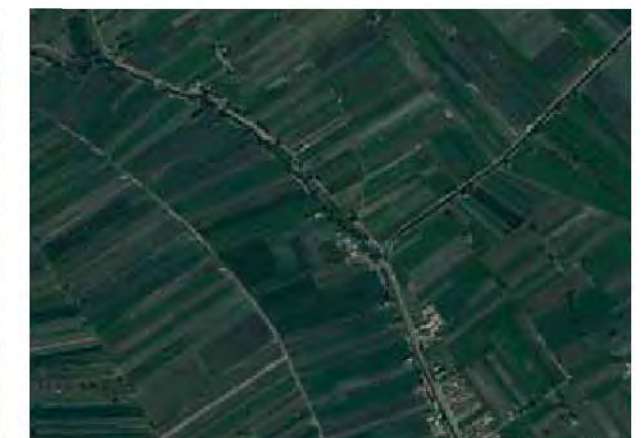
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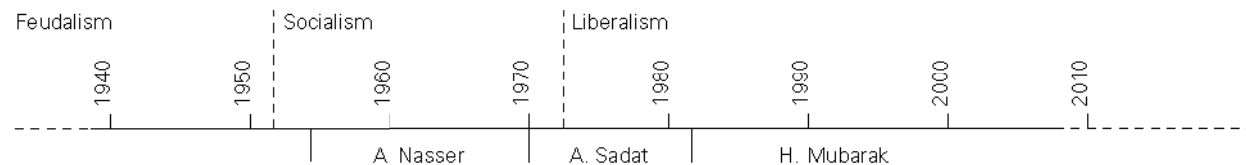
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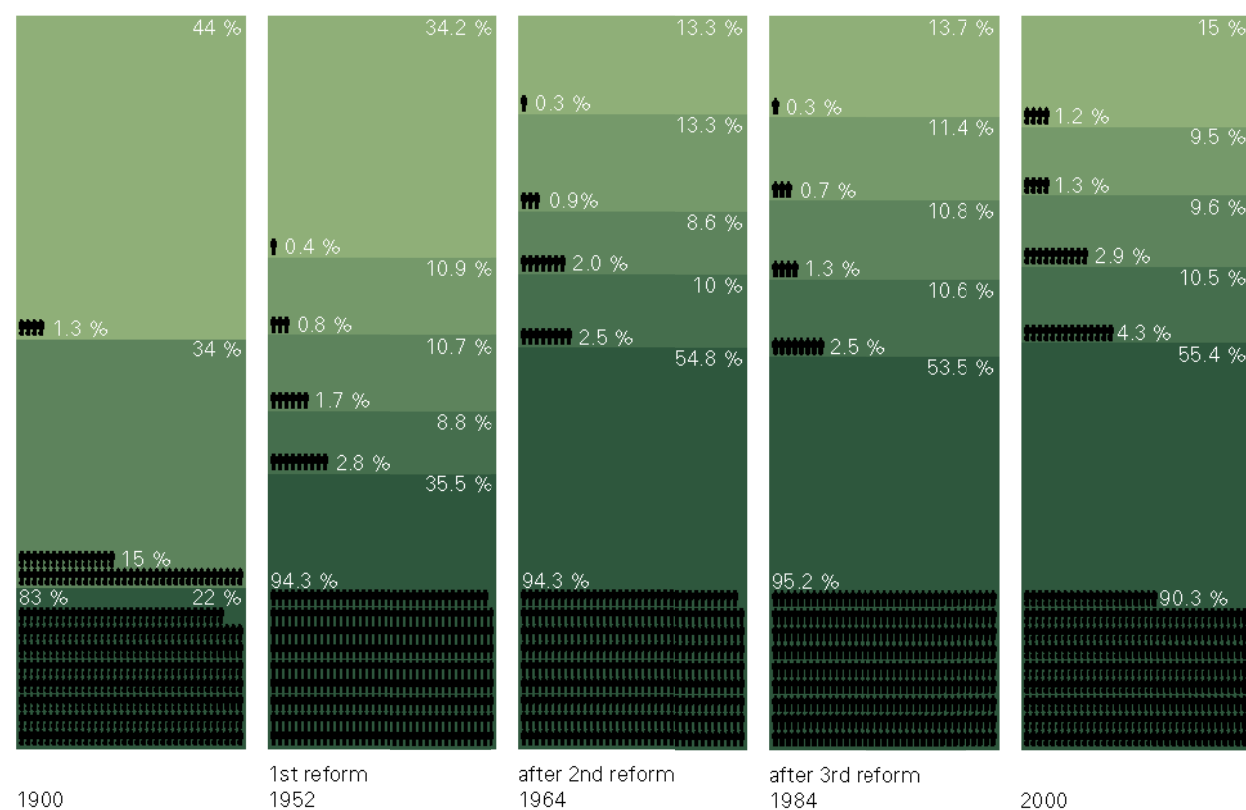
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200 m

- 1. Edge of the Delta: large holdings with modern technology (like in Kansas, USA)
- 2. Edge of Cairo: villas with swimming pools and fruit plantations in the reclaimed area next to Cairo
- 3. Edge of the Nile Valley: large holdings in the reclamation area along the Valley
- 4. Nile Valley: many small farms because of inheritance in the old, traditional land



- > 50 feddan
- 20 - 50 feddan
- 10 - 20 feddan
- 5 - 10 feddan
- < 5 feddan



Ownership Distribution Development

In the beginning of the 20th century there were a few land-owners who tenured about 80% of the agricultural land. The agrarian reforms aim to regulate this disparity of land distribution. After the reforms the percentage of farmers with much land stayed constant, but they owned less land than before. At the same time, the number of peasants raised. Today, around 90% of owners hold less than 5 feddans of land. The number of farmers without land rose since the first census in the 1950s.



Farmers without land:
rent land or are employed as workers at a holding



Farmers with some land:
sell wheat and plant fruits for self-sufficiency



Employees with some land:
sell wheat and plant fruits for self-sufficiency



Farmers with much land:
sell fruits, vegetables and wheat, employ workers



Employees with much land:
employ workers or rent the land to farmers

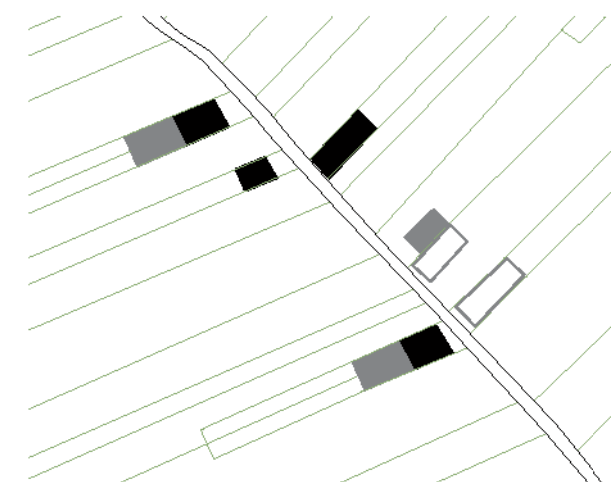


Ismail, 29-years-old

"I got some land from my father, but I'm not a farmer. I work as an assistant at the university in Assiut. I can't really use the land and rent it to farmers. The area is near to Assiut city. I'm waiting until my agricultural land will turn into a housing zone. Then I will sell it, because you get more money for housing areas."

Urbanisation on Agriculture

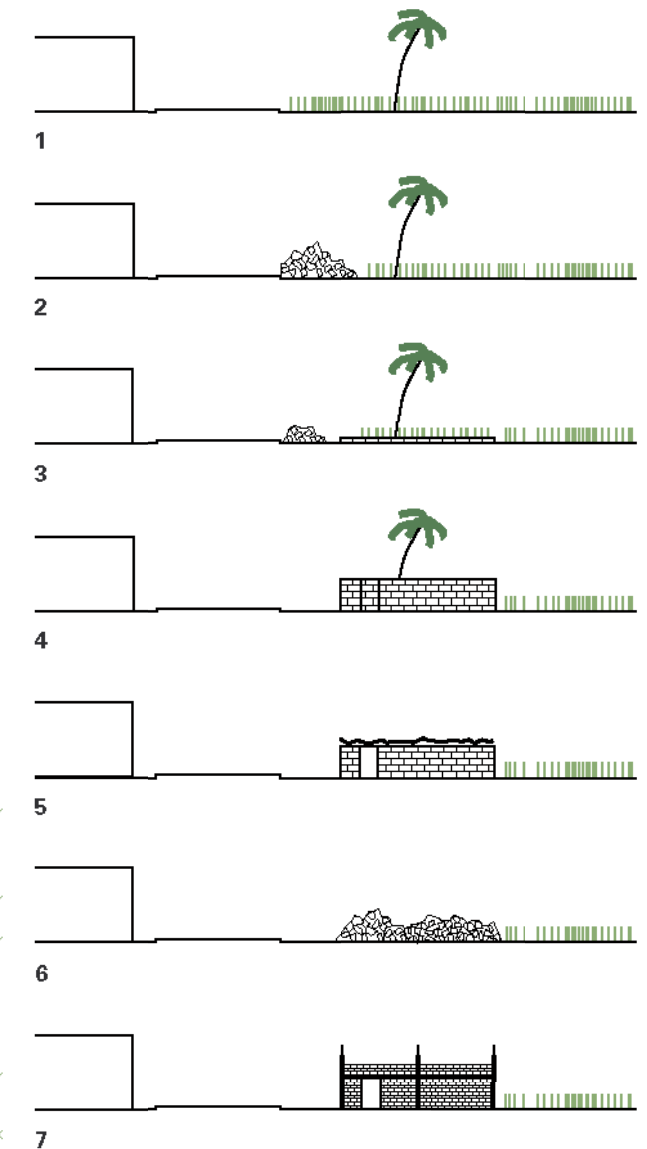
It is illegal to build houses on agricultural land because they displace land for cultivation. However, the large families of the farmers need space to live. For that reason, they build illegal houses near their fields. There are different steps of building the houses. First, limestone walls are constructed. The farmer use the unfinished buildings as storage for crops or as a cot for animals. Then, the government demolishes the illegal house. A process of legalization follows. The farmers explain that they need the house and plead for its cause in a court. After legalizations the farmers rebuild the house with a concrete frame and bricks. Houses get built along the streets, at the edges of the fields.



■ new housing
■ existing housing

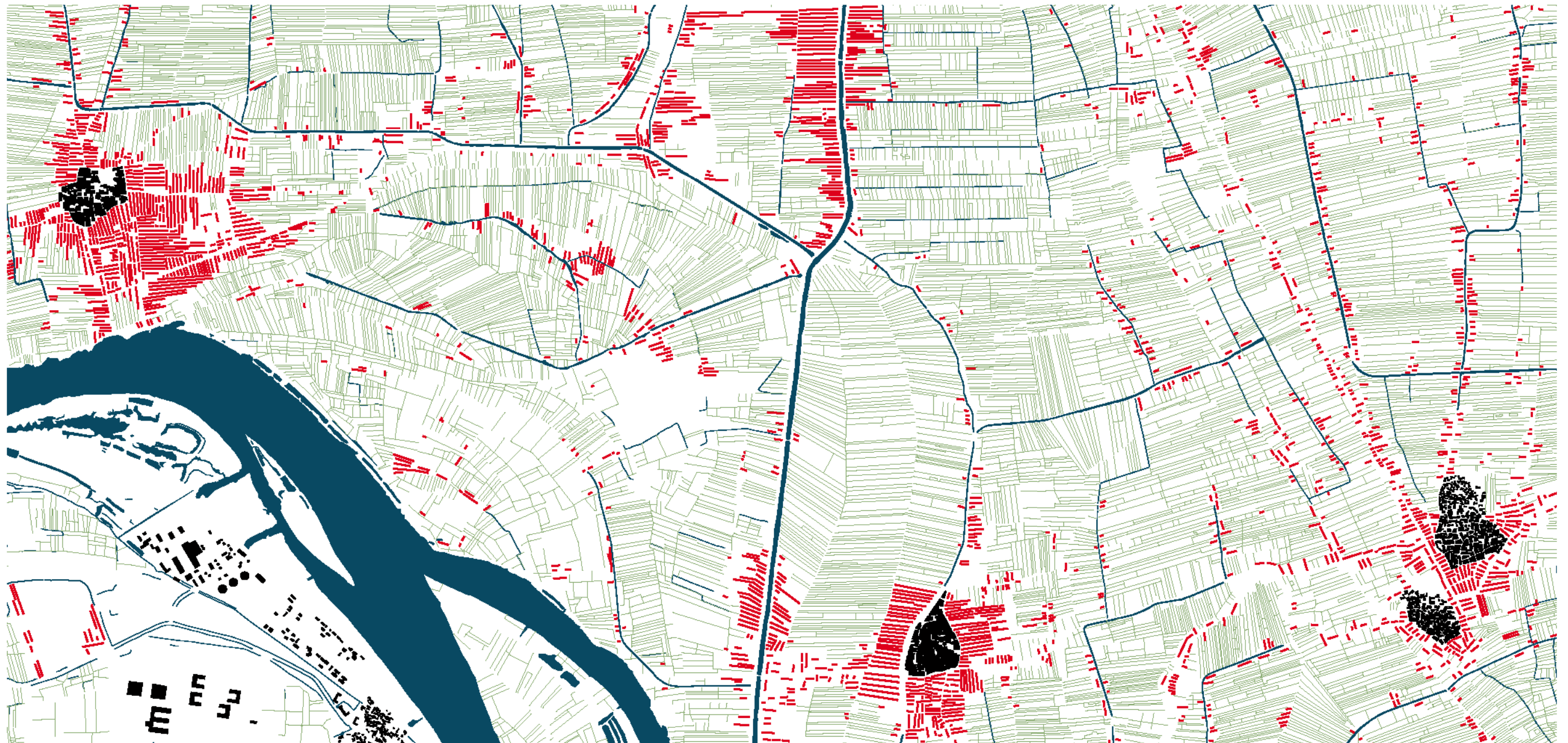
Houses on Agricultural Field Parcels

Houses are built along the streets at the edges of the fields and sprawl into the agricultural parcels.



Legalizing Illegal Housing

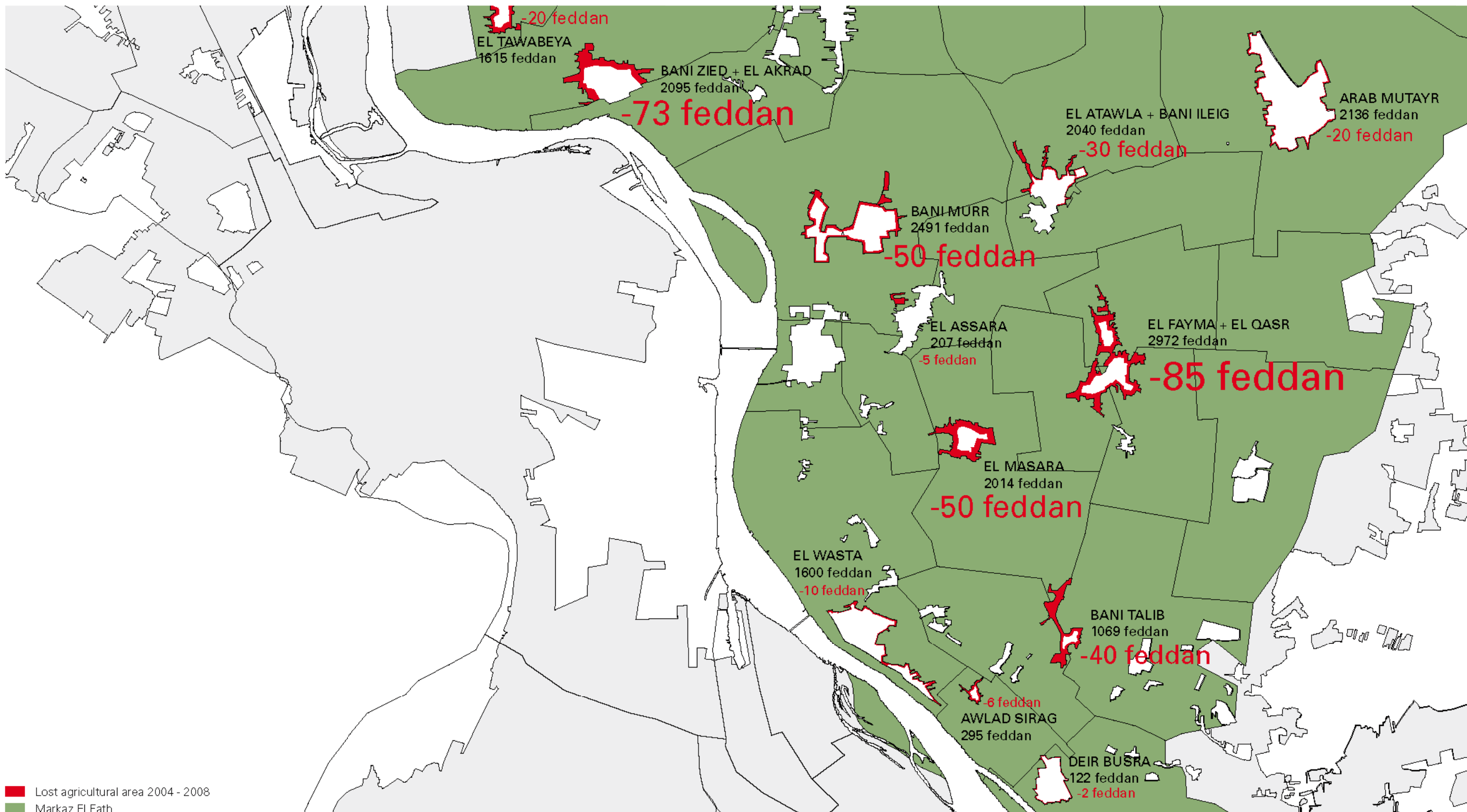
1. Agricultural field
2. Bring white limestone to the field
3. Slowly build
4. Use finished walls as storage or a cot
5. Construct roof with dried maize
6. Government demolishes house, legalization ensues
7. Legal reconstruction with concrete and bricks



- Housing in agricultural structure
- Old village cores and industry

Housing Follows Subdivision

The agricultural structure of the fields influences urbanization. Houses sprawl on the fieldstrips around the villages and along the streets. Old village cores are clearly visible. New houses, which follow the fields, are long and narrow.

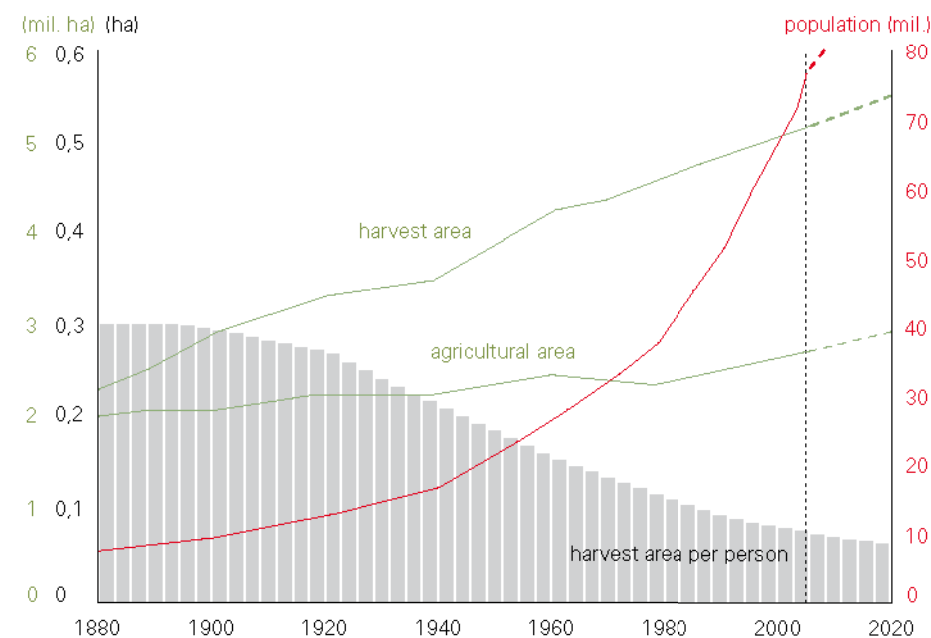


Agricultural Area Lost by Housing

Agricultural area displaced by housing in the last four years (2004-2008) in the region of El Fath totals 391 feddans. This number is comparable to 280 soccer fields.

SUPPLY

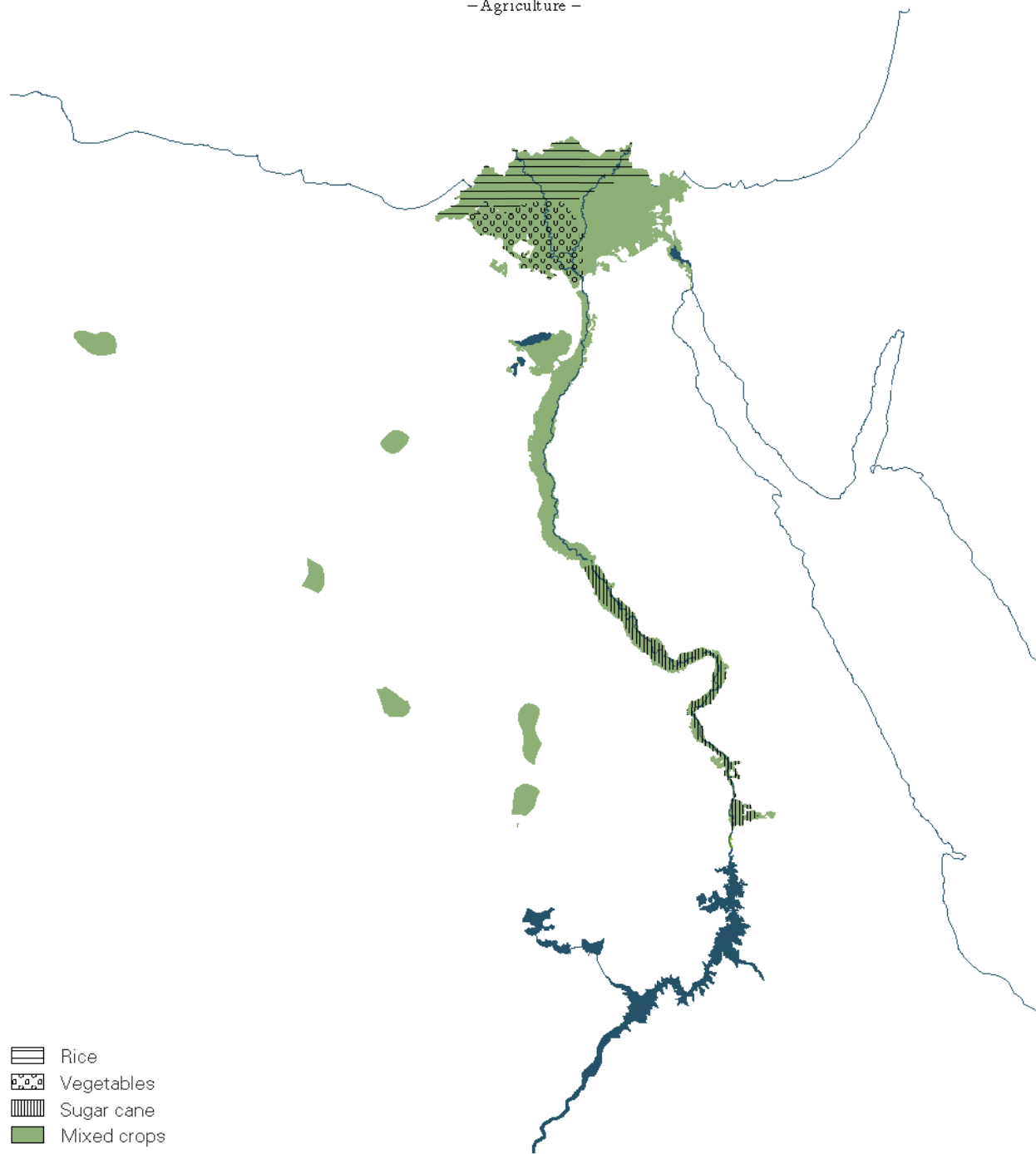
The enormous increase of the Egyptian population has led to an insufficient agricultural supply. In spite of expansion of the agricultural economy through land reclamation and more efficient cultivation, the harvest area per person is decreasing. In addition, farmers with small holdings farm old traditional land with obsolete cultivation methods and inefficient seedbed preparation and irrigation. To use the agricultural land in the most efficient way, new farming techniques and greater mechanization are required. Livestock breeding and aquaculture are critical practices to close the gap between production and consumption. New land reclamation provides another opportunity to raise the production rate. The present Southern Valley Development Project aims to create a new focus for agriculture, industry, settlement communities and tourism.







Harvest Area per Person

The yield per feddan could increase from better utilization of the agricultural area. But because of the high population growth, the harvest area per person decreases.

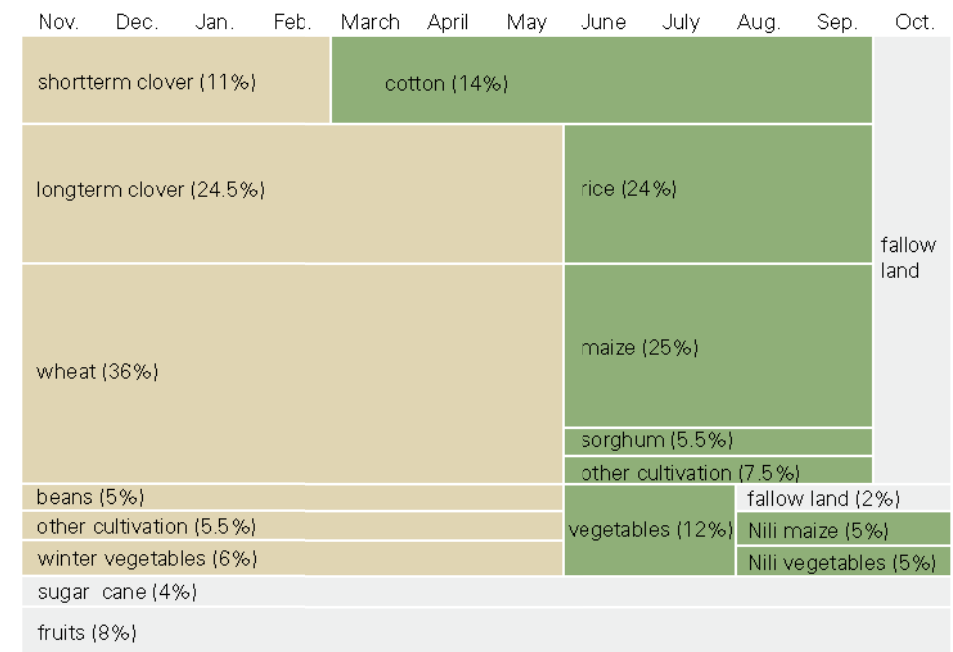




-  Rice
-  Vegetables
-  Sugar cane
-  Mixed crops

Cultivation

Agricultural area covers only 3% of Egypt's surface. The highest agricultural production is in the Delta, which is also the most populated region. Less mechanization causes a low productivity. The Valley holds mainly mixed crops like wheat, clover, cotton, maize, vegetables and fruit. In the Delta regions are more likely to grow rice and vegetables. In upper Egypt, sugar cane constitutes an important crop. Alternative cropping patterns can increase profit, reduce water use, and increase self-sufficiency. Profit-making export commodities like fruits, vegetables, cut flowers, medicinal and aromatic plants should be supported for increased efficiency, whereas traditional cultivation of rice and sugar cane should be reduced or substituted because they require much water.



Seasonal Cultivation

The main crops in winter are wheat and clover, which together composes about 70% of the agricultural area. In the summer, maize, cotton, rice and vegetables are grown on 75% of the agricultural land.



Clover is used as animal feed and can be cut and harvested several times per season.



Wheat is one of the main crops in Egypt and Assiut, vital for making bread. The big harvest is in May.



Banana plantations can be found next to the Nile because they require plentiful water and fertile soil.



The construction for grapes, which consists of stone pillars and palm leaves, is built by the farmer.



Farmers with fruit plantations normally hold more feddans than wheat farmers. Oranges mature in September.



Most vegetables in Assiut are cultivated next to the village of Durunka. Onions are sold to other governorates



Cultivation in Assiut

In spring, wheat and clover fields grow all around Assiut. In summer, cotton and maize dominate. Next to the Nile, one finds many fruit plantations with bananas and grapes, mangos, oranges or citrus, with a few sugar cane fields.



- Palms
- Banana and fruit tree plantations

Cultivation Pattern in Assiut

The map shows subdivision of the fields into different field-crops. The area has mixed cultivation and fields with fruit trees between wheat and clover.





Working Tools

Most work on the fields in Assiut is done by hand. Many peasants do not have machines, but are able to rent machines from other farmers for the big wheat harvest. Transportation tools include wheelbarrows and donkey carts.



Only large holdings have tractors. Small farmers can rent them from other farmers to treat their fields.



Wheelbarrows are useful to bring crops from the field to a path or a street.



This machine is owned by a farmer with much land and is used to scuff the ground before seeding.



Tradesmen mostly use donkey carts to transport the goods to the market and sell them directly on it.



This special machine for the big wheat harvest is required in May.



The sickle is primarily used for clover harvesting. Farmers sometimes employ workers for this exhausting fieldwork.



In sheep breeding, milk production is less significant than meat and wool production.

Livestock Husbandry

Due to the lack of rangeland, livestock breeding is sparse. However production is increasing because of growing meat and fish consumption in Egypt. The domesticated livestock are an important element for increasing food production to supplement dwindling crop quantities. In general, every farmer family in Assuit has a buffalo and chicken for self-sufficiency. In the Delta, large fish and poultry husbandries increase the per-capita consumption of animal protein.



Donkeys are useful for transportation. They carry crops from the fields to the farmer's house.



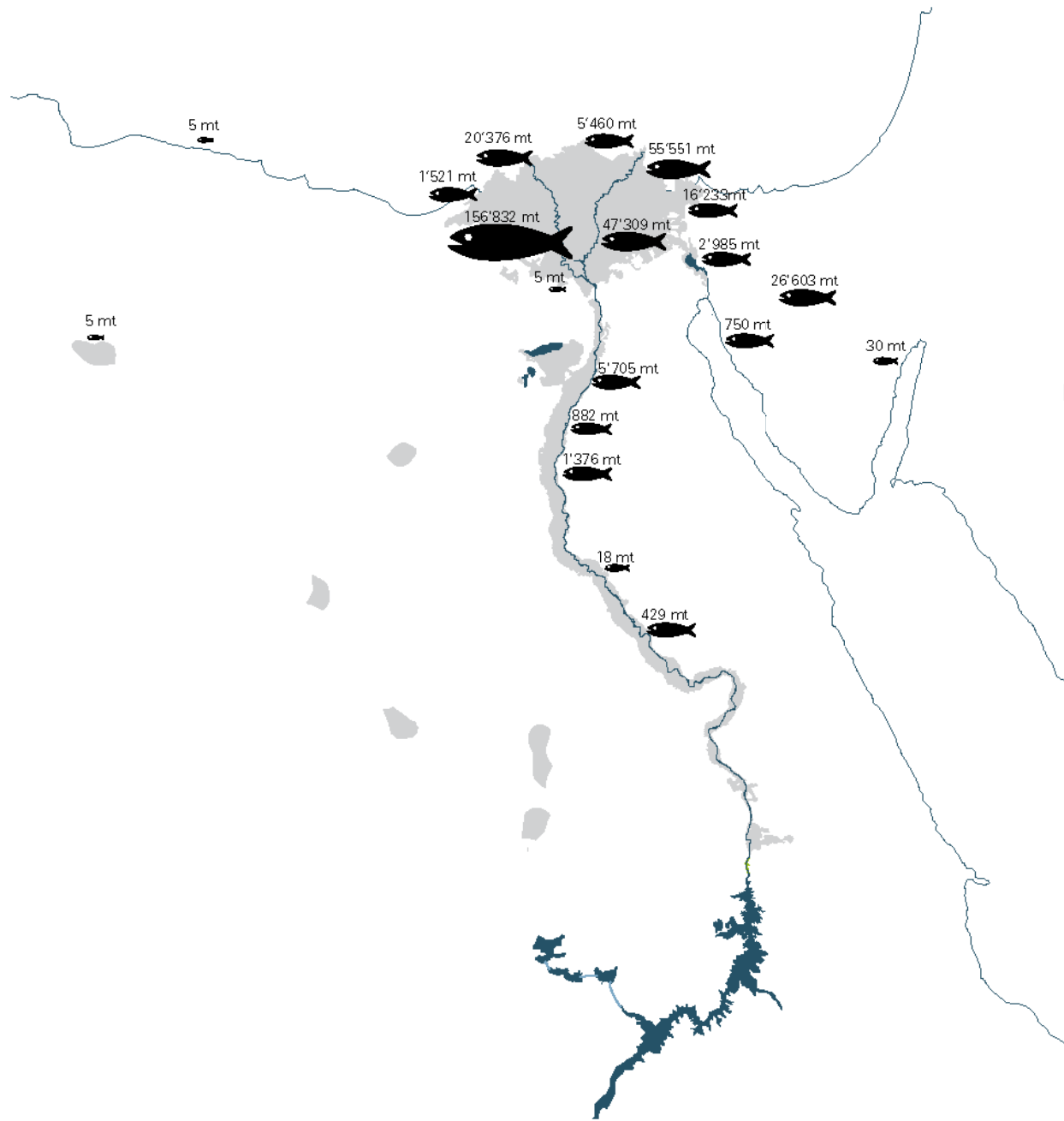
Chickens can be found in the farmer's house. Their eggs and meat are eaten by the family.



Buffalos and cows are the most important animals for milk and meat production. Normally every farmer has a buffalo.



Camels are also used for transportation. But there are only a few in Assiut, because they are very expensive.



Increasing Aquaculture

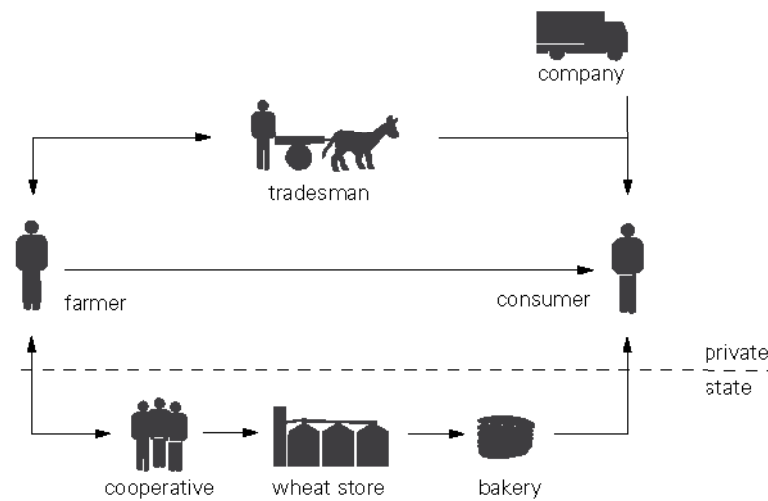
Aquaculture is the largest source of fish supply in Egypt. The production records a rapid growth in the last few years. Most farms with aquaculture are located in the Delta region. Aquaculture is an opportunity to close the gap between the fish consumption and fish production in Egypt. The Ministry of Agriculture and Land Reclamation plans to increase Egypt's total fish production from 0.5 million tonnes to 1.5 million tonnes by 2017.





Souk for Vegetables and Fruit

This open market is next to the canopied souk in Assiut. The tradesmen are not required to pay for their booth.



Farmer Trading Opportunities

Farmers have three different ways to sell their goods. They can sell them to tradesmen or to cooperatives, or vend their fruit, clover or cereals at the market in their village. Small farmers use a larger percentage of their production for themselves. Another source for consumers or tradesmen is the big market in Assiut city which sells both local goods and imports from other governorates.

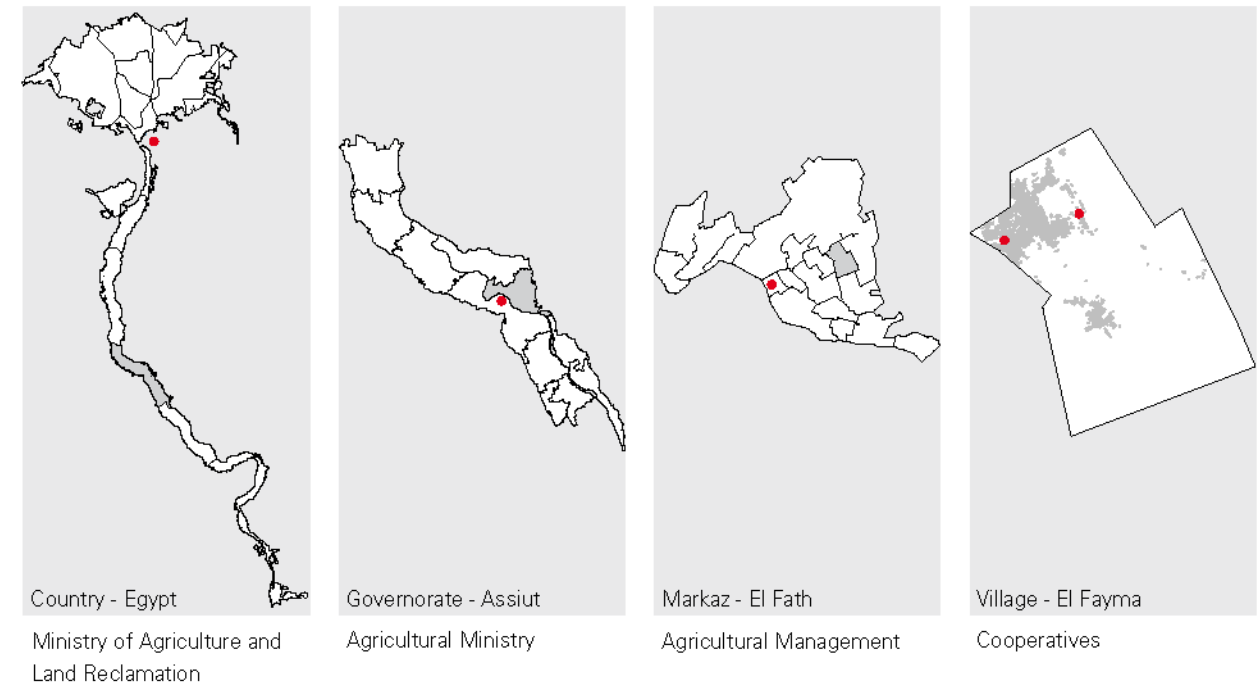


The picture shows the central wheat store in Assiut.



Cooperative Support

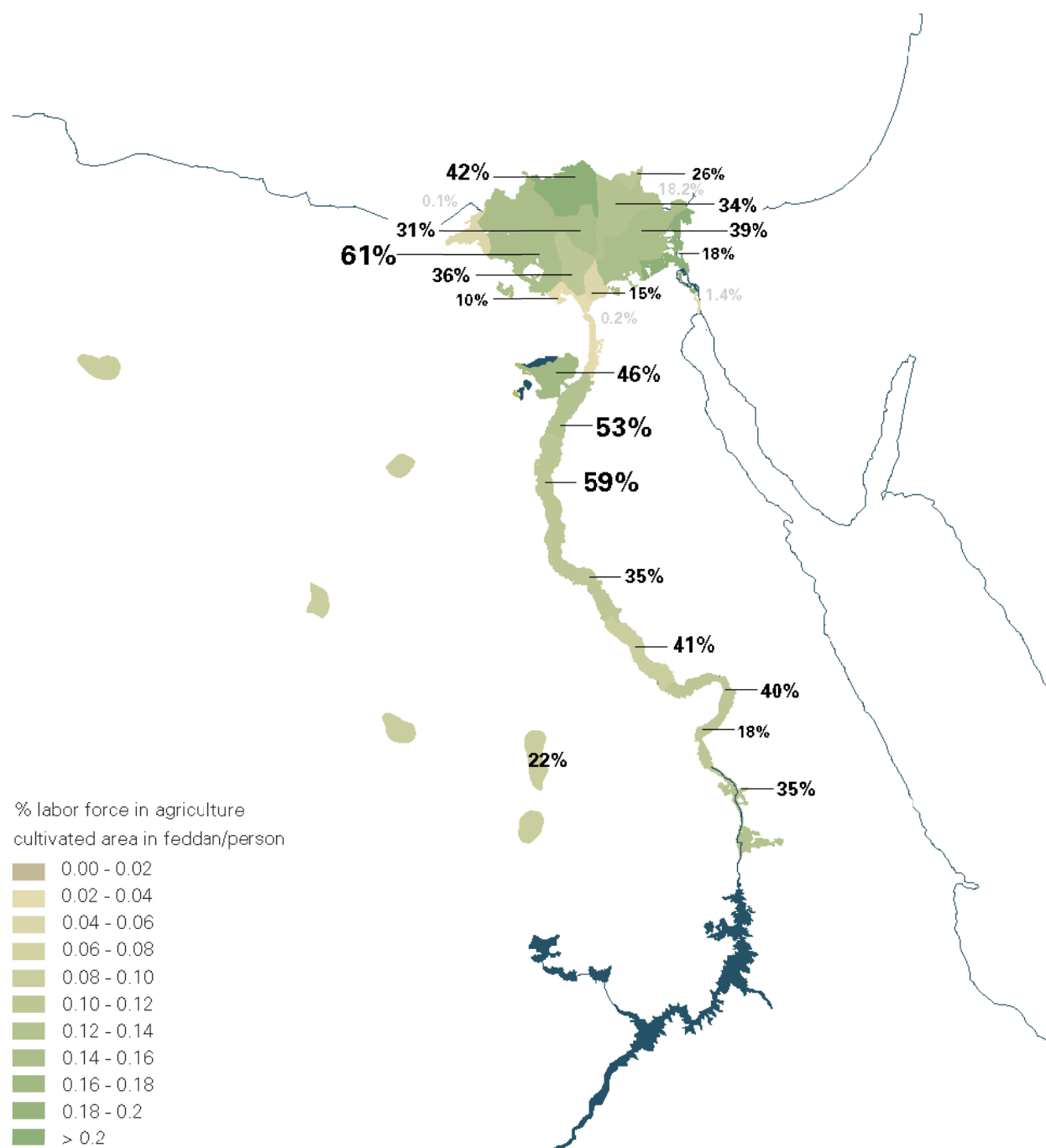
Cooperatives serve as the connection between government and farmer. Farmers can buy subsidized seed and fertilizer there, when they are registered as land holders. The cooperative sells only a limited amount of fertilizer per feddan. The farmer must often buy more expensive fertilizer on the market because the sold amount is not enough. Every village holds one to two cooperatives that buy wheat from farmers and bring it to the big wheat store in Assiut. Next to the cooperative is a government bakery where the wheat is directly processed to bread.



Ministry Structure for Agriculture

The domicile of the main Ministry for Agriculture and Land Reclamation is in Cairo. It holds authority over the Agricultural Ministries in the governorates. Each governorate is subdivided into smaller regions, Markaz, with own Agricultural Management. This Agricultural Managements are responsible for the cooperatives, which are in every village.





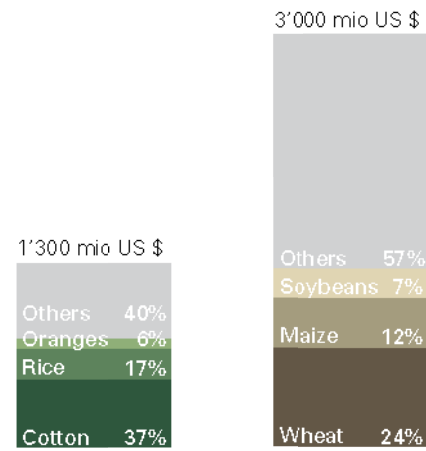
Internal Trade Indicators

Egypt governorates have an unequal distribution of cultivated area per person. The lowest are located near large cities like Cairo and Alexandria, which impacts internal trade. The largest labor force in agriculture is in El Minya. The share of agricultural labor force of the GDP is generally high in Egypt.



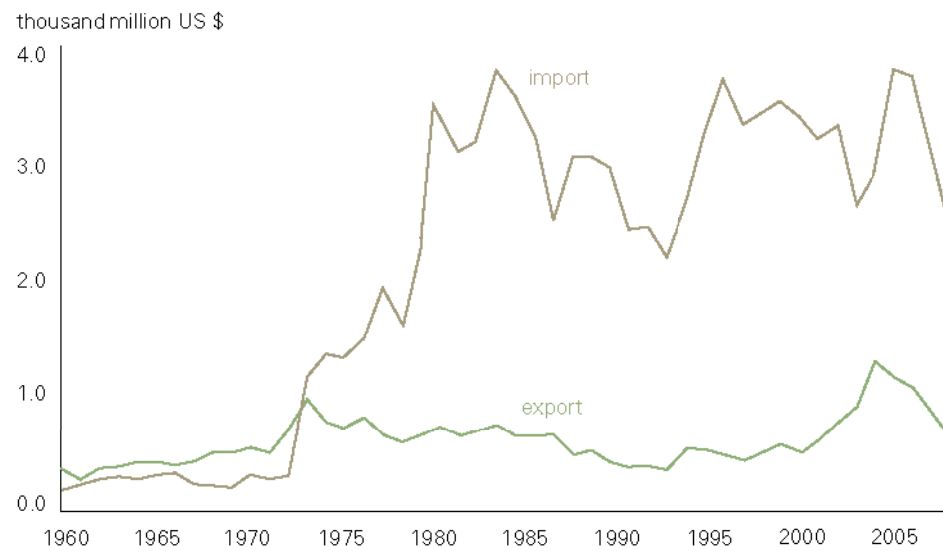
Tradesmen from the Delta

The oranges in Assiut mature in September. In the spring, tradesmen import them from the Delta where there are greenhouses with fruit plantations.



Shares in Imports and Exports

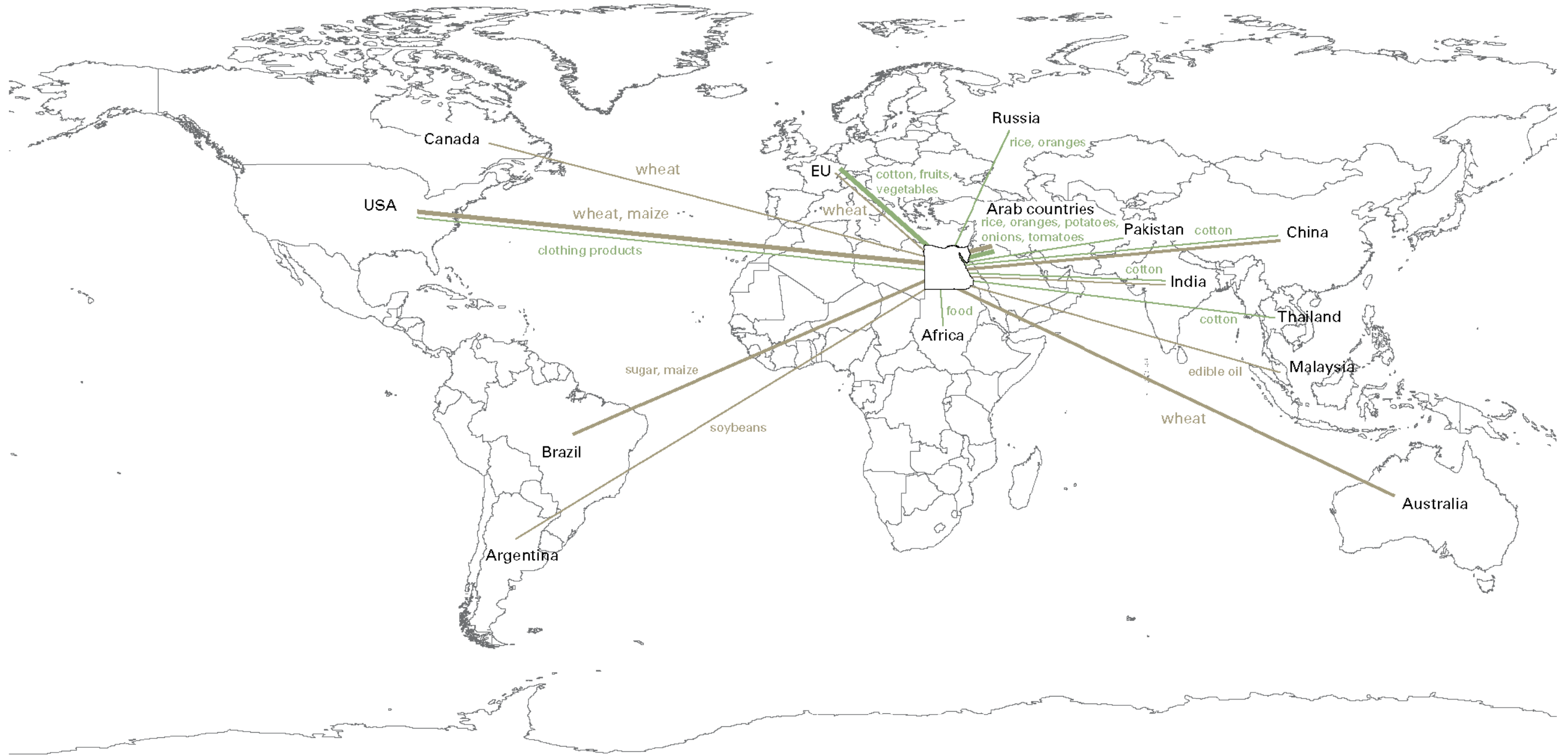
The major commodities in agricultural exports are cotton lint, milled rice and oranges. The major agricultural imports are wheat followed by maize and cake of soybeans.



Negative Agricultural Trade Balance

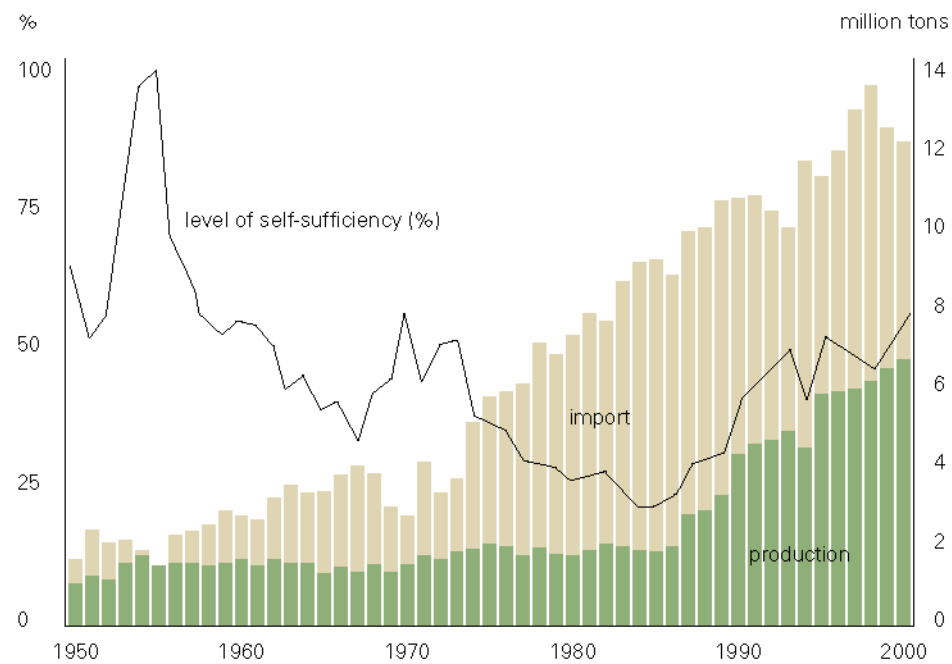
Since the 80s there exists a large gap between agricultural imports and exports, generated by Egypt's large population increase. Since 1973, the trade balance of agricultural goods has been negative, reflecting a dependence to the world market price and Egyptian trade partners.





Agricultural World Trade

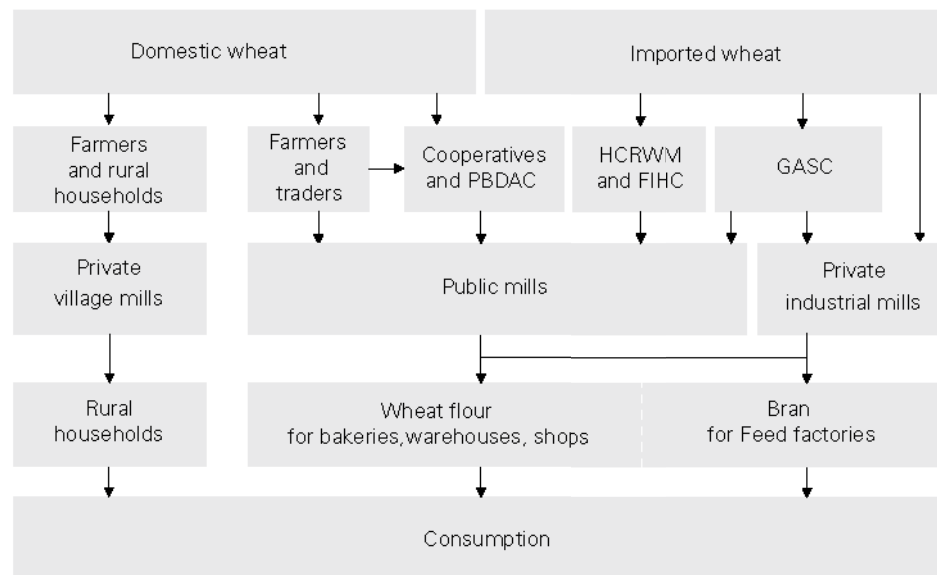
The main agricultural trading partners of Egypt's exports, like cotton lint, rice, oranges, potatoes, onions and vegetables, are the European Communities, Saudi Arabia, United Arab Emirates, Jordan, and Russia. The major agricultural imports to Egypt are wheat, maize, soybean cakes, palm oil, sunflower, beef, tobacco, broad beans and sugar. 60% of Egyptian exports go to European countries.



Low Self-sufficiency of Wheat

Wheat is the most important agricultural element in Egypt. Although Egypt's wheat production could have tripled since the 80s, it covers only the half of demand because of the extreme population growth. The average size of wheat farms is about two feddans, while 50% of the wheat farms are smaller than one feddan. The small holdings consume about 70% of their own production.





PBDAC = Principal Bank for Development and Agricultural Credit
 GASC = General Authority for Supply Commodities
 HCRWM = Holding Company for Rice, Wheat and Wheat Mills
 FIHC = Food Industry Holding Company

Structure of the Wheat Industry

In Egypt there are equal parts domestic wheat and imported wheat. Domestic wheat is mainly consumed in the villages. Rural households use what they farm for self-sufficiency. Some domestic wheat goes to traders or cooperatives, which take the wheat to the public mills. The imported wheat goes to public mills, but also to private industry. Private industrial mills and public mills produce bran and about 77% of the nation's wheat flour. The wheat flour is processed and sold in bakeries, warehouses, food processing factories and shops. The bran is used in feed factories, bakeries and by poultry producers and traders.



Mill factory in Assiut



Self-sufficiency in El Fayma

El Fayma clearly illustrates the infrastructure of a self-sufficient village. There are two cooperatives in the village which are the contact point for the farmers to buy fertiliser or seeds from the government. Three private mill machines produce flour which gets directly processed for consumption in the village. In the main lanes of the village, farmers sell harvested crops to their neighbors.



The main lanes hold water stations for free drinking water. One of the boys has brought some traditional bread.



The village inhabitants and farmers sell fruits, vegetables and clover at small booths and on donkey carts.



Private mill machine in the center of El Fayma, where farmers can mill wheat for their own use.



In El Fayma, there are two cooperatives; one serves the old land, the other one serves the reclamation area.



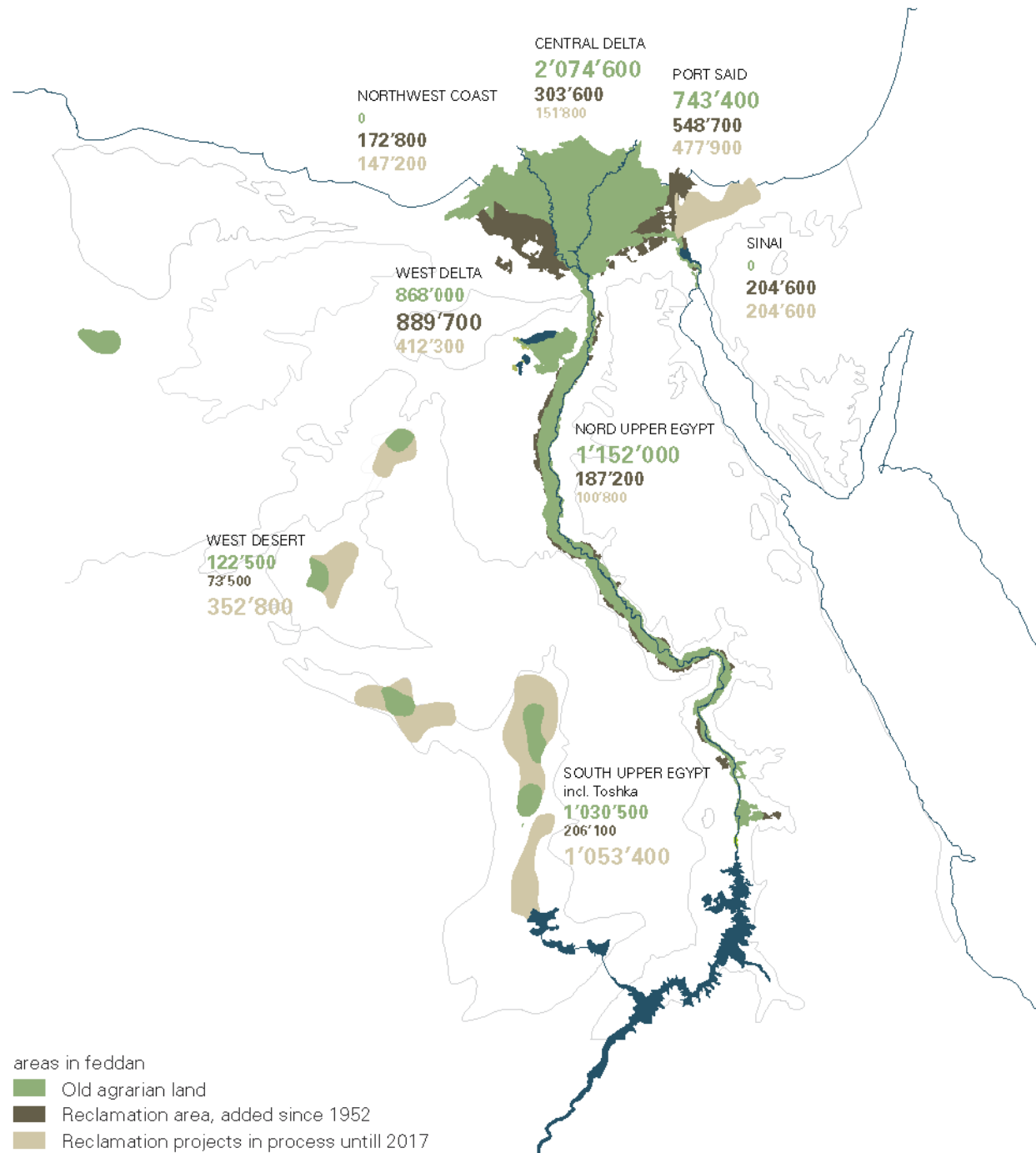
Sanctions to Increase Yield

Production has grown at a noteworthy rate since the 80s. Sanctions to increase yield include fertilization, new irrigation systems, and the adjustment of crop rotation from a rhythm of three annual rotations to two. In spite of new chemical fertilization methods, animal dung is also used as a fertiliser.



Yield Increase through Fertilization

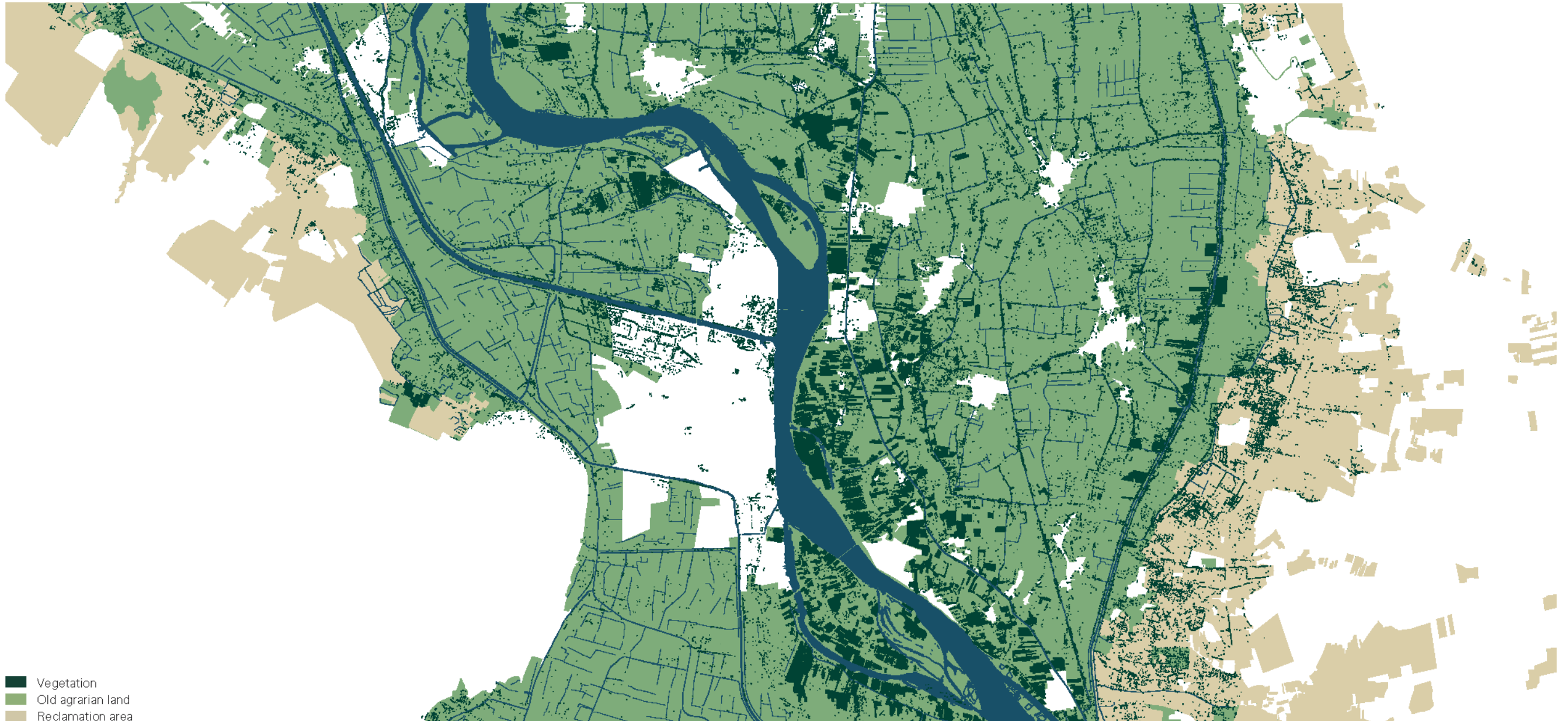
Fertilizer is sold by the cooperatives or by tradesmen. Some crops, like sugar cane or maize, need more fertilizer. The graphic shows how much fertilizer is used per one feddan. The average usage is 300 kg per year, with one bag holding 50 kg. Since the Aswan High Dam was built in 1971, the farmer have required more fertilizer since the dam stopped the annual flood that normally deposited fertile soil.



Expanding Cultivated Area

All cultivated land added since 1952 is called reclamation land. Today, cultivated land amounts to about 9 million feddans, which includes 3 million feddans of reclamation area. Egypt started a long-term strategy until 2017 to add a further 3.4 million feddans to the agricultural land. One main reclamation project is the Toshka Project, an integral part of the much larger Southern Valley Development Project which plans a second valley in the Western Desert for the growing population.





- Vegetation
- Old agrarian land
- Reclamation area

Old Land

The fertile soil of the old land, in comparison with reclaimed land, requires less irrigation. Divided into small parcels and allotted to many owners, the distribution of fragmented land is not very conducive to large interventions. The old land, at 100,000 LE/feddan, is quite expensive, while irrigation is for free for all lands old and new.

New Land

The government reclaimed new land into the desert, where soil is stony and infertile. Land cultivation requires more work; farmers must fill the ground with soil and dung and irrigate often. However, the land is inexpensive and costs only 10,000 LE/feddan. After 10 years of cultivation, the land begins to produce an average crop yield.



1



2



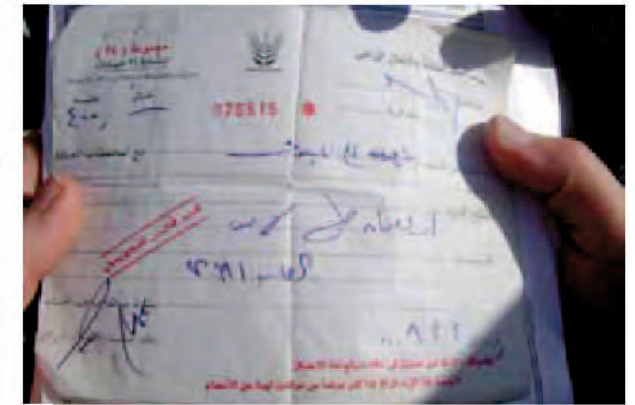
3



4



5



6

Process of Land Reclamation

- 1 Bring infrastructure and water to the fields
- 2 Flatten the ground
- 3 Clear soil from rocks and stones
- 4 Fertilize land
- 5 Plant and irrigate crop
- 6 Buy or rent the land from the government



Sa'ad Mohammed, 35-years-old, farmer

"I sold some of my small fields in the old land for a good price so that I could buy much more cheap land in the reclamation area. The cultivation in the first years is hard, but after 10 years my family will have the same crop yield like in the old land. I do this for my children."



Prospect

Egypt's urban organism flexibly uses limited resources of water and fertile soil. Agriculture is like a skin and compensative element between the inner pressure of the population growth and the bounded expansion into the desert. The peasants and the habitants must be adaptable, as the fragmentation of fields through inheritance has progressed far. Most family holdings are too small to nourish the next generation. The liberalism of the current policy leads to an economic pressure on the smallest holdings because must compete with large companies. Some farmers are forced to leave their land and work in the cities in other occupations. The government purposes to raise the low self-sufficiency through higher mechanization, new irrigation systems, alternative cropping patterns, and land reclamation. But the planned reclamation projects are not possible without more efficient water usage. The largest project for land reclamation, which is the Southern Valley Development Project, not only seeks to create new harvest area, but it aims to create a second valley for settlement, industry, and tourism. The exploitation of the ground with resources leads to new problems like salinization and pesticide poisoning. It is questionable how elastic and stable the agricultural skin will perform in the future.



AGRICULTURE: COMMENTARY

The cultivation of fertile land along the Nile describes a kind of genetic code of the Egyptian culture. Although today the Nile Valley is highly urbanized and agriculture does not provide sufficient means of existence in the villages, the old agronomic structures still determine the parameters, which guide the development of the territory between the two deserts. The growth of the settlements in particular still follows the logic of a highly fragmented field and property structure. Even though these small land units do not secure the means of existence and a major part of the needed goods have to be imported, agriculture is still an important activity for the majority of the population – at least for self-supply with basic goods. The low level of mechanization, the family and community based work distribution and the cooperative organization structures on a larger level all emphasize the importance of agriculture as a function which «stabilizes» a fast growing region.

قرى الوادي. التركيبة المتوازنة



VILLAGES IN THE NILE VALLEY

A STABLE CONSTELLATION

THE PEASANT AND THE FAMILY

Family House
Building a New House

THE EXTENDED FAMILY

A Stable Instability

THE VILLAGE

Evolution
Actors and Actions
Three Villages

THE VALLEY

70 Million along the Nile
A Valley Mat
Interconnections

BEYOND THE VILLAGE

A Cairo Dream
Connections
Migration
Stability

ETH Studio Basel
Contemporary City Institute
Liisa Gunnarsson, Mirco Brugnoli
Prof. Roger Diener, Prof. Marcel Meili
Mathias Gunz, Rolf Jenni, Milica Topalovic
Christian Mueller Inderbitzin

Spring Semester 2009

VILLAGES IN THE NILE VALLEY

A STABLE CONSTELLATION

Rural settlements constitute a substantial part of the Nile Valley and Delta landscape, housing half of the Egyptian population. The area covered by settlements is constantly increasing, putting pressure on remaining agricultural land. The distance between agglomerations are decreasing as connections are enhanced. This network of settlements is a stable fundament of the urban fabric, feeding cities with a labor force receiving commodities in return. The research maps three villages in the Nile Valley to understand their internal metabolism, and how they relate to each other and the larger context.



THE PEASANT AND THE FAMILY

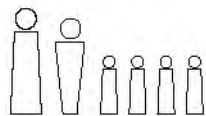
The peasant, dressed in his “galabeya,” a long tunic, is the typical figure of the rural settlement in the Nile Valley. Originally the peasant worked as a farmer, or a “fallah”. He and his family lived off the land he cultivated. Currently, the peasant family is engaged in a dispersed range of various activities in order to manage its livelihood. Agricultural production alone is not enough to support the rural population anymore. The peasant is changing; today he is a teacher, tradesman, factory worker, hotel porter, office employee, café owner, construction worker, carpenter or petty trader, and he has seen the world, and traveled abroad to work at a construction site or in a factory in Middle Eastern and North African countries (MENA). Agricultural production remains the most important generator of subsistence, and is the directing force of peasant life of the Nile valley. The peasant family forms the smallest economic unit in the village.



Urban-Rural Demography of Egypt

source: CAPMAS Population, Housing and Establishments
Census 2006





Hasanin 'Okasha', 38

Primary school teacher, fallah and phone card salesman
"Life is better here than in Assiut"
"The main problems of El Fayama are bad education quality and the high built density"

The Family House

Marriage constitutes the most important event in the life of an Egyptian peasant. The physical representation of the event is the construction of an extension or an all-new house for the new nuclear family. This is one of the most important factors of the social stability because it represents the realization of the peasant families merging together. In many cases, the new nuclear family stays in the house of the husband's father where an apartment or room extension is prepared for the couple.



Hasanin with four of his children. Hasanin's sister also lives with the family. This nuclear family is otherwise an exception on the street where all the other families are a part of an extended family.



The Heart of the House

The patio is an area where all the daily activities are carried out. The women prepare food and bake bread in a mud oven, as well as wash and dry laundry.

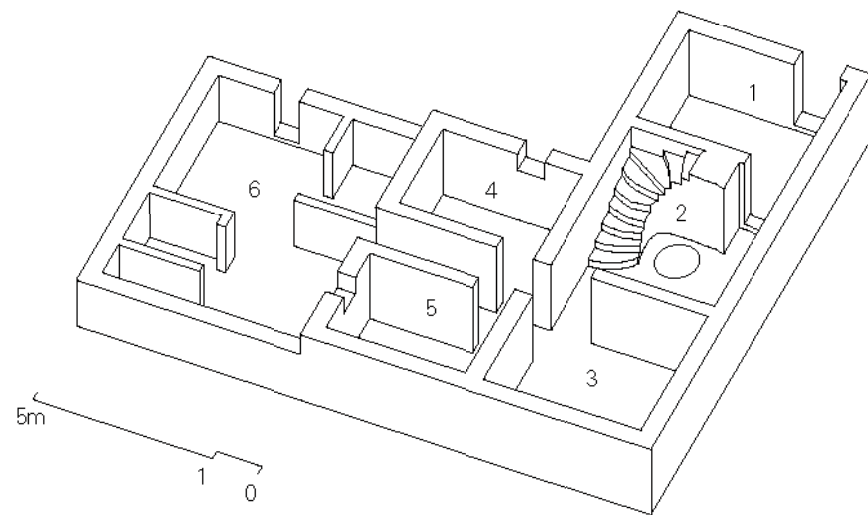
Cohabitation

The animal courtyard is the largest open space. Animals are an important resource for the family, as they are used for transport as well as a secure source of food.



Mandara: Receiving Room

The "mandara" is a sign of hospitality for the guest and a representation of the family. Usually quite simple, with painted walls, and tiled floor, the room is furnished with benches along the walls, a small table and a TV. Here the guests are welcomed in the social space of the house.



Hasanin 'Okasha's House

- 1. Receiving room
- 2. Patio
- 3. Kitchen
- 4. Parents room
- 5. Children's room
- 6. Animals courtyard



Ahmed Sayed, 28

Salesman for a telecommunications company in Assiut
His family lives in the center of El Fayma, but they have no land so Ahmed bought some agricultural land on the outskirts to build a house for his future family.

“I built this house with my brothers. The village expert helped us to define the structure”

“With a big fire we prepared 5000 bricks, but we had to do it on holidays because it is illegal”

Building a New House

The traditional typology or function of the rural house has not changed much, it is the manifestation of the family’s needs. One noticeable change is the construction material. Regardless of what the laws say, most homes are built with mud bricks produced on-site by the peasant himself, using valuable agricultural soil. The load bearing parts are most often reinforced concrete, allowing future expansion.



Traditional Materials

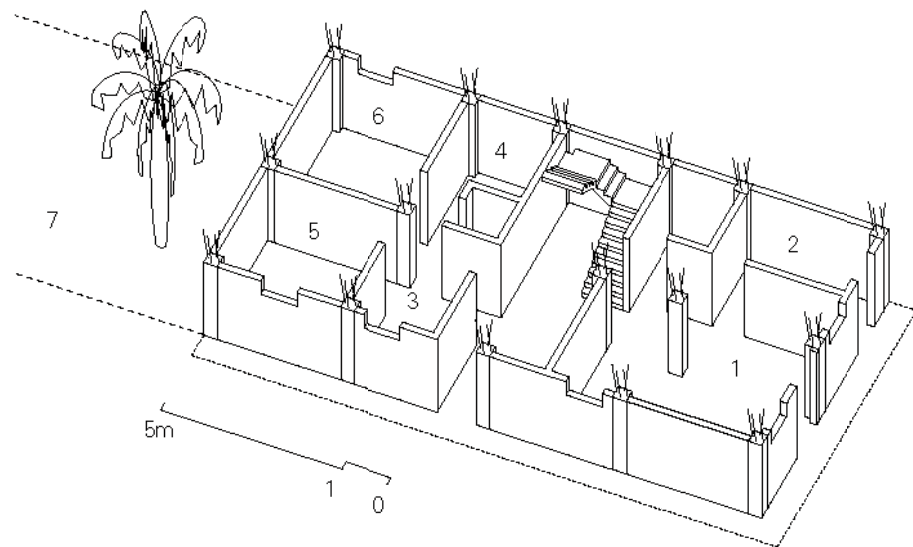
Construction materials are handmade and come directly from nature. Palm tree beams support mud brick walls. Old houses in the village center are often partly degenerated.



New Materials

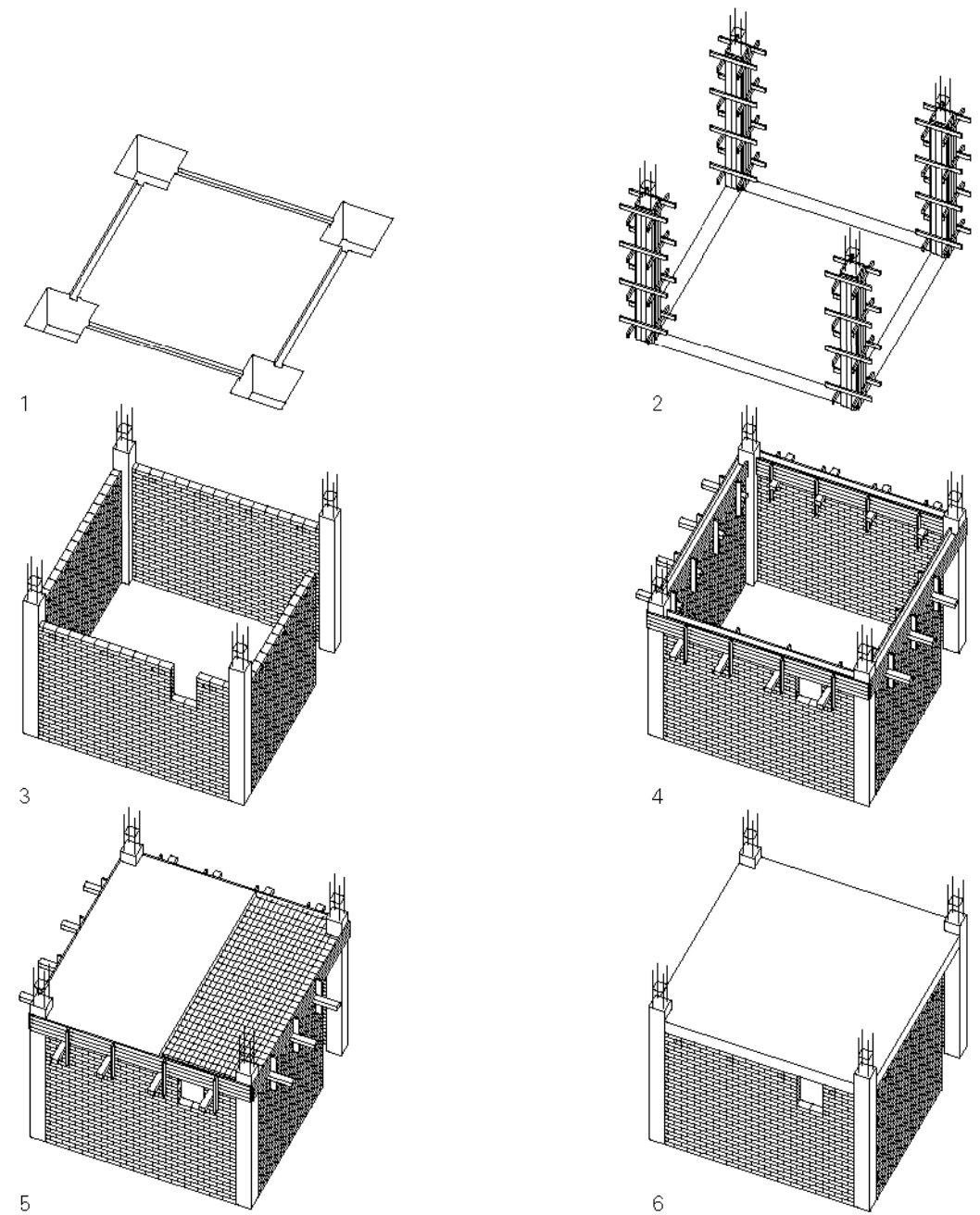
New construction materials are industrial products that come from Assiut or the Delta. Materials like steel, concrete and industrial bricks, allow for speedy construction.





Ahmed Sayed's House

- 1. Receiving room
- 2. Future shop
- 3. Storage
- 4. Kitchen
- 5. Children's room
- 6. Parents room
- 7. Field



Building Process

- 1. Foundation
- 2. Pillars, arming - caisson - concrete laid
- 3. Walls, bricks prepared - bricks laid
- 4. Beams, arming - caisson - concrete laid
- 5. Floor, caisson - arming - concrete laid
- 6. Finished, ready for future extension

THE EXTENDED FAMILY

The extended family represents the principal socioeconomical unit of the rural settlement. Multigeneration-families usually live in a compact unit of houses. Traditionally, this agglomeration of nuclear family houses are disposed along a narrow street that has a semi-private character. The extended family works like a small community in itself where all members collaborate to maintain the dynasty of the whole group. New generations remain in the villages, but given today's situation with heavily overpopulated villages, they, in most cases, are forced to build their new house detached from the original street, in the outskirts of the village on agricultural land.



Reda el Hakayma, her daughter-in-law, and grandchild

Farmer and migrant wife

The extended family live all in the street Abu El-Qasim.

"In El Fayma there are not enough services, for example the health center does not have enough drugs"

"Families don't move from El Fayma, and no new families come here."

Stable Instability

The family is the smallest functional unit in the Nile Valley network of settlements. With its members engaged in a variety of activities, the risks and vulnerability of the economy at large, are dispersed and thus low. The family can therefore also support individuals and hence allow for the specific work flexibility that is characteristic for agriculturally-based economies of the villages.



Traditional Family Street

Older houses are being replaced by new constructions with more levels for the growing family.



New Generations

The construction of new, large houses on agricultural land is common even though it is illegal in most cases.



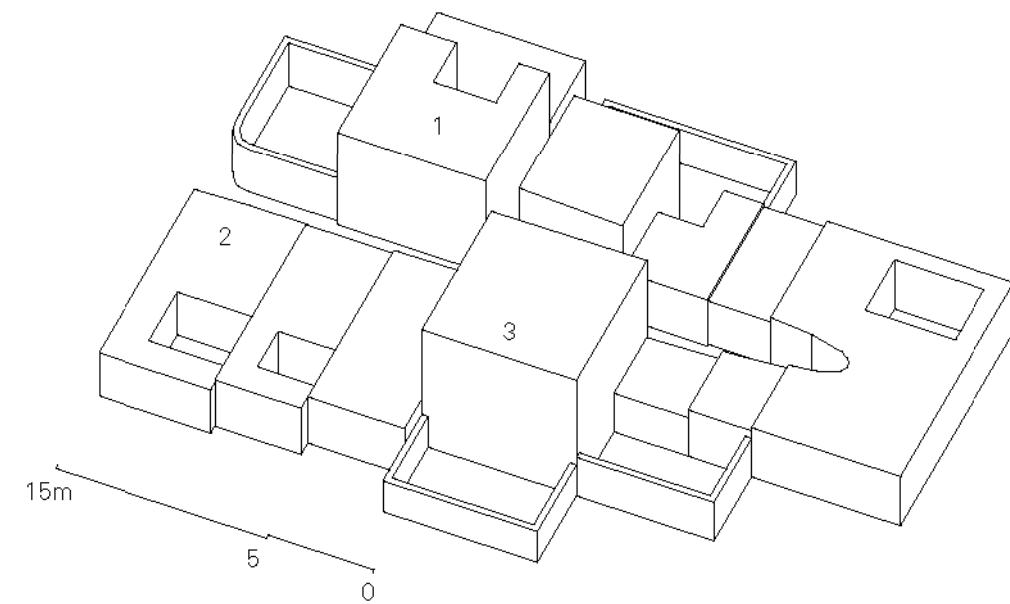
Community Life

High density becomes more obvious along the newer streets where houses already begin with two to three levels. The narrow street functions as a common semi-private space perfect for children's games and chit-chats.



Petty Trade

Many families engage in trading as a means of making extra money. However, several families trade goods internally within the extended family, Shops are located in the house directly to the street.



Family Street

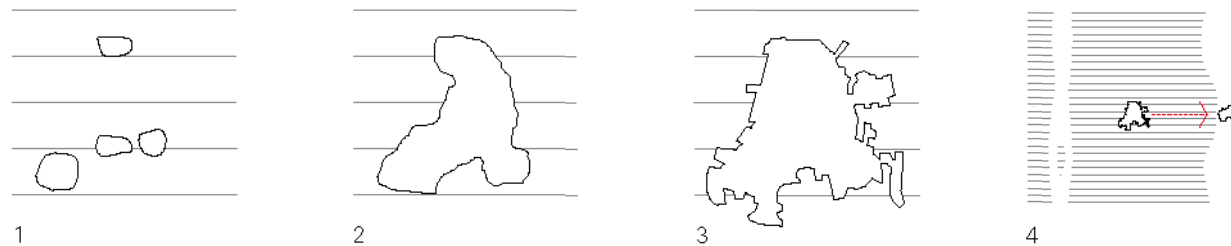
- 1. Traditional house
- 2. Shop
- 3. New family's house/extension

Community Life

In the family everything is shared; the house is built together just as the bread is baked together.

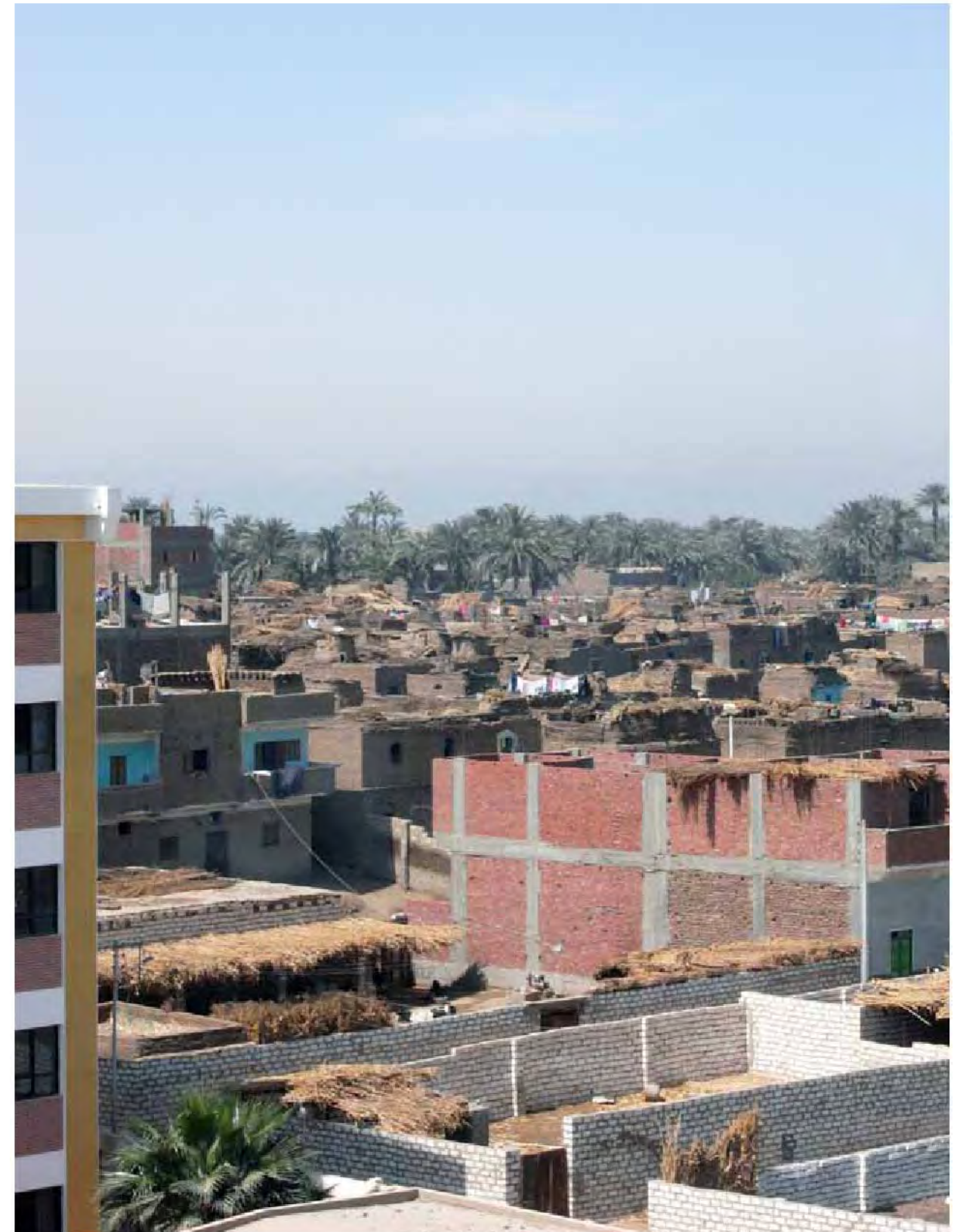
THE VILLAGE

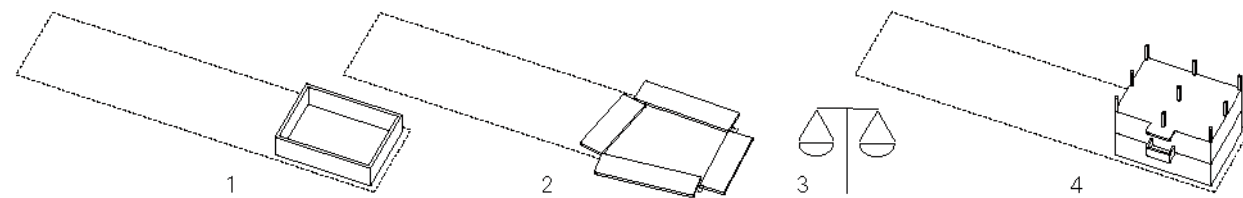
The village is the main form of urbanisation along the Nile. Most villages are closely connected with their surroundings but maintain their introverted character. All the village are provided with facilities like water and electricity and institutions like schools and religious communities. The villages are located in land serviced by water via canals or wells. Since the very beginning, Egyptian villages have distinguished their own lifestyle, social structure and the relations between the individuals through close participation and cooperation in all different activities of life.



Evolution

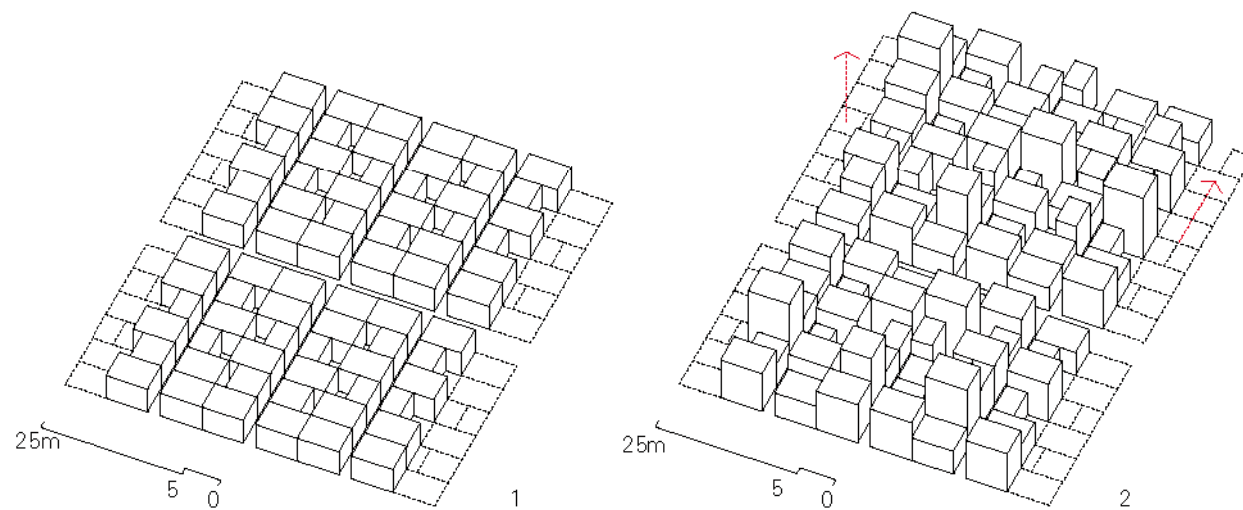
1. Origins: Villages were pre-disposed to the highland, where houses were protected from annual Nile flooding.
2. Expansion: Population increase in the last 50 years has lead to an informal expansion onto surrounding agricultural land so that some villages grew together into each other. (With the planning program of 1986 the government fixed a village border to preseve arable land.)
3. Informal growth: The village border fails to halt expansion. Buildings are legalized through a formalization process. A new border fixes a new limit of the village till 2022.
4. Sister village: The government's "sister village" program along valley edges aims to enlarge urbanized desert areas.





Building Formalization

1. Temporary light building: The first step proceeds with fast construction of bricks walls without cement. The goal is to capture the attention of governorate authorities.
2. Demolition of the walls: The governorate intervenes with the demolition of the light construction.
3. Court: The owner addresses the court and with the private ownership protection clause, wins the case.
4. New permanent building: The owner is legally allowed to built a house on the land.



Vertical and Horizontal Growth

The original village structure (1) is composed of 1-2 floor houses that define parallel family streets along the main street. The family expansion brings a densification of the existing pattern (2) with 3-6 floor buildings and an expansion on precious agricultural land.



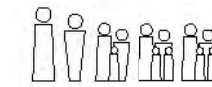
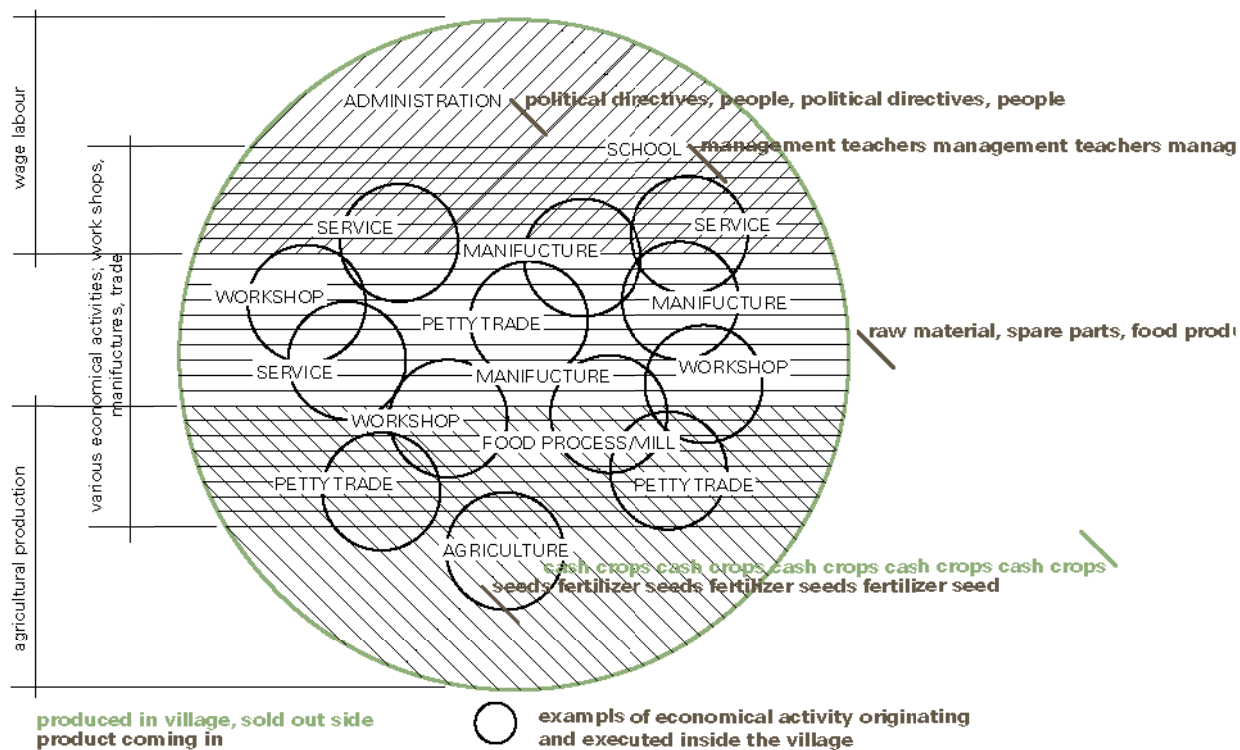
Toward Formalization

Natural family growth is directly related to the formalization of illegal buildings.



New Buildings

The expansion follow the parceled structure. Land is intensely exploited between agriculture and housing.



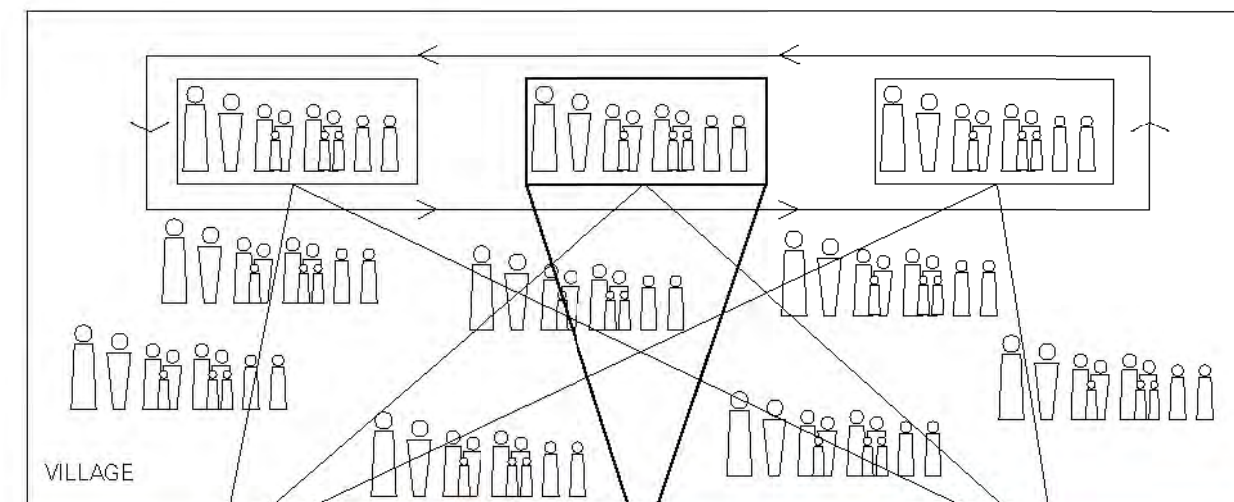
Ibrahim Sayed, 63
 'Omda in El Fayma, land owner, mill owner
 "The big problem in Fayma is the density of constuction."
 "In the village council we speak with the farmers about many questions and problems"

Economic Activities in the Village

An illustration showing an estimation of the division and distribution of economic activities.

Actors and Activities

The village is in most cases under the control of one or few powerful and rich families. The "Omda" (mayor) of the village is elected or chosen from one of these families. The 'Omda is the traditional figure; close to people, he knows all the inhabitants and plays an important social role. While the election of the 'Omda is a public, official election, in reality it is more or less a decision made by a select few. These families most often control and own major economical activities or institutions, such as the mill, in the village. It is also common that a larger part of the agricultural land belonging to the village is owned by a few and then rented out, legally or illegally, thus increasing their economic and social power. Other important internal actors include religious representatives. Just as the family unit is subsistence-producing, the village also include a lot of everyday services and produce the everyday goods needed. But this changes and differs between families, and between villages. The village economy is based on the surplus from the agricultural production, but there has been a major shift towards a wage labor dependent economy. Since few production or service jobs are generated in the villages, these jobs must be searched for outside. The informal or self-producing economy is large, however, and produces economic activities inside the village, contributing to self-sufficiency when it comes to services like smaller production/repair workshops, food processing, and social activities (café).



Economical body



Political body



Administrational body

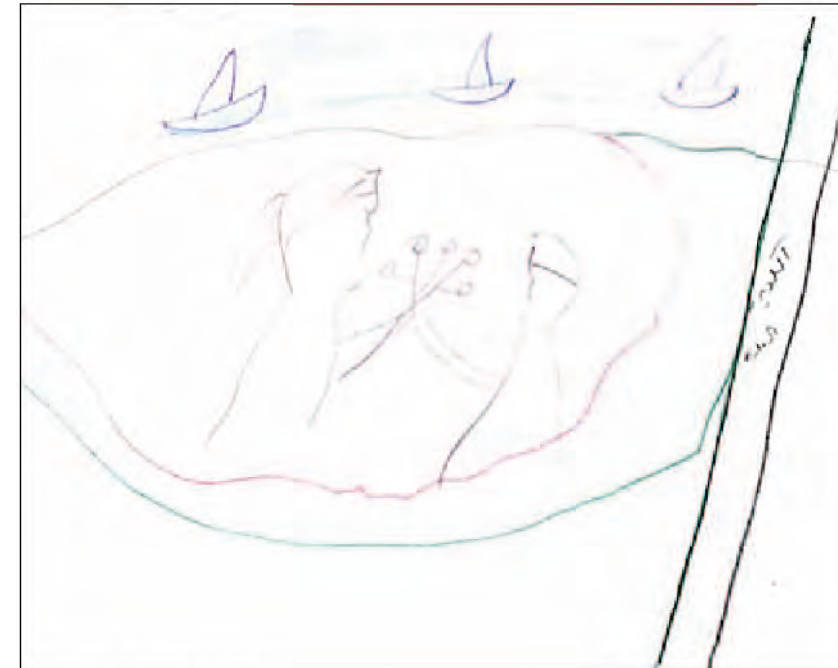
Power Structure in the Village



El Fayma, Ibrahim 'Abd al-'Ati

Three Villages

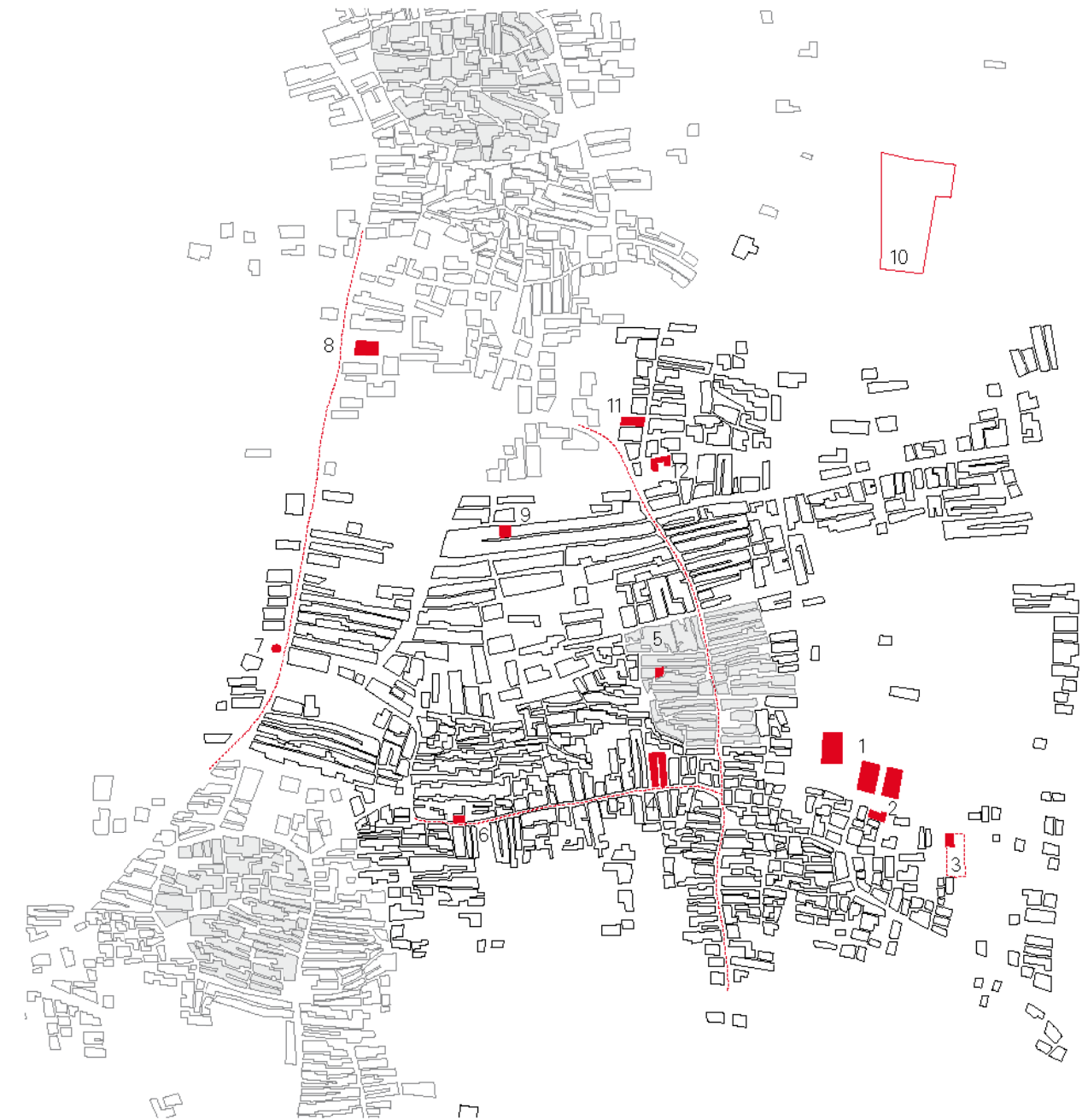
Representations of the visited villages.



El Wasta, Kamal Sayed

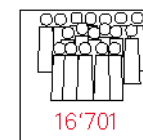
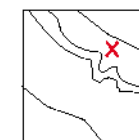


Durunka, Ahmed Rizq



1:5000

- 1. Schools
 - 2. Administration
 - 3. Ahmed Sayed's property
 - 4. Traditional family street
 - 5. Hasanen Okashaa's house
 - 6. Ibrahim Sayed's house
 - 7. Water tower
 - 8. Health center
 - 9. Reda El Hakayma's house
 - 10. Reda family's field
 - 11. Tawfek Shahata Nassar
 - 12. Muslim center
- Original settlement
 Commercial street



El Fayma

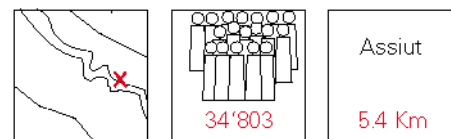
El Fayma is a typical rural Egyptian village. Located in the middle of the Nile valley, the village maintains some features from its original nature. Agriculture is the main economical activity, in fact more than half of the total labor force is involved in the farming sector.



1:5000

El Wasta

El Wasta is situated on the riverbanks of the Nile opposite to Assiut. This proximity to the river and the city influences the village. Intensive agriculture on the fertile island of El Wasta and fishing activity characterize the strong village economy. Since the construction of the bridge in 1996, the number of inhabitants has increased and the village changed from agricultural to an urban settlement. The urban village of El Wasta is developing services and infrastructure is creating good quality of life. These conditions attract people from Assiut to move to El Wasta.

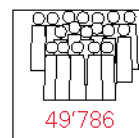




1:10 000

Durunka

Durunka is situated at the foot of the mountain chain along the edge of the valley, close to Assiut city. The original village has changed a lot and now the urban portion grows randomly on the reliefs and on the land without having the necessary facilities. The main part of the labor force is employed in Assiut. Only some industrial factories, agriculture activities and markets are located in Durunka.



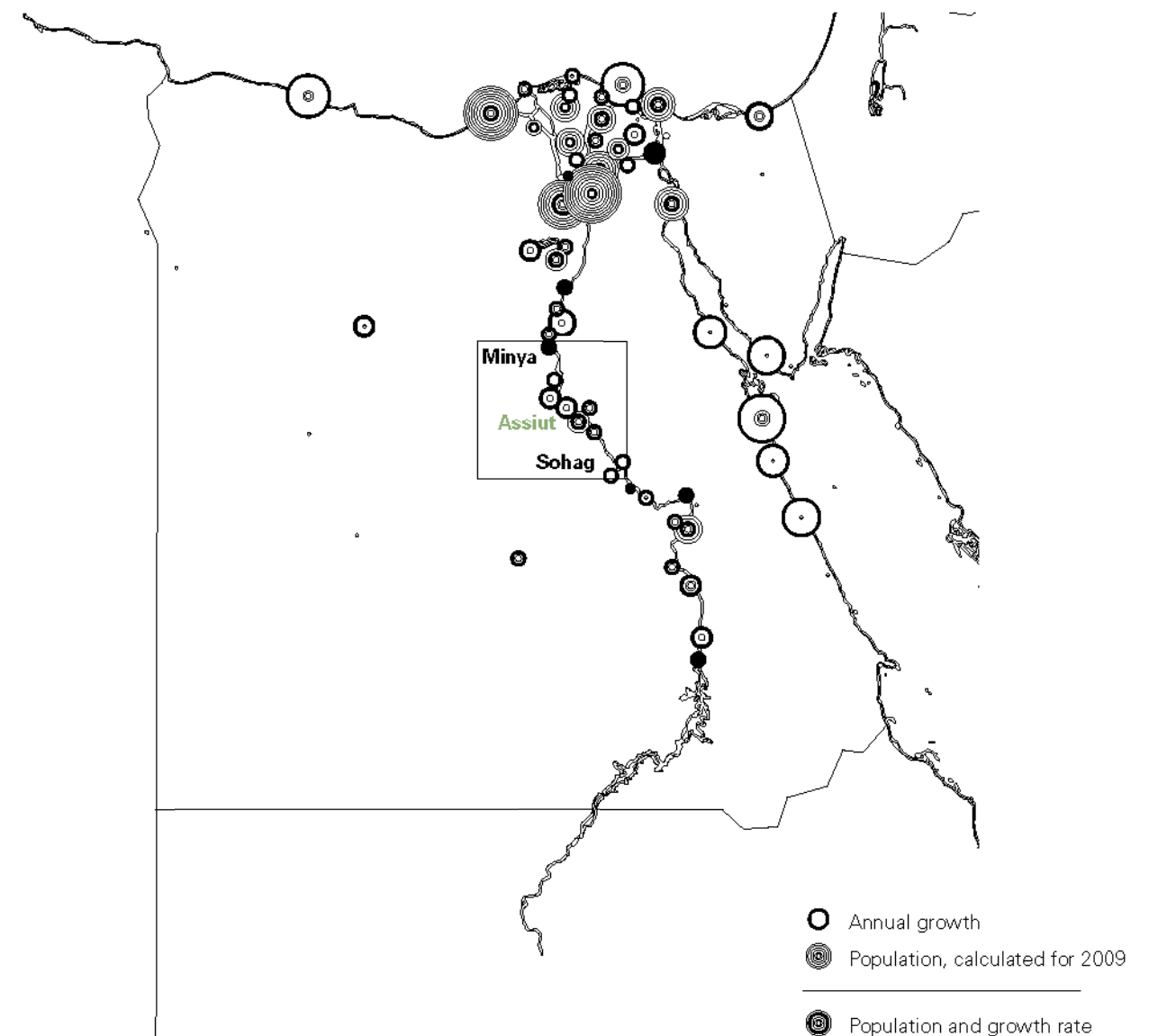
THE VALLEY

The definition of what is rural and what is urban is always a question of degree and of level. In Egypt, especially, the definition of a rural settlement, a village, a hamlet or a city does not automatically follow quantitative facts and numbers, but rather tradition and administrative rules. This means that a village can have up to 30,000–50,000 inhabitants and still be considered a rural village. At the same time, a settlement with 2,000–5,000 inhabitants is still sometimes not considered a village. This leads to a large discrepancy between numbers describing the distribution of the population between urban and rural. It also raises the question of what is to be described as rural with respect to the urban. How does this fabric of settlements work, how are they connected, and do they not already shape a somewhat semi-urban situation? The organization and relationship between the villages and between the village and the closest city is still today heavily derived from traditional activities such as trade and farming, organizing the life in the villages. But the interaction between the villages, and especially between the village and the city, has significantly increased during the last decades. It has been enhanced by many different factors and changes in society at large, but most importantly the development of the infrastructure, the public transportation and the rise of work migration. The increased population has also led to a situation where many villagers no longer can provide for themselves but are dependent on cash-generating activities outside the village.



Bread Distribution

Bread is heavily subsidized by the government.

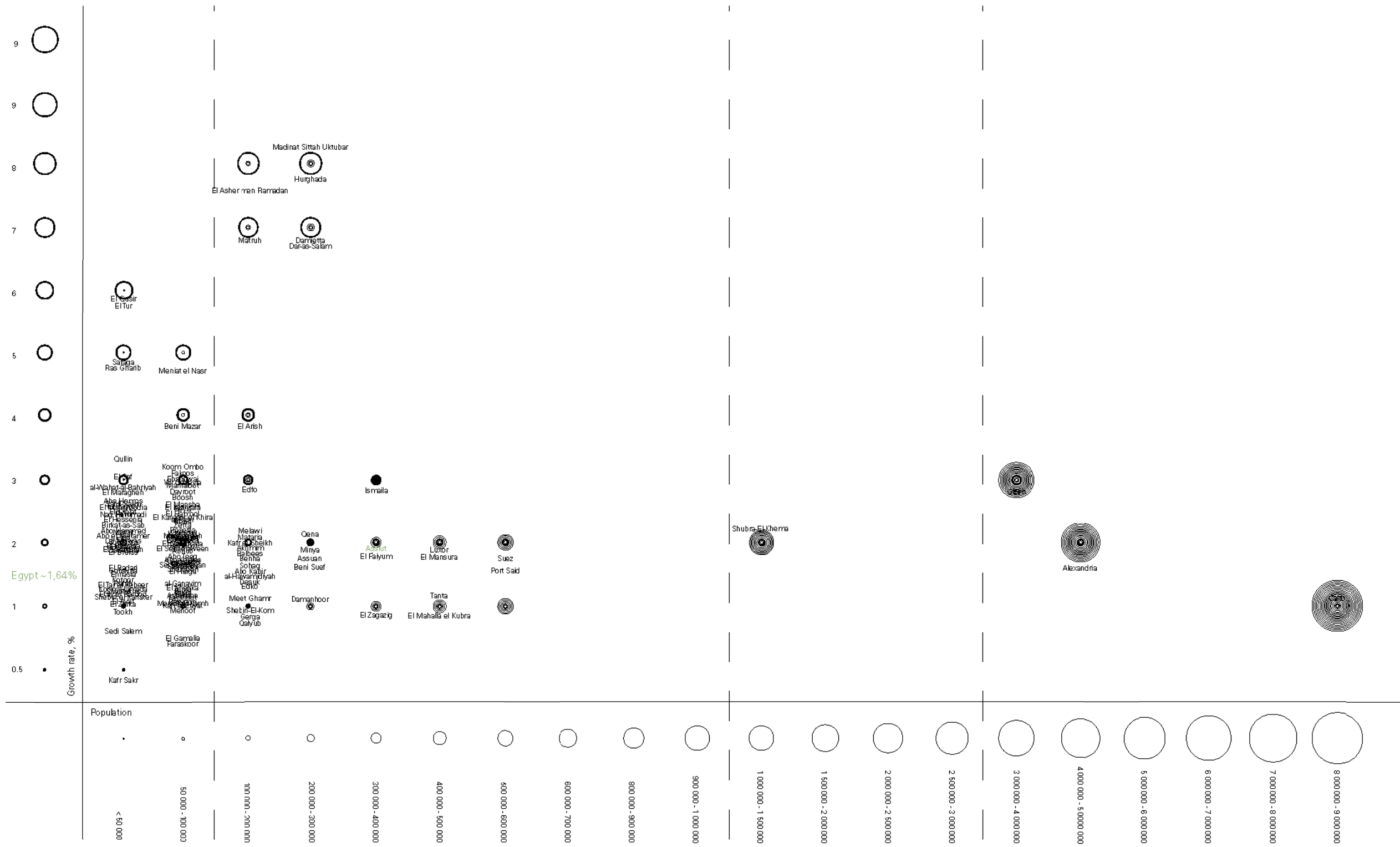


Distribution of Cities in Egypt

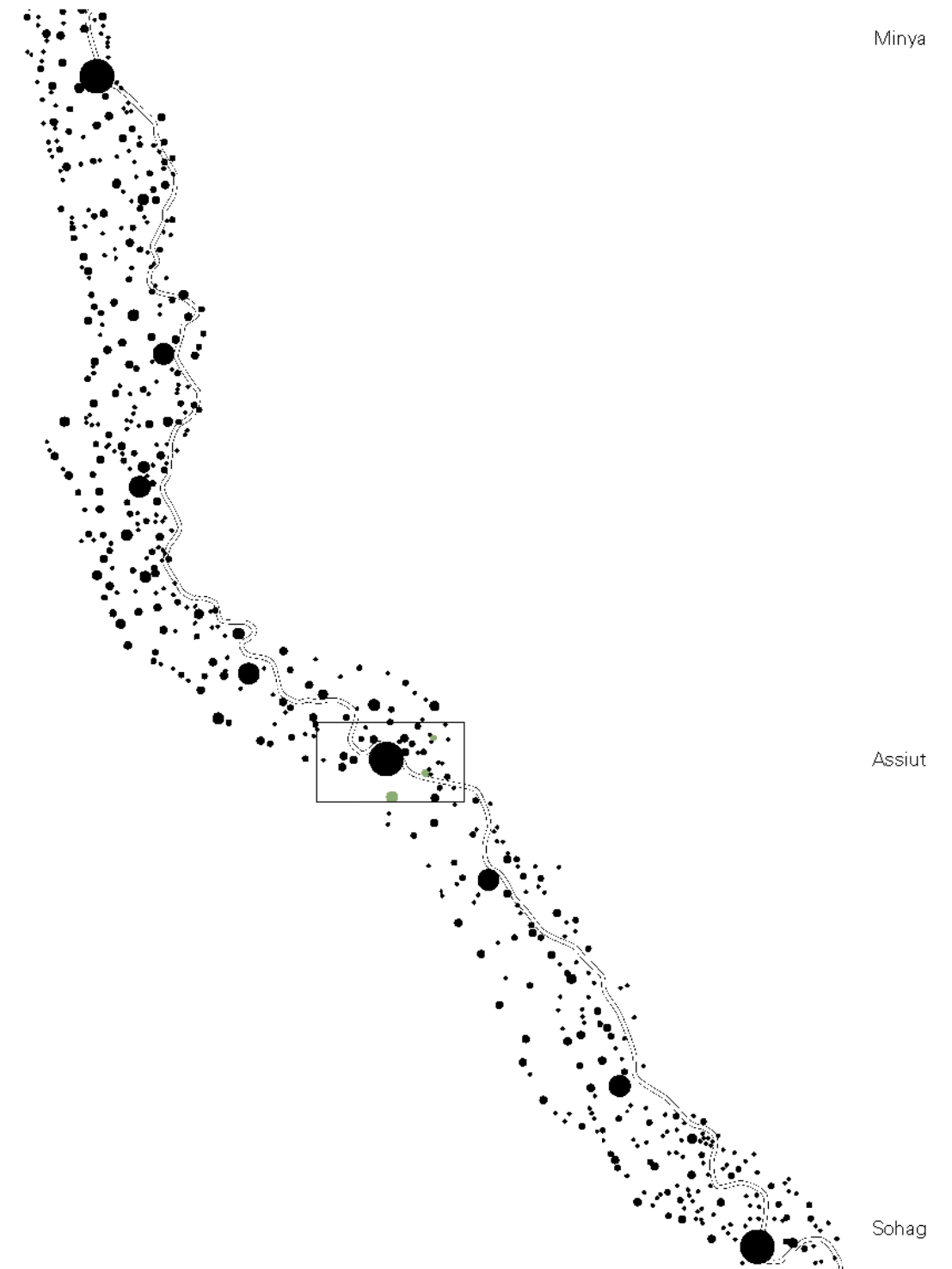
Distribution of cities and their growth rates in Egypt.

70 Million Along the Nile

The vast majority of Egypt's population lives in the Nile Valley or in the Nile Delta. This creates a dense layer of agglomerations, more or less evenly distributed across the whole valley and delta. The flux of people moving to the cities has been the most prominent factor of urbanization in Egypt up until recent decades. Cairo, for example, had immigration rates ranging from 2 to 2.8%. This type of internal migration has lost importance and the growth of the major cities has stabilized. The attractiveness of major cities has worn among the rural population mainly because of the many problems facing the newly arrived (insurmountable housing and transport problems) in the overpopulated cities and the fact that international migration offers a good alternative for rural families today. The most common occurrence of migration is time-limited and allows the families to stay in their villages, which contributes to the village's stable condition. Well-established migration channels leading directly from rural areas to foreign working sites have made migration to an Egyptian city obsolete. The cities that see the strongest growth today are driven by the growing tourist-related economy along the coasts.



A Dichotomy of Cities

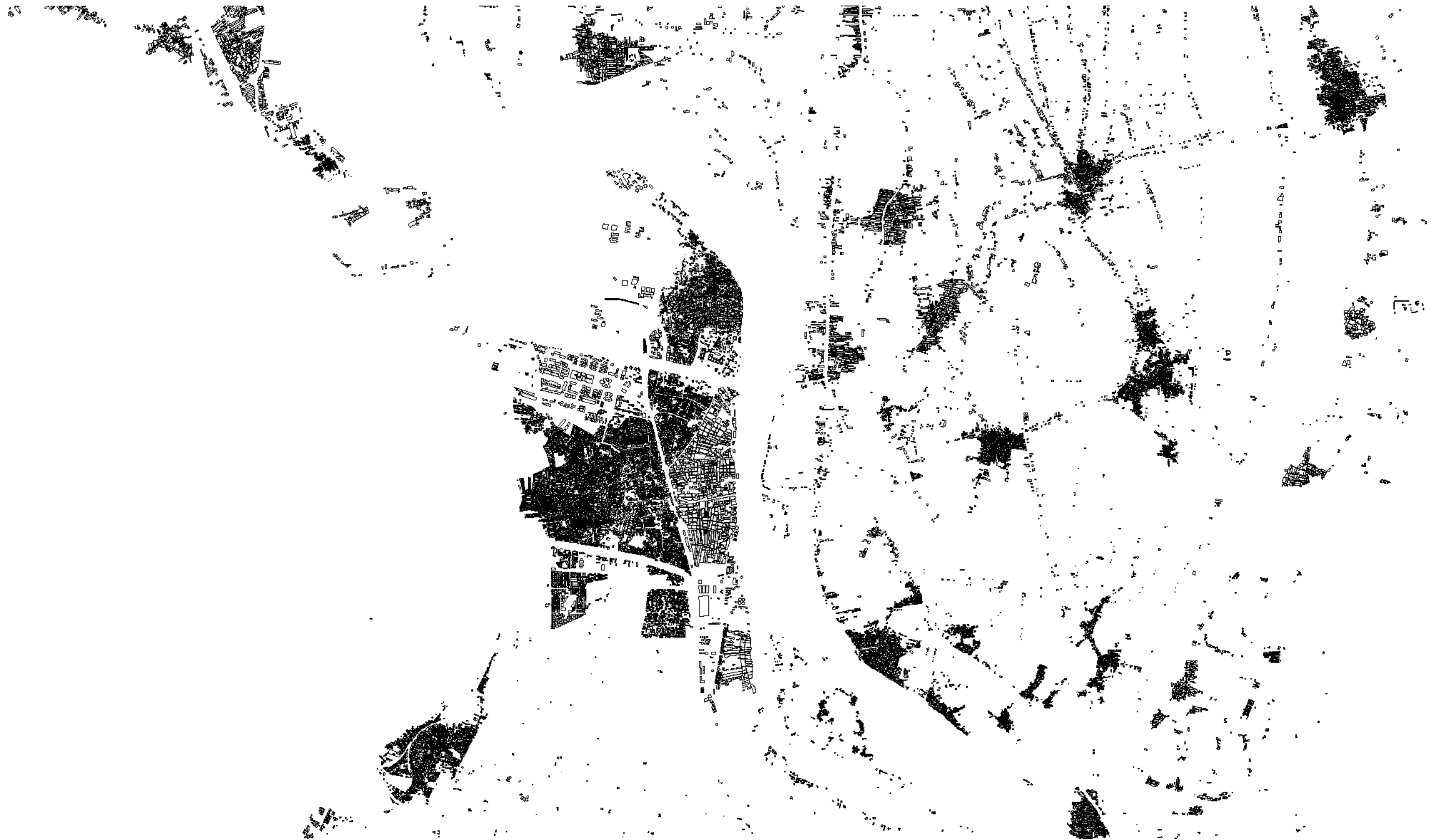


A Valley Mat

Approximately 58 percent of the Egyptian population lives in 5,630 villages and another thousand hamlets. These settlements are relatively evenly distributed through agricultural areas. As a result of the increasing population, the numbers of settlements as well as the area occupied by housing in general have increased. Topographical and natural conditions usually dictated that the villages were built on high land. After the Aswan Dam, new settlements were established along water channels and new national roads and railways. The most recent establishments are being built on the desert edge as a reaction to the strict agricultural land policy. The proximity to neighboring villages is, in most cases constant, and larger cities appear along the Nile in even intervals. There tends to be a slightly denser pattern around the cities, and one can observe channels and roads crossing through the landscape. Also the desert edges are slightly more legible through the higher concentration of settlements along them. A close look at the structure in the valley reveals a pattern of built connections. The settlements are no longer isolated islands in the landscape but a continuous mass of constructions.

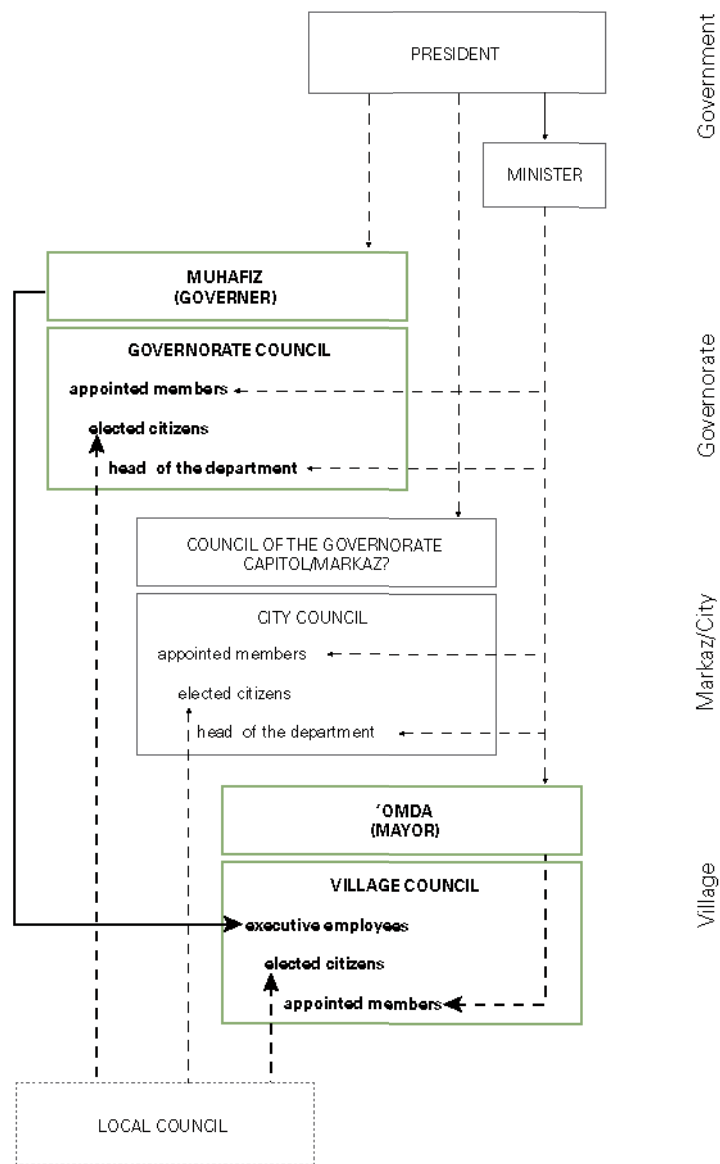
Agglomerations in the Valley

Settlements and cities from Minya to Sohag show even spread of villages. Illustration based on Google images.



Physical Relations

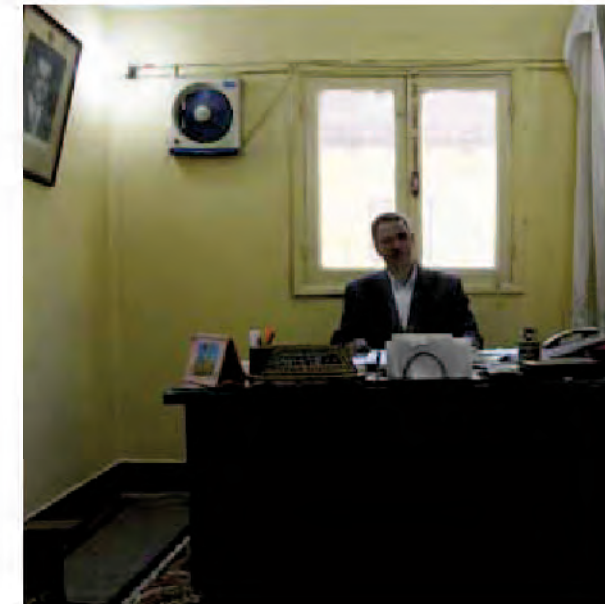
A pattern of built connections, the notion of a village border is overridden by the idea of a fabric or a mat.



Governorate - Village Relations

Interconnections

Many interconnections in the valley create a mutual dependency between villages and the city, and the system of governance is assembled hierarchically. The executive board of the village is appointed by the governor and functions as an extended arm of the central power. The agricultural politics of the national administration in Cairo are administered via the governorate office. The village cooperatives operate on the most local level of governance, as a direct political interference in the life of the villages.



Head of the Administration

Kamal Sayed in El Wasta, appointed by the governor.



The Administration Building

One of few prominent buildings in El Fayma is the administration official building, built by the governorate.



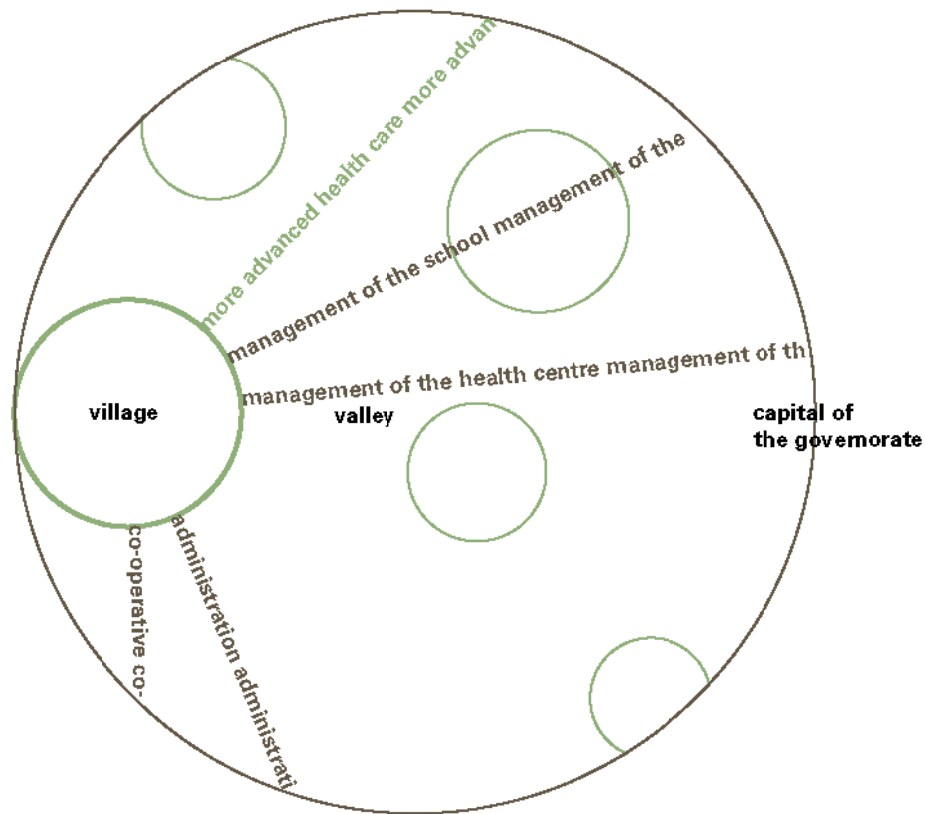
The Cooperative

Fertilizer used in the village is distributed and sold by the local cooperative, but only to the registered farmers.



Fertilizer from Alexandria

Farmers who want extra fertilizer or are not enrolled in a cooperative, are directed to traders like Skata Katefa Baket in El Fayma. He buys fertilizer from a wholesaler in Assiut.



Services

The governorate is obliged to provide education for all children. The school is often planned and built in a mother village but also serves a few villages in the area. Money and space allocated to the school is usually insufficient and leads to over-populated classes, as many as 60-70 pupils per class in elementary school. School management is run by the governorate with a local headmaster on site, and teacher wages are paid by the administration of education on the governorate level. The villages also provide healthcare to a certain degree. Healthcare centers are run by a decree from the governorate and are state-funded. The healthcare is free but the medicine provided by the center costs about 1LE. The available medicine is not always satisfactory; sometimes, villagers must go to the city hospital to seek the medicine and care they need.



The School as Employer

Schools employ and engage many villagers. El Fayma holds two primary-, two middle-, and one secondary school, as well as an Islamic middle school for girls.



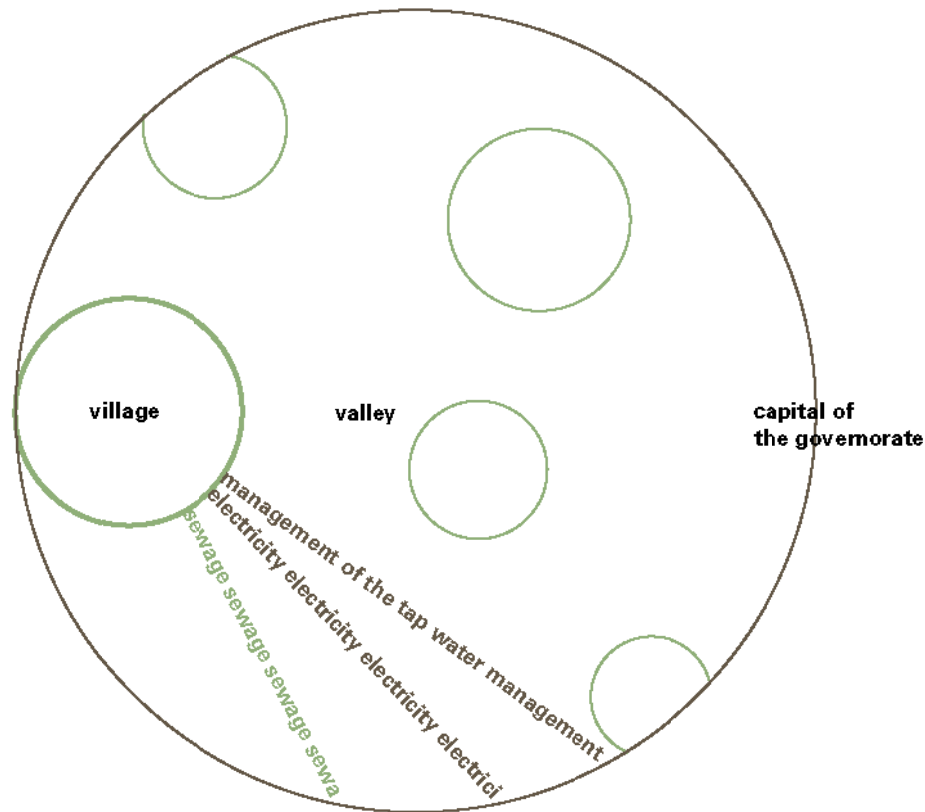
Over Populated Schools

Children from another four villages also attend the primary school in El Fayama, which has 2000 pupils. Primary and middle school, a total of six years, are mandatory. Because of the large classes, the level of education is lacking, leaving many children illiterate even after finishing school.



Healthcare Center

The healthcare center led by Dr. Fahd has 150 to 200 visits per day from 6 different villages. The center is always open and employs four doctors, eight nurses, and one dentist. Dr. Fadd moved to the village to work at the health center when it was built in 1970.



Infrastructure

Most villages have a centralized distribution of potable water via a network of pipes and a common water tower. Since water is directly taken from the ground and distributed without any purification, the water quality is often poor, depending on salination and ground pollution. All villages are connected to the national electricity network and all formal housing is supplied with electricity. A connection to the national telephone network is quite rare and only provided for the institutions or available for the very rich. Few households use a modern stove, and the gas used for it (and other equipment), is privately distributed, either by tradesmen or by the user.



Electricity for 50 LE per Month

Electricity is expensive for most villagers and constitutes a larger proportion of living expenses. Many wage workers, such as teachers, do not earn more than 460 LE per month.



Traditional Cooking

In addition to using the gas stove, this villager cooks in a traditional clay oven outside. Her husband buys bread in As-siut every day because there is not enough in Durunka.



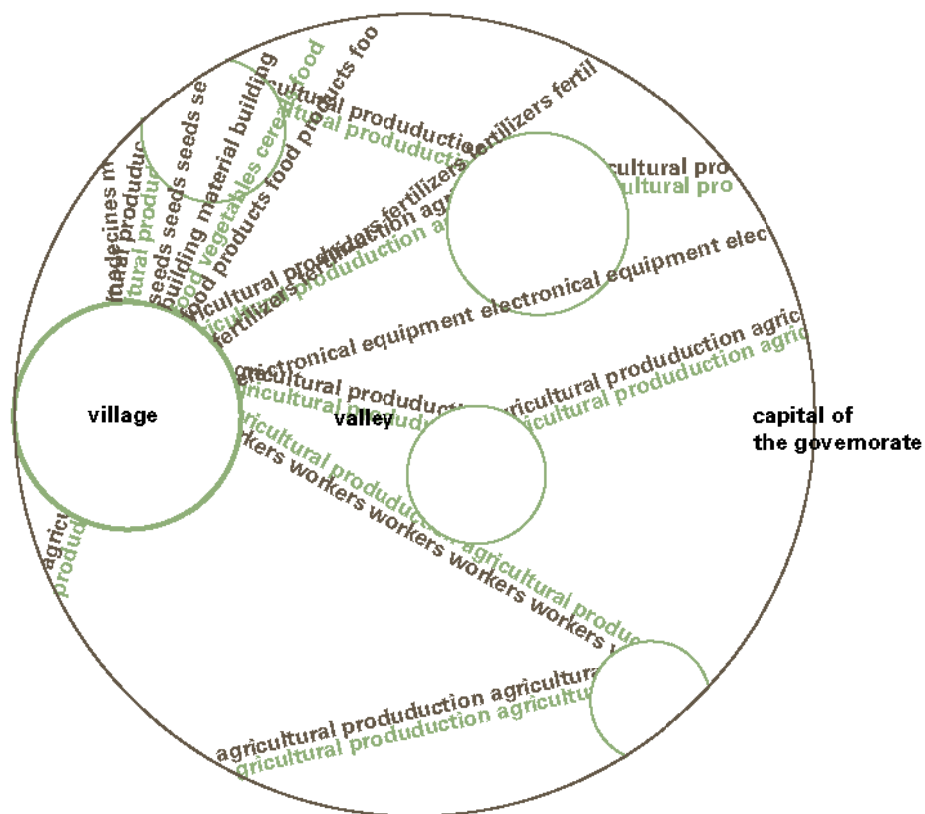
Public Telephone

Very few households in the villages have their own telephone connection. The number is also not likely to rise considerably due to new alternative techniques.



Water Tower in El Fayma

The central water distribution system was built in 1949. The management of water distribution is run by a central governorate administration.



Flow of Goods

The villages are self-sufficient regarding food production, but there is a increasing demand for supplies from outside the village. These needs are not only self-generated but result from interconnections and dependencies between the village and its surroundings. The quantity of goods produced by the village and sold outside is less then what is imported, and is limited to agricultural crop-cash products.



Imported Goods for Production

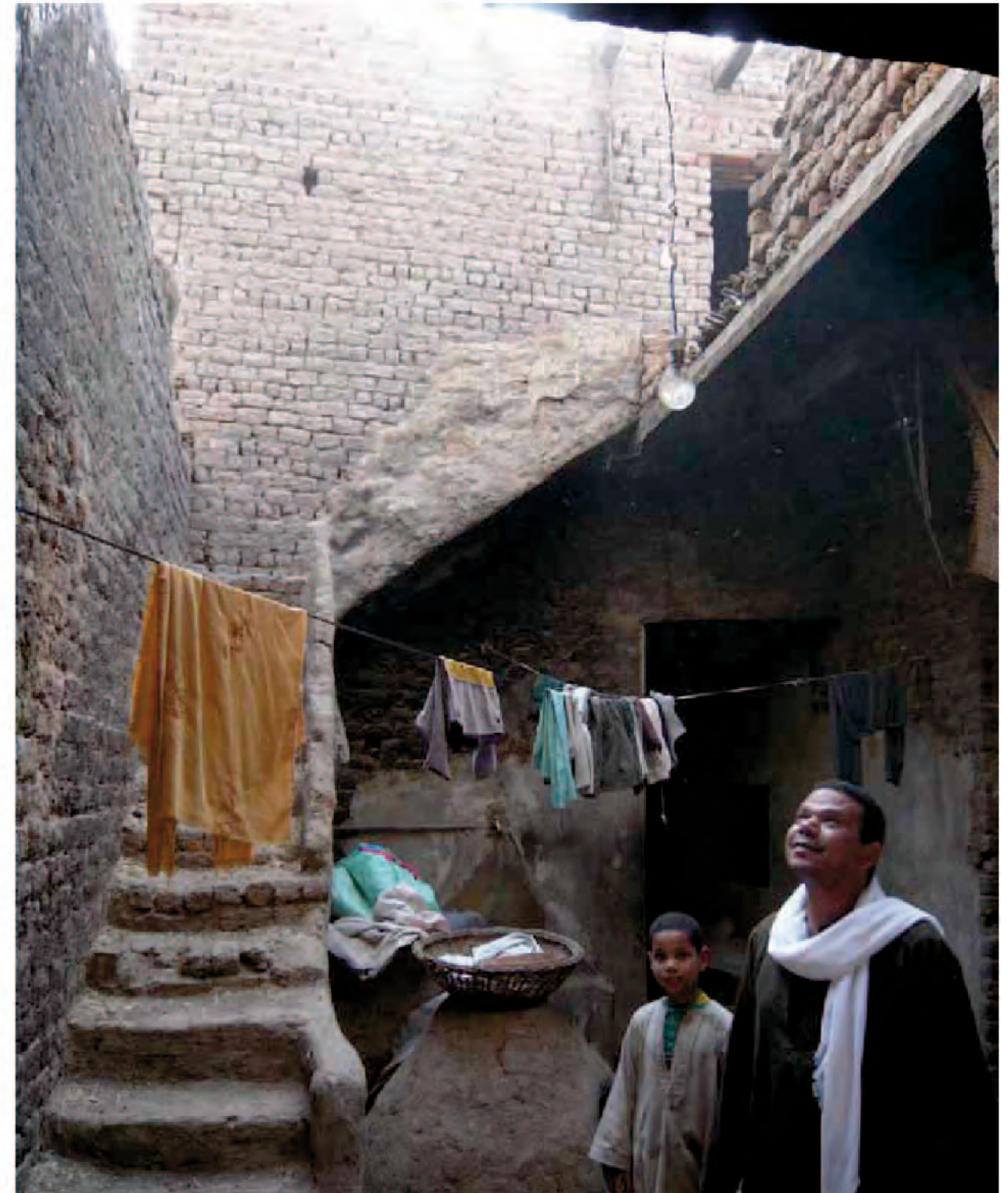
Concrete and steel reinforcement are building materials that can be purchased in Assiut. Limestone blocks, a cheap alternative to the red bricks, are also available. Wood from Finland is bought from wholesale in Assiut, as are spare parts for water pumps and electrical fans.

Imported Goods for Consumption

Medicine is sold at the local pharmacy, but it is not always sufficient. Oranges, canned tomatoes and candy are examples of food sold at the numerous small petty shops found in the villages. Village shops also carry shoes, clothing and toys, and all kinds of consumer goods.

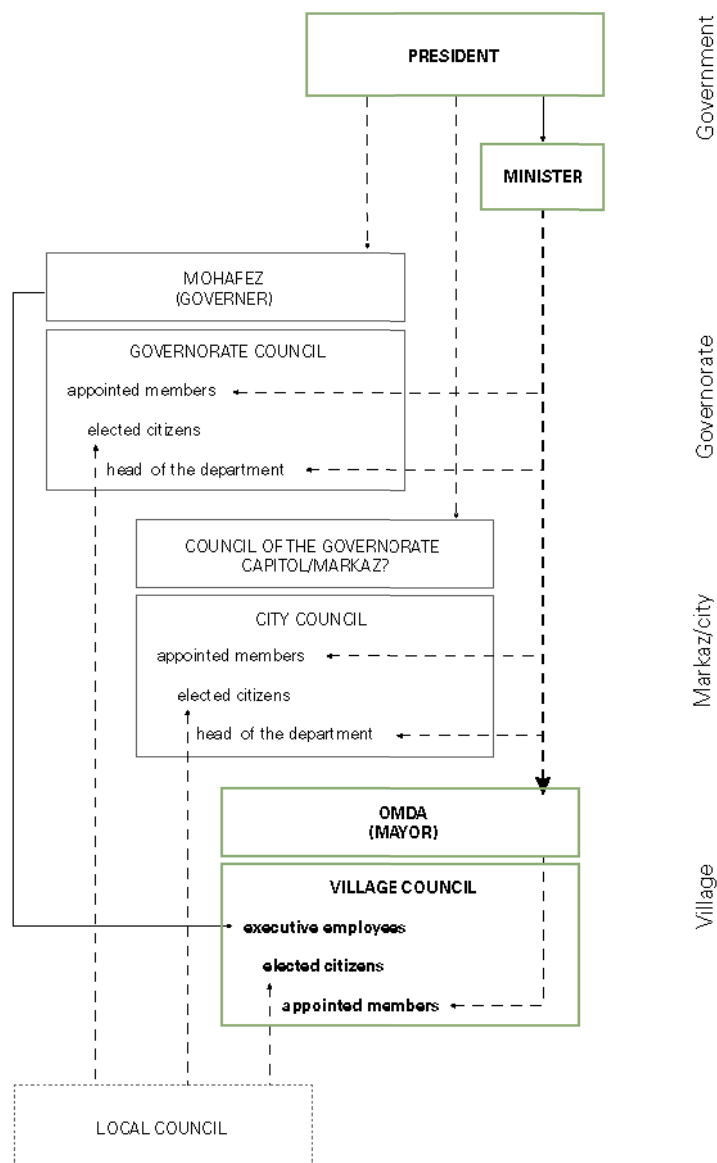
BEYOND THE VILLAGE

If this network, mass, or mat of rural settlements is the body of Egypt's urban fabric, what is its relation to the world outside the valley? What factors and interactions affect and impose a noticeable impact on this stable urban structure? There are both formal and informal, direct and indirect cultural, economical, and political connections to the surrounding world affecting village life.



A Cairo Dream

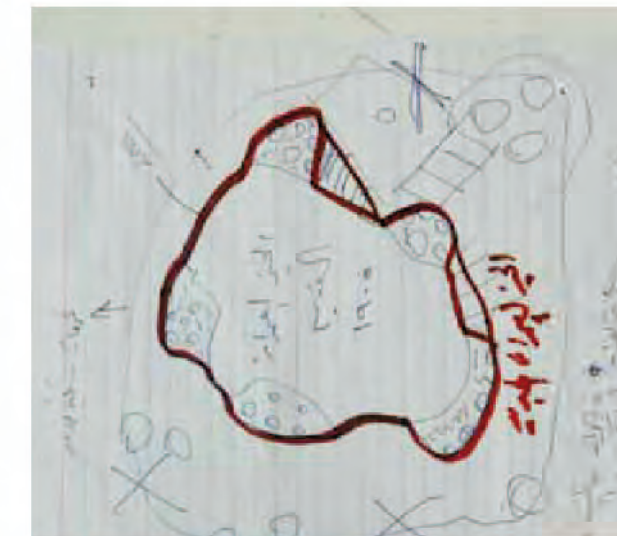
Hasanen dreams of moving to Cairo, so his sons will have the chance to develop a better future in the city.



Egypt - Village Relations

Connections

The 'Omda's position in the village is sanctioned by the Minister of Interior Affairs, but is officially elected by the villagers. In reality, he is still appointed or elected according to the traditional structure of the village. Many political decisions taken by the government in Cairo concern the villages and directly impact village life. In many cases, it has shown to be difficult to implement new decrees or laws; the religion and traditions of the village sometimes create strong opposition, like the case of Nasser's birth control program in the 1960s. Many propositions passed in Cairo are executed by the local governorate administration, which work more or less as an extended arm of the government.



Future Development Plans

A decree taken by the government, or the Minister of Housing, Utilities and Urban Communities, states that all villages and rural settlements shall have a "Strategic Plan" for their future development, directing all aspects from social, environmental and economical development as well as handling their future growth. The Strategic Plan's main object is to state a new fixed border for the village, a defined legal border for future growth disabling future growth on valuable agricultural land. This has been done before (via Hayez, a previously determined territorial line), but the then-defined border has not always been recognized as a legal factor of importance and has been ignored, allowing villages to rapidly expand. Writing Strategic Plans and mapping all agglomerations in Egypt has not been done consistently before, and having all these comprehensible and comparable plans might help strengthen the notion of a juridical border. The Strategic Plans are being written by the GOPP (General Organization of Physical Planning), who delegate the task to persons tied to the planning administration and/or architectural- and planning departments of the universities of Egypt. The process of developing these plans must follow a Participational Planning Strategy and involve people from the village. This Strategic Plan is an example of how villages and hamlets are governed or controlled on a state level, as is the The National Project for Developing Villages Surrounded by Desert and the project of creating "sister-villages."



Bread for the People

An important government-implemented reform is subsidized food for the poor, especially the bread program. The state meets 96 percent of the cost. This has directly impacted village life where many people depend on subsidized food. About 55 million or two-thirds of the population is entitled to subsidized rations of food according to the Guardian. Local village bakeries have been established; their economy and daily schedule are organized around the bread pick-up event.



Infrastructure and Connections

Almost all families have a television even though not every one has a receiver. The presence of this one-way, Cairo - peasant communication shapes the villager's view of the surrounding world and their impression of the easy, modern life of the middle class in Cairo. Mobile phones are another prominent source of communication in the villages. In contrast to the low number of household with a landline, almost all households seem to have at least one mobile phone, allowing a direct mode of communication over long distances. Few computers exist, mainly at the Office of Administration and at the schools, with the exception of one village that had an internet café. Few families own a computer, much less an internet connection.



Mobile Phones

A mobile phone with camera function, pictures of the girlfriend, and numbers to a bunch of friends in Assiut—the villagers are well-connected. The number of mobile subscribers has, on a national scale, increased from 2.1% to 30.9% from 1999 to 2006.



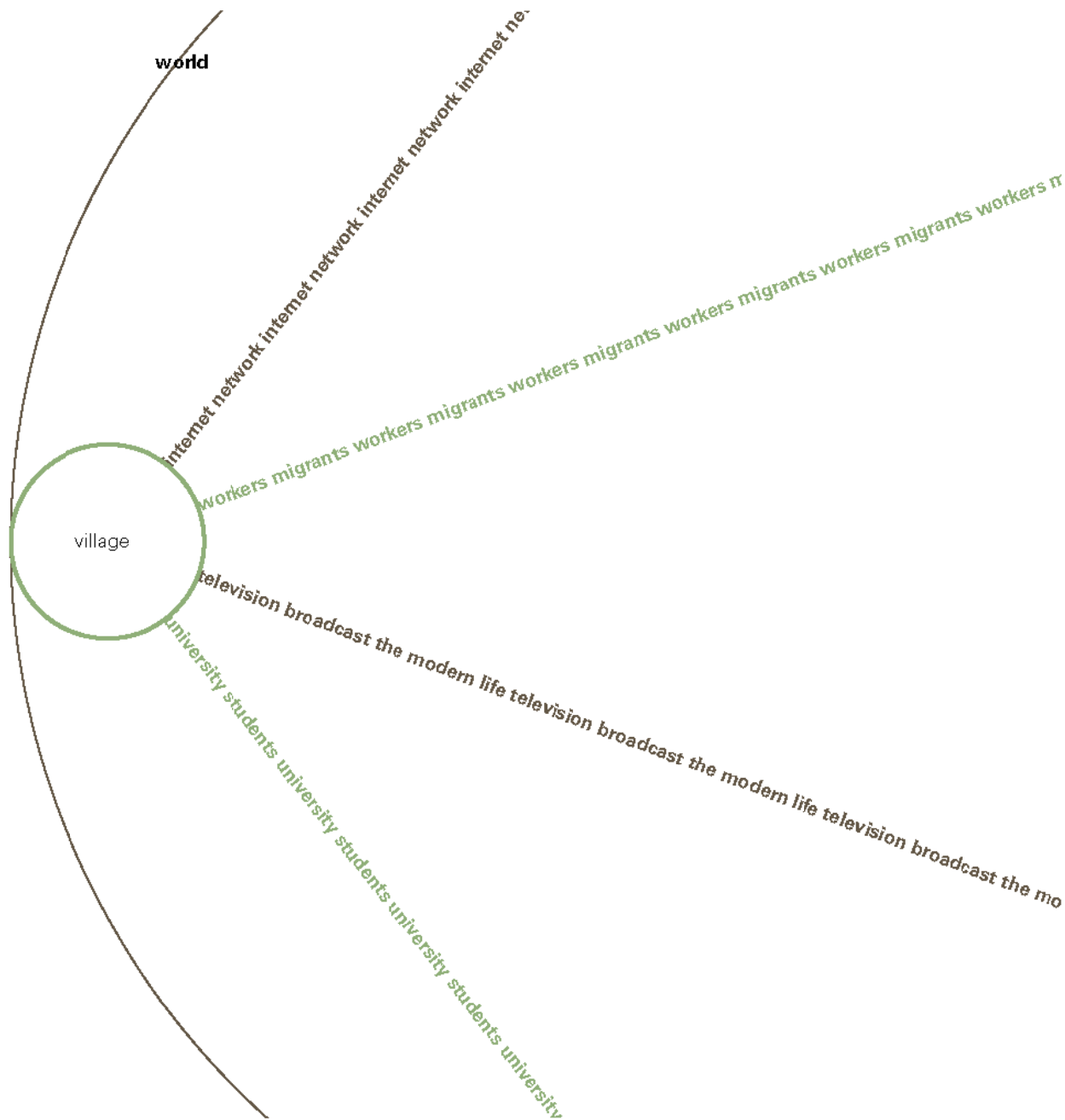
Internet and Computer Games

Durunka holds at least one computer shop and internet café, mostly used by young boys. Internet users in Egypt rose from 0.3% to 9.5% between 1999 and 2006. This phenomenon is muted in the case of the villages.



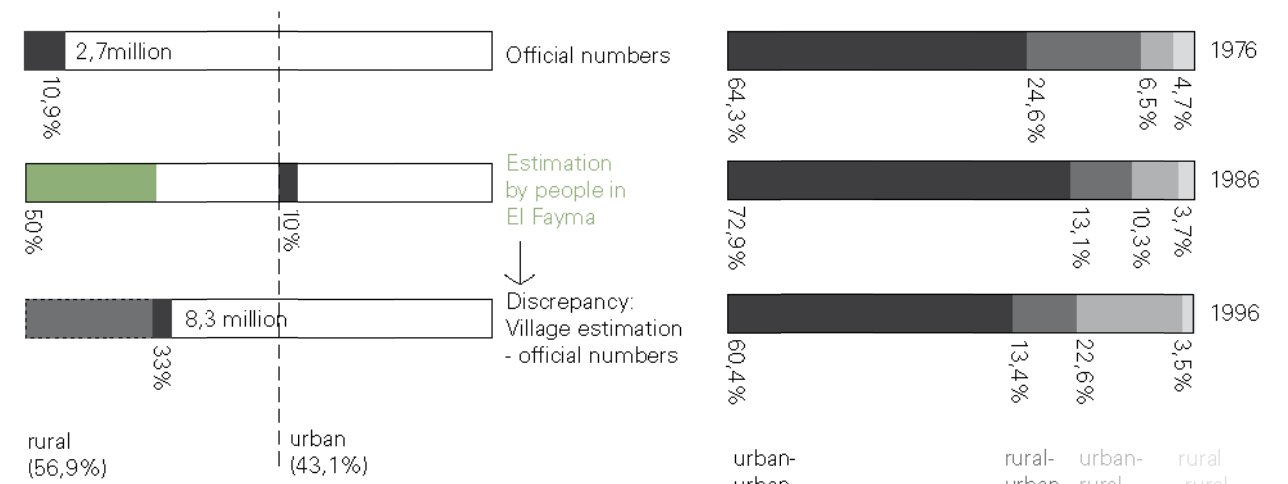
TV

The TV is prominently placed in the reception room.



Migration

Working migration is not a new phenomenon but it has increased in numbers and importance for Egypt and particularly for the rural population. Both permanent and temporary internal migration to the bigger cities occur and temporary migration abroad to MENA countries also is fairly common. The internal migration also goes in the other direction, from urban to rural areas. International migration has shifted from a mostly urban, educated labour force to a majority of rural, uneducated workers. Rural families have a direct connection with the world, and migration is highly important to rural settlements. Outside employment and remittances enable the family to stay in the village.



Per cent International Migrants of Labour Force, Egypt 2007

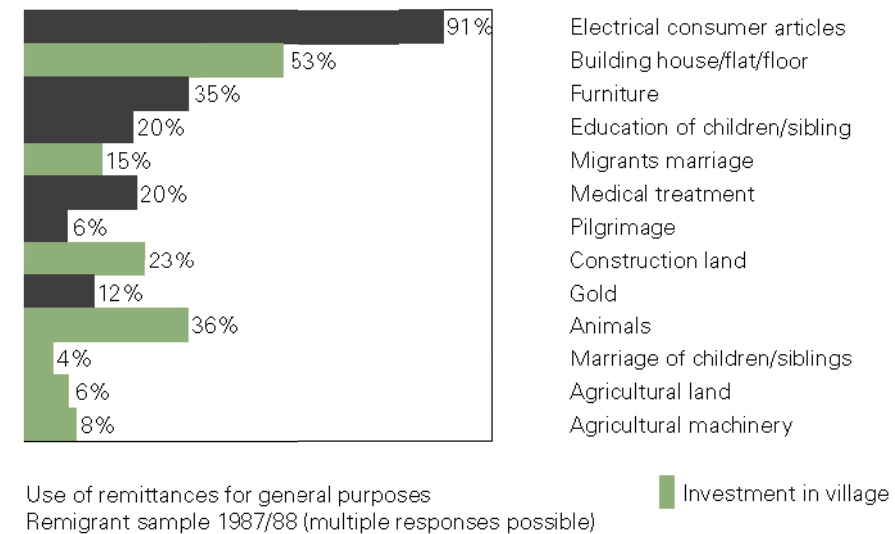
Migration by Type of Movement, Egypt 1976-1996

International Migration

Official numbers vary, and are contradictory to estimations done by people in the villages with whom we have spoken. Calculations based on: "CAPMAS The Statistical Year Book 2007" and "Interrelationships between Internal and International Migration in Egypt: A Pilot Study", Ayman Zohry.

Changes in Internal Migration

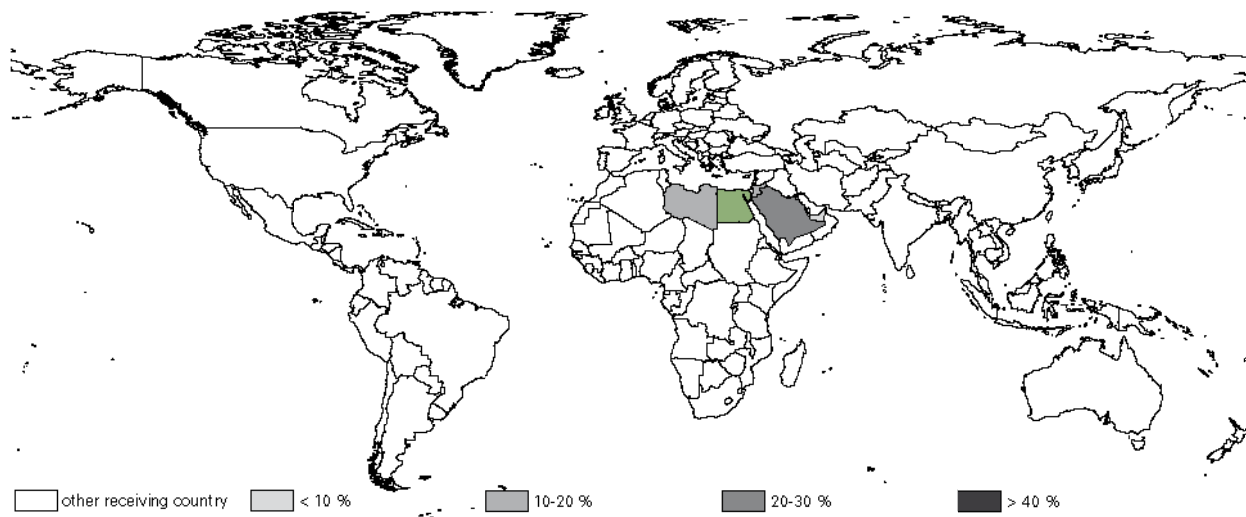
The statistics do not tell if migration is temporary or permanent. Source: "Interrelationships between Internal and International Migration in Egypt: A Pilot Study", Ayman Zohry.



Use of remittances for general purposes
Remigrant sample 1987/88 (multiple responses possible)

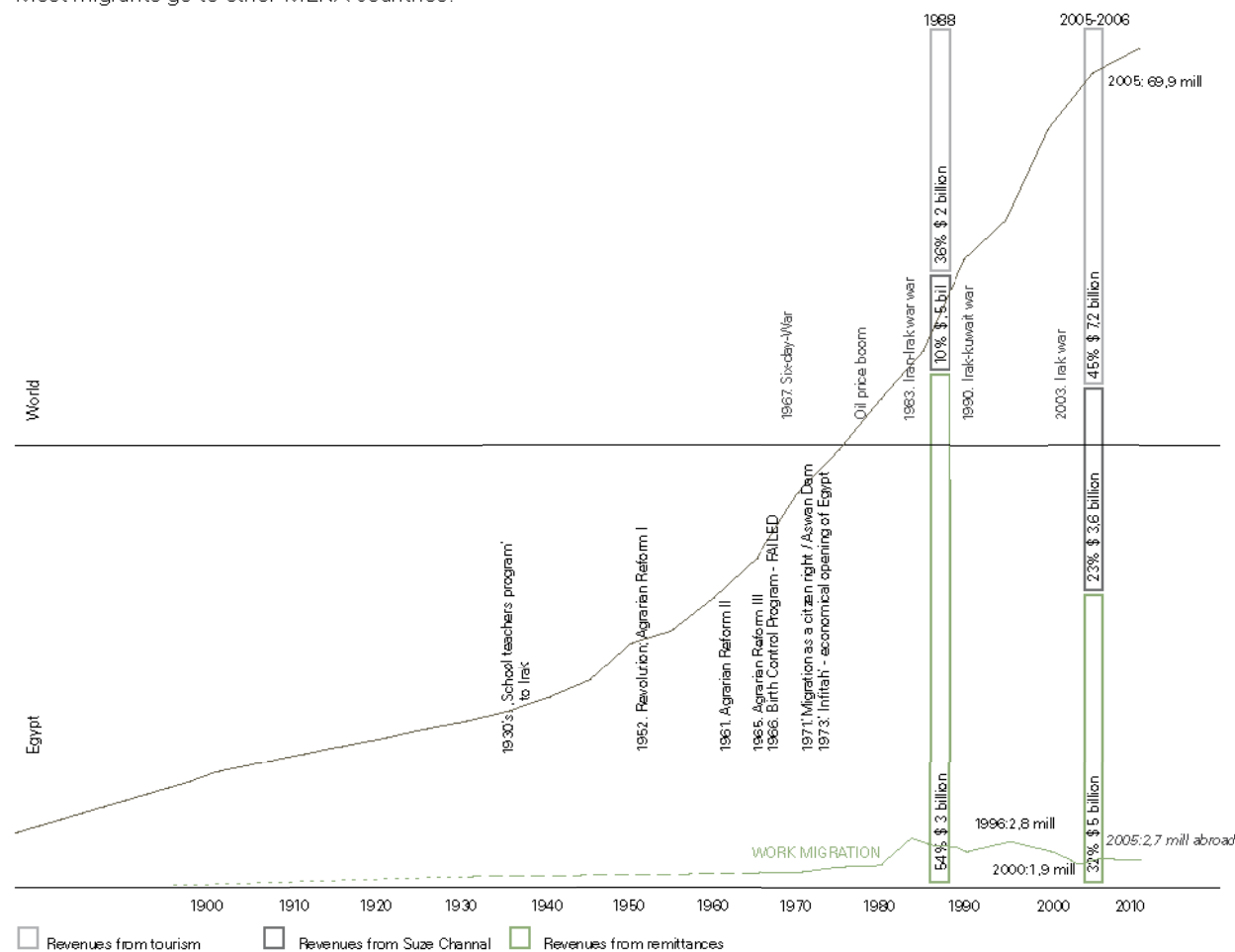
Remittances

Much of the remittances generated by migrants are invested in the village—a source for the village's economy. Source: "Inside the Third World Village", Petra Weyland.



International Migration

Most migrants go to other MENA countries.



Migration Timeline



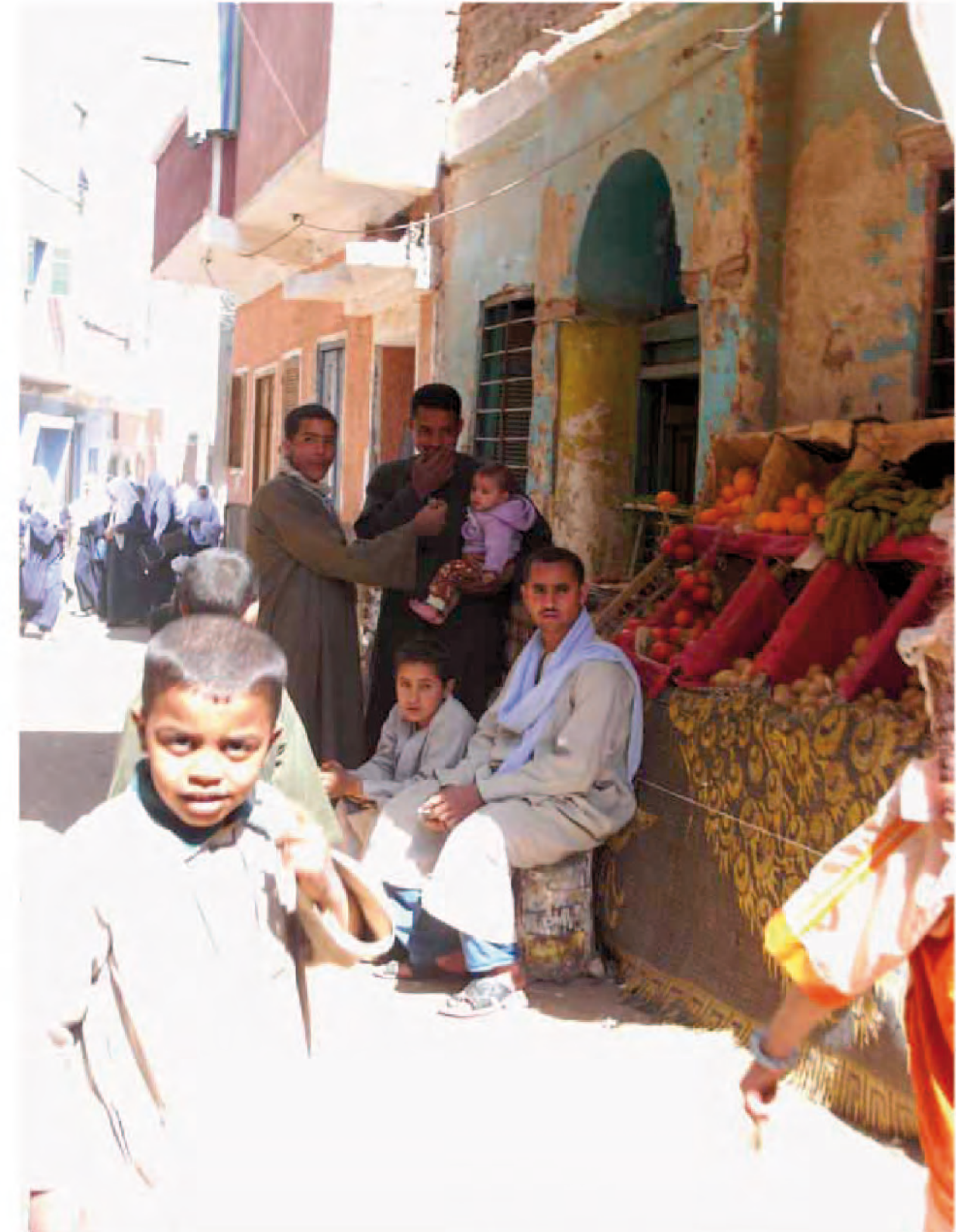
Ahmed Sayed, salesman

"I worked in Kuwait for one and a half years. I worked with computers, mostly writing or typing. That is where I learned English! When my dad called and said he found this job for me at Telecom Egypt, I came home. Now I am building my own family house here in the village. My father helped me find the land and I am building the house with the money I earned in Kuwait. I also own a house with apartments in As-siut, where I live during the week, but only until the house is finished. Then I will marry and move back. I want to live close to my family, my parents and my brothers. Life is easier here, and cheaper!" March 24th 2009, El Fayma



My Husband is in Cairo

"My husband and one of my sons are working in Cairo, and my other son is working in Libya. They come back every two to three months and stay at home for about 20 days before they leave again." Reda el Hakayma, mother and grandmother. "I live here in this house with my daughter, my two daughters in law and my grandchildren. There are 15 of us altogether." March 26th 2009, El Fayma



Stability

The village built up by its stable family units constitutes the smallest part in the network of settlements covering the Nile Valley—a networked community where flows of goods, people, and money constantly increases, resulting in mutual dependence between the village and its network. These flows are temporary but recurrent, and reciprocal. Goods are moved, transformed, and consumed, but people tend to move on a temporary basis, for work or studies. Establishing this static pattern of living is the flagrant family-tradition inside the village. In this unit, dependency and collaboration is strong, and direct both the social and economical aspects of the individual's life. The necessity of the “way of life” in the community and its slow and stable metabolism orchestrate the community and network mood. Proximity to cities affects the degree of urbanization and dependency between the village and the city. Greater proximity can lead to shrinking agricultural land and a higher connectivity and resulting flow of people, turning close villages into suburbs. The Egyptian village is strongly integrated into its surroundings; its quality of life establishes it as a sustainable and stable organism.

NILE VALLEY VILLAGES: COMMENTARY

The rural village is the basic unit of Upper Egypt urbanization. It is part of a seemingly perfectly balanced network where each village contains a certain amount of public infrastructure that corresponds directly to its size. Within this network, there is no clear division between cities, towns, and villages apart from their size and corresponding infrastructure. The rural settlement itself has an ambivalent character. On one hand, they are still traditional, tight-knit organisms deeply rooted in agriculture. On the other hand, they maintain strong connections to urban centers through migrated or commuting family members whose remittances economically sustain the village. Many households use agriculture only as a means of basic self-sufficiency while earning money in cities. This expands the economic capacity of the village above farming land resources and also enables vertical and horizontal expansion at the expense of arable land. The cross-financing of rural life has also inhibited any revision of small-scale farming structures in the valley. Nevertheless, this combination of the security of basic agriculture and the ability to commute to larger urban centers via a highly developed transportation infrastructure has made the village a competitive contemporary mode of living.

آليات ترمير الصحراء



THE MECHANICS OF CONQUERING THE DESERT

VISUAL INTRODUCTION

Eastern Edges

Western Edges

NATURE / MORPHOLOGY

Morphology or a Water Layer

Scarce Water Resources

Specific Morphology of Assiut

A CULTURE OF EXPANSION

Stages of the Expansion

Historic Argumentation

Law and No Order

No Data

How to Conquer the Desert

Modernity

ETH Studio Basel

Contemporary City Institute

Olympia Georgoudaki, Argyro Poulivoli

Prof. Roger Diener, Prof. Marcel Meili

Mathias Gunz, Rolf Jenni, Milica Topalovic

Christian Mueller Inderbitzin

Spring Semester 2009

THE MECHANICS OF CONQUERING THE DESERT

The combination of very rapid population growth during the second half of the 20th century and a geographically limited arable area around the Nile Valley and in the Delta Region led Egypt, since the 1960's, to embark on a policy of reclaiming desert land for agriculture. Since then, Egypt has invested effort and money to expand into the desert, putting heavy pressure on the edges of the Nile Valley, and in some ways insinuating that expansion is the only solution to the demographic problem. While it is almost impossible to tell if this is the case, what can be considered as fact is that Egyptians have meanwhile developed their own mechanics of conquering the desert.





Eastern Edges





Western Edges



NATURE

Nature is the first element that forms the edges. This is a prerequisite in order to understand the methods of expansion in the edges of the Nile Valley. All of Egypt's ambitious plans for expansion are based on the morphology of the landscape and limited by the scarce resources of water. After all, this specific topographic section of Egypt, created over millennia by fertile alluvial deposits brought by the Nile, is exactly what allowed life in the Valley.





Topography of Egypt

Egypt is primarily a limestone plateau with the exception of the Nile River. Without the topographic channel that permits the Nile to flow across the Sahara, Egypt would be entirely desert. One can read the topographic contour lines as another water level. In Upper Egypt, the raised topography limits the Valley to a narrow strip, but further north towards the Nile Delta the surrounding topography flattens and allows the expansion of arable land both east and westward.



Significance of the Valley

Illustrations like this one above of Nicolas Sanson D' Abeville, Royme, Et Desert de Barca et L'Egypte, in 1679 highlight the importance of the Nile Valley for Egypt as a container of life. The distinction between the flat Valley and the desert is sharp; the valley edges are defined as raised ridge topography of barren hills. Throughout history, the edges were a preferred location for villages since the raised terrain served as protection from the annual floods.



The Nile Valley diminishes into a narrow strip in Assiut, with a width of 13 km. Limestone cliffs on both sides rise 230 m above sea level. In the southwestern edge, topography defines a sharp border between the Valley and the desert. In the eastern edge, gradual topography allows agricultural expansion. The Wadi El Assiuti (Valley of Assiut) is located eastward, between two mountains 10 km from one another. Before turning northwest for 160 km to Assiut, the limestone plateau forces the Nile to change course to the southwest for 60 km. Northward from Assiut, escarpments on both sides diminish; the valley widens to 22 km.

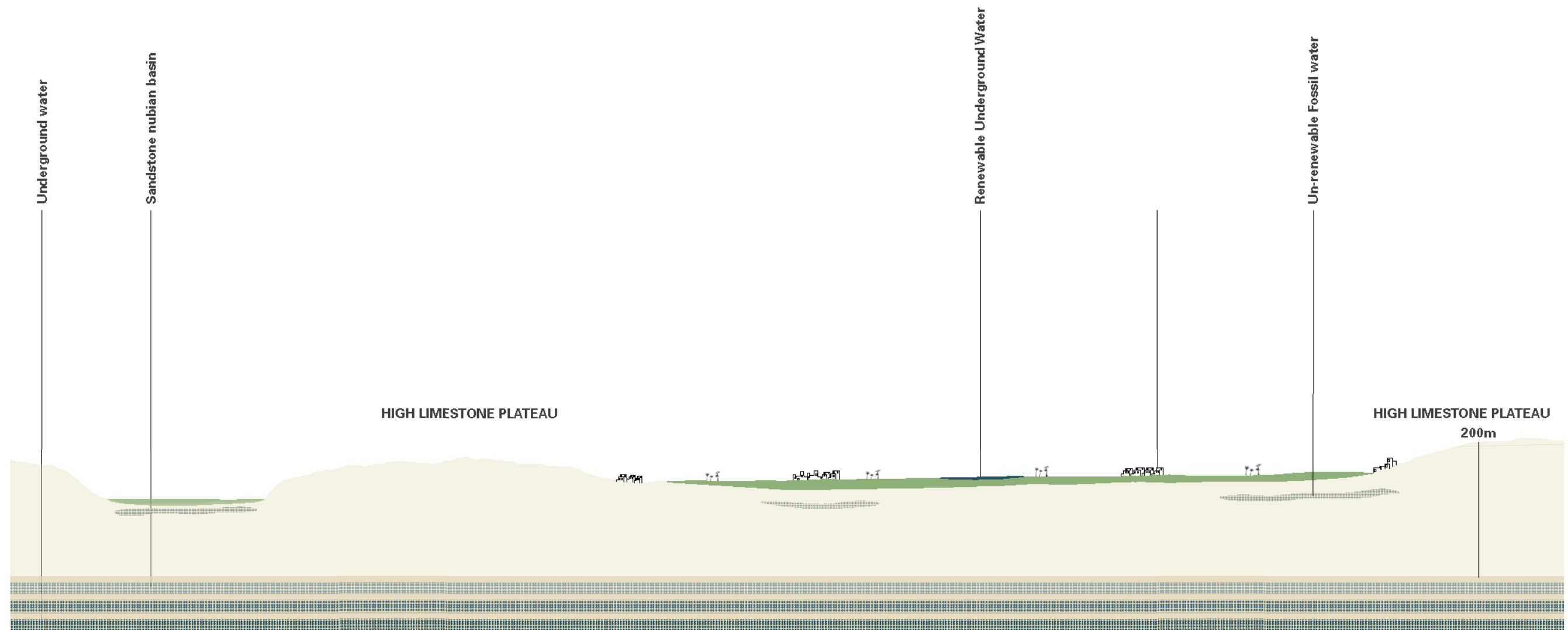
200m above sea level
100m above sea level
50m above sea level

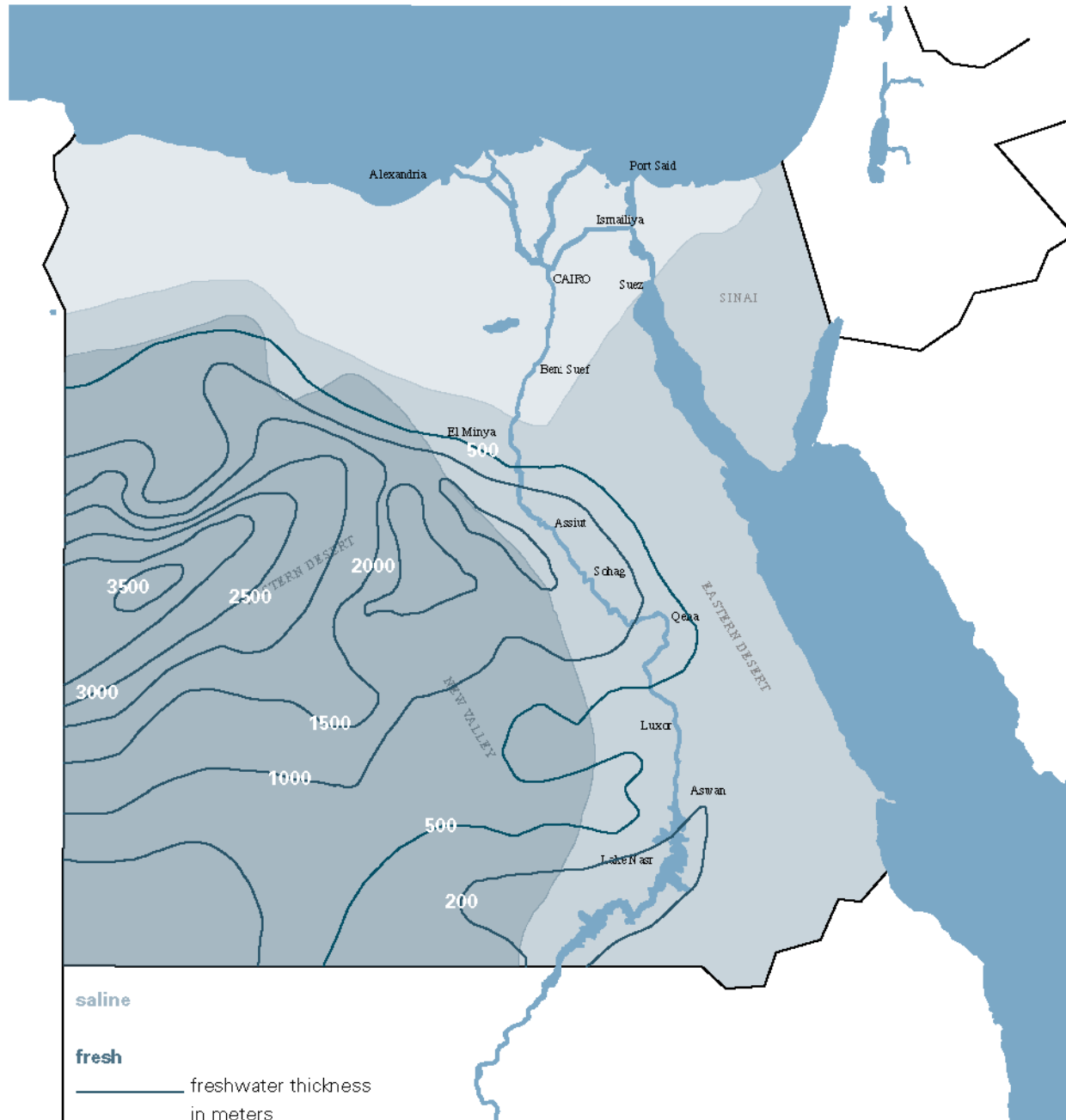


Wadi El Assiuti

SCARCE WATER RESOURCES

It seems to be common knowledge in Egypt that any land can be reclaimed regardless of the soil quality and the wind force as long as you can find water. Water is the basic ingredient in the physical reclamation process. The main water resource in the old lands is Nile water. But when it comes to reclamation, underground water is key. The three main types of underground water are fossil water, underground water which is renewable by the Nile, and deep underground water, the so-called Nubian basin.





Nubian Basin as Water Storage

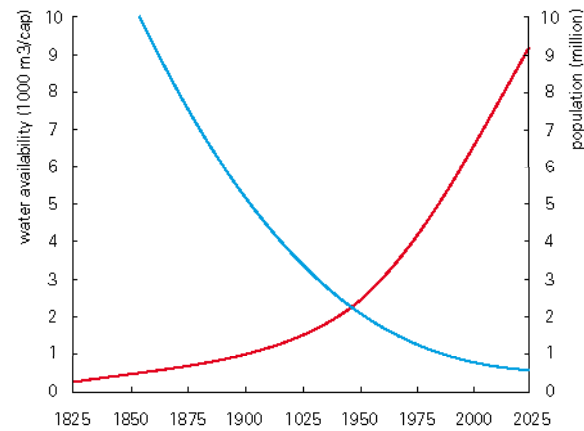
Egypt shares the Nubian Basin underground water layer with Sudan and Libya. It is estimated that the Nubian Basin stores 200 billion m³ of water. Egypt's share is around 66 billion m³ in a level of 0-3 km below the surface.



Deep Aquifer in North Africa: Nubian Basin Layer

Source	Water Quantity		
	1990	2000	2025
Nile water	55.5	55.5	55.5
Reuse of agricultural drainage water	4.6	7	7
Deep groundwater	0.5	2.5	3.8
Treated water	0.2	1.5	1.5
Winter closure water	—	1.0	1.5
Water harvesting (rains etc)	—	—	1.5
Reducing evaporation losses from High Aswan Dam	—	—	2.5
Sea water desalination	—	—	1.5
Total	60.8	67.5	74.3

Main Water Resources in Egypt



Growth in Relation to Water Availability

The population of Egypt in 2025 is estimated at around 9 million, whereas the water availability at less than 1 cubic meter per capita, underlining the extent to which the water resources of Egypt are limited.

How many feddans can be cultivated with the existing water resources?

6mm/ day * 4.2 = 25.2m³ / feddan / day → Daily average of water consumption in Egypt for agricultural use

25.2m³ / feddan / day * 300 days = 7560 / feddan / year

Utilizing 85% of the 74.3 Gm³ agriculture = 63.3 Gm³ → Sum of water resources in Egypt

This amount may irrigate 63.3 Gm³ / 7560 m³ = **8.333 Mfeddans**

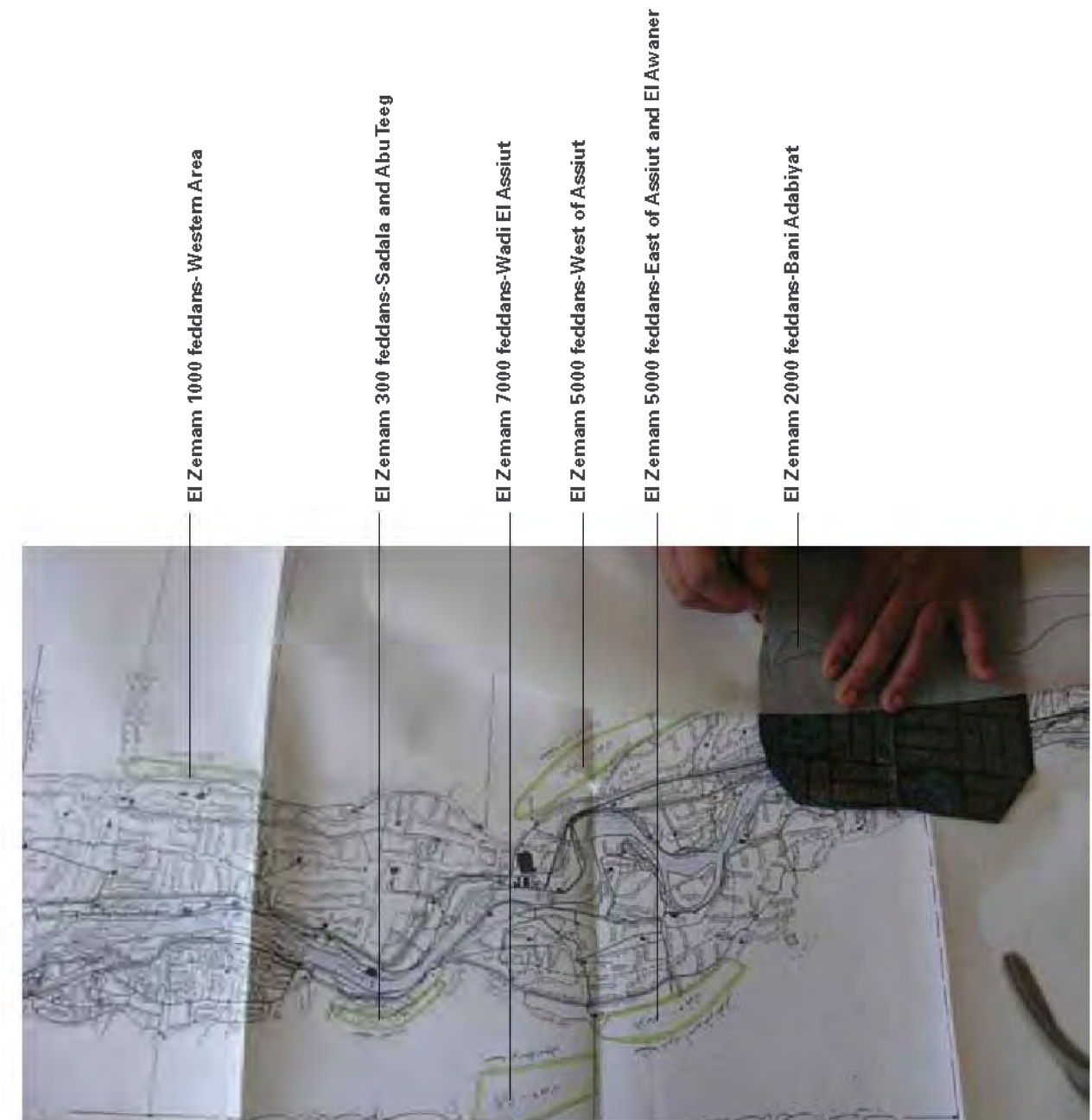
This is the already cultivated land in Egypt.
10 Mfeddans is the limit.

To expand further into the desert:

- modify their irrigation methods and save as much water as possible
- start producing types of plants with high tolerance in salinity wind and waste water

There is a Limit to the Expansion

According to Dr. D. Mohsen Gameh of Assiut University's Soil and Water Sciences Department, this is the mathematical estimation of Egypt's expansion limits based on available water resources and already reclaimed land. Although, it was impossible to confirm these numbers, due to complex and inefficient data collection system in Egypt and the inevitable uncertainty that the numbers correspond to reality, they indicate critical circumstances in Egypt regarding agricultural expansion.



New Lands on an Old Map

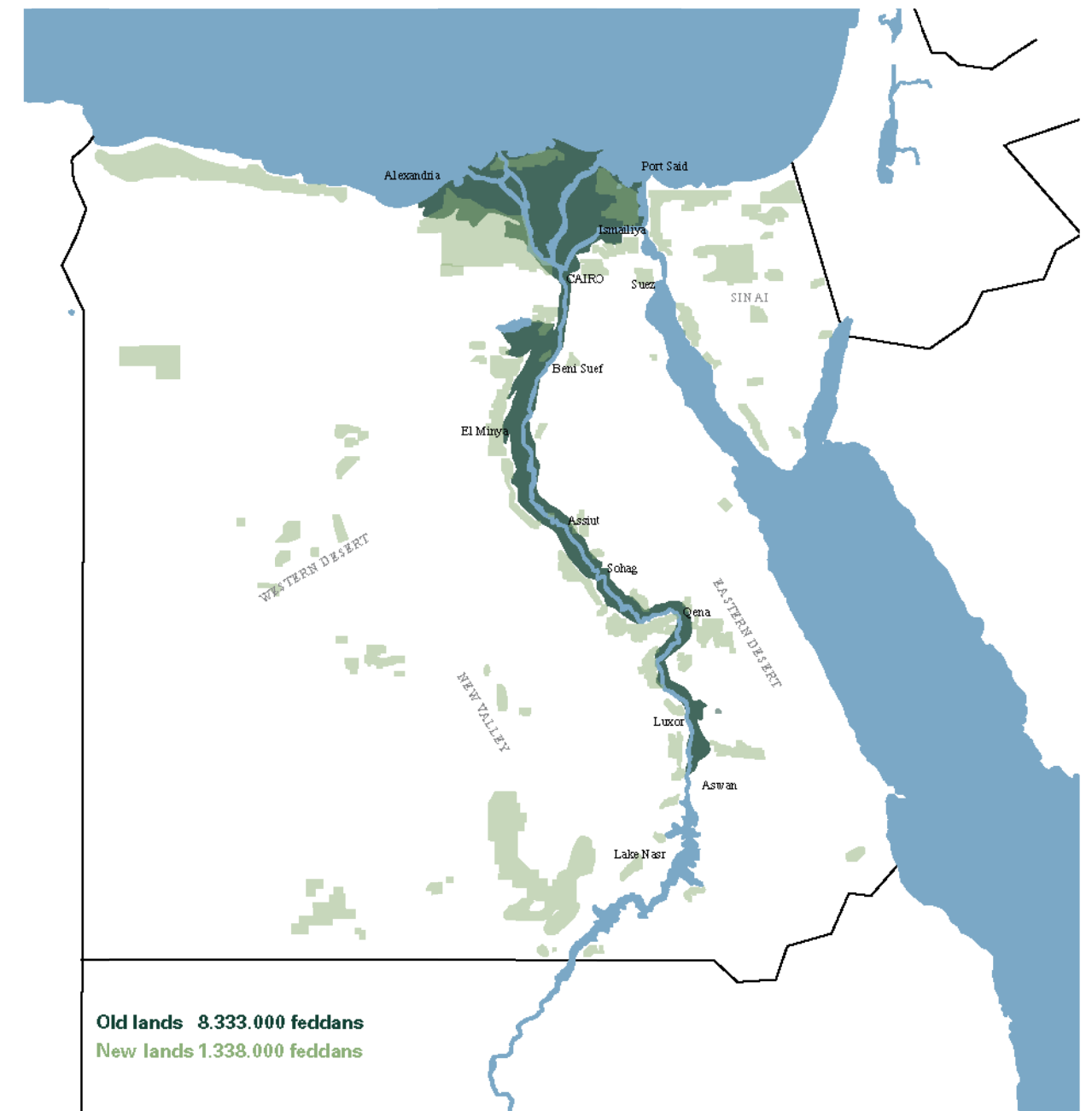
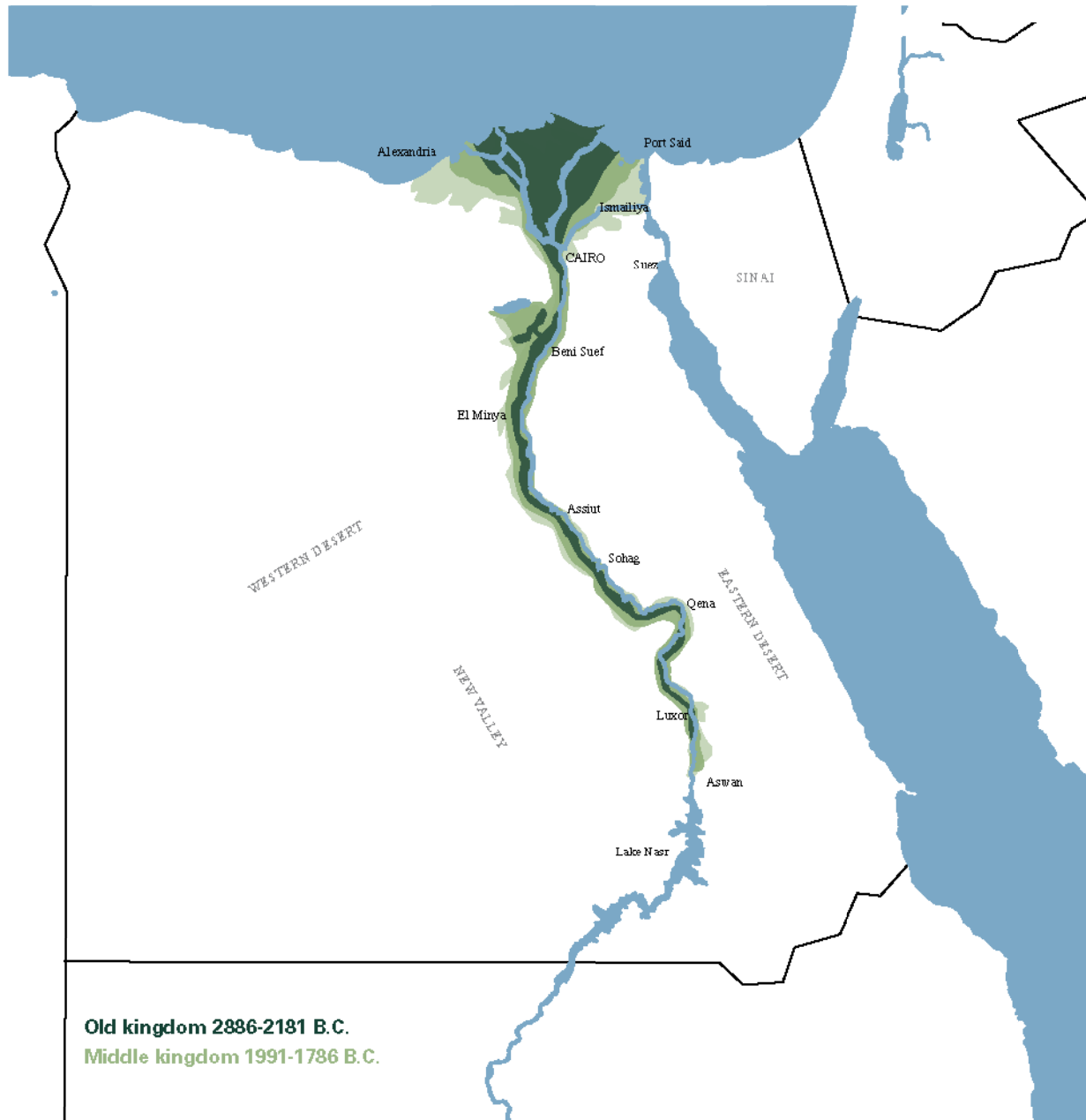
The "Pen for drawing" branch office of Assiut's Ministry of Water Management and Irrigation is planning ongoing governmental projects on a map drafted in 1965. The areas inside the green perimeter are land reclamation projects, with dimensions and geographic information, yet small-scale informal land reclamation is not noted. By using this outdated map as a base, Egypt is mapping the future on the past and that easily leads to false management.



Struggle for Water in Wadi El Assuiti

This almost anthropological image of the Nile Valley with clear distinction between desert and agricultural land no longer exists. On the edges, Egyptians have set themselves free from tradition. Since the 1960s, agricultural reclamation policy of Egypt and all of its consequences—laws, ownership reforms, rules, institutional and physical processes—have formed a new culture of expansion that has greatly impacted life on the edges of the Nile Valley.

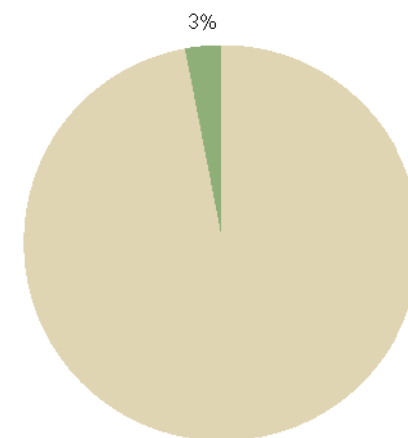




Stages of the Expansion

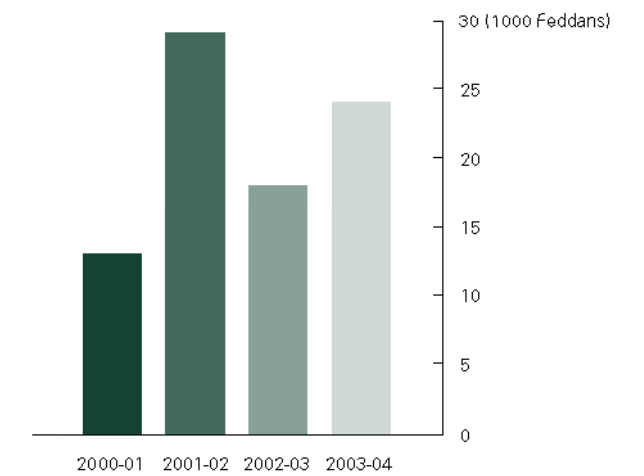
Land reclamation is a process that has been known in Egypt since ancient times, are taking place today as more aggressive activities. Reclamation in the past always depended on Nile floods and developed along the Valley. It is worthwhile to note the contradiction between this map illustrating the expansion during the old and middle kingdom of the pharaohs and the national development plan for agricultural use today. Nowadays, expansion is not just an offset of the existing valley; green islands appear in the desert, enabled and dependent on underground water.

This ambitious plan is part of a long-term programme to reclaim about 3.4 million feddans by the year 2017, at an annual rate of 150,000 feddans. This number represents the official projects held by the Government of Egypt, which compose only 25% of all land reclaimed since 1988.



Cultivated Land in Egypt

The total arable land area within the Zemam constitutes only 3% of Egypt's total land area. In numbers, this means 996.450 sq km out of 1.001.450 sq km.



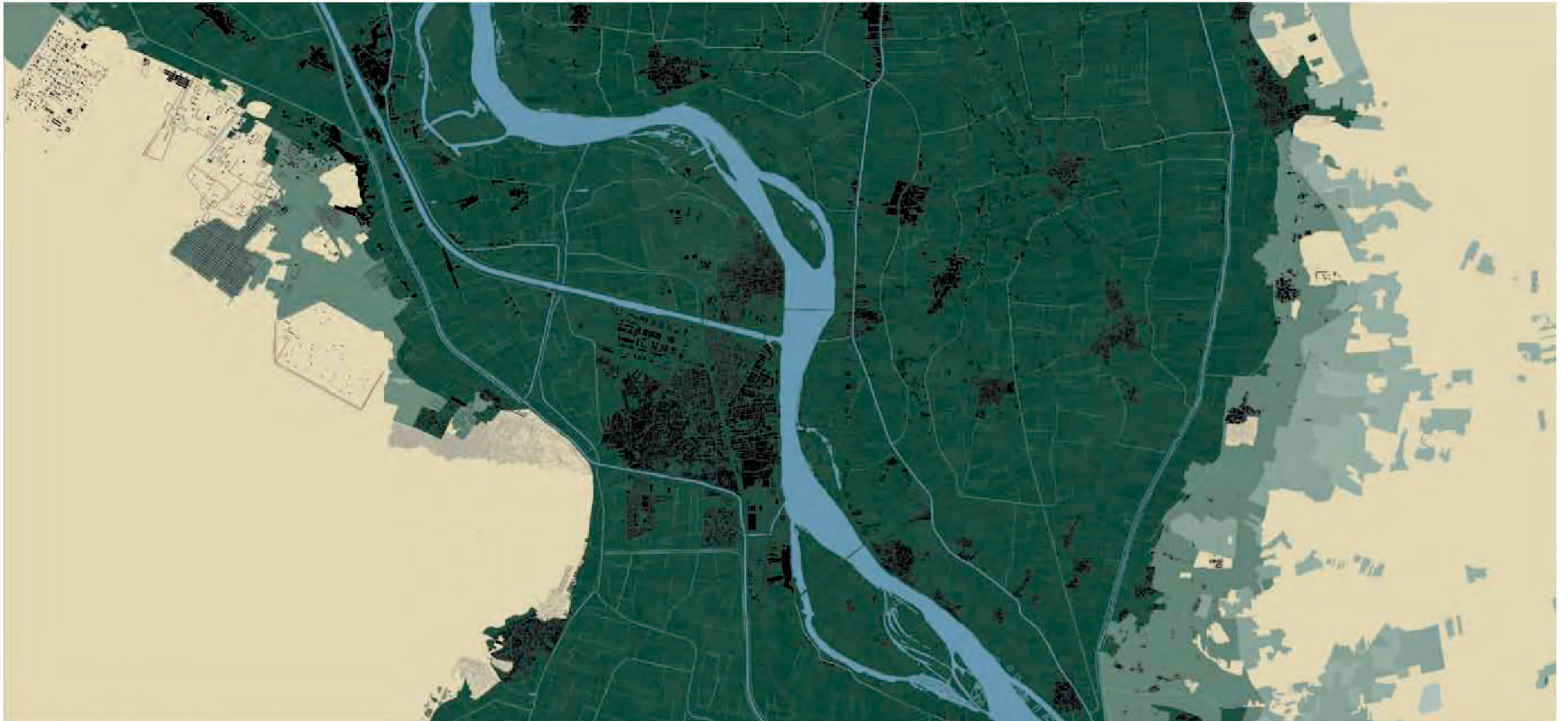
Rate of Reclaiming Land

The rate of reclaiming land for agriculture was around 20,000 feddans per year between 2000 and 2004, in governmental projects. Given a loss of agricultural land to urban expansion at an estimated rate of 30,000 feddans per year, the total land area under cultivation has more or less remained constant.



Domus of the Edges

The urban encroachment inside the Nile Valley is subtracting agricultural land, which Egypt is trying to regain in the Edges. The expansion is not just a linear row of fields, but also includes holes within it depending on topography and land use, e.g. graveyards.



Mapping the Expansion

The “New Lands” can be divided into three different categories, based on interviews with farmers conducted during the field research, maps of Assiut illustrating old borders of the valley, colors of the fields in Google aerial images and the proximity of fields to old canals. It is important to mention that at an institutional level, there is no clear definition of “New Lands” accepted by all crucial participants in the MARL data collection and reporting system. New lands are not taxed—only the Zimam are. This is probably the clearest definition of “New Land” from a legal perspective.

0-15 years

30-50 years

Old lands



English Map of 1907

Survey Department controlled by the British
Survey in 1905-1905 / 1:50.000

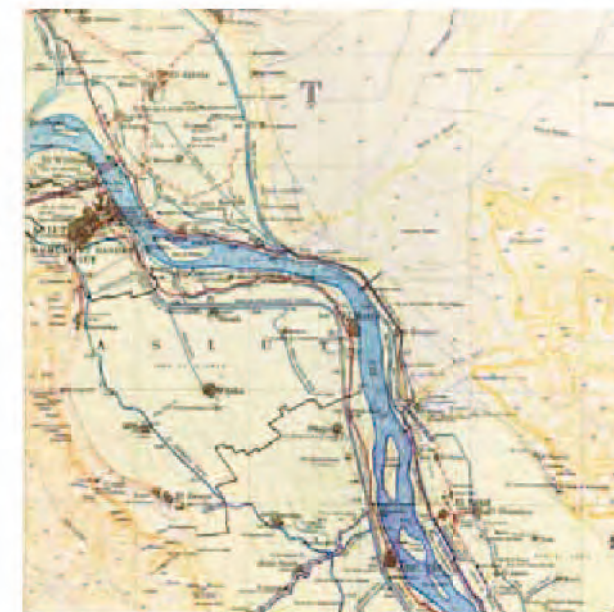
Historic Argumentation

These maps were used as tools to understand the evolution of the Nile Valley in a broader time span. Cemeteries were always located on the edges of the Valley, together with villages, such as Arab Mitteir and Durunka. It was also possible to trace the Zimam line of the Valley of Assiut. Zimam generally refers to the boundaries between cultivated and uncultivated agricultural lands that have been historically surveyed by the Egyptian Survey Authority. The border of the valley has not been transformed because of the topography. On the contrary, it is obvious the big transformation of the eastern edge with the agricultural expansion. It is easily distinguishable the bigger structure of the agricultural fields, underlining the repeated subdivision of the plots that followed later on due to inheritance from one father to a lot of sons. In the Russian map, one can also observe the Wadi El Assuiti forming itself between two limestone cliffs eastwards.



Russian Map of 1972

1:500.000



German Army Map of 1940

Survey period 1934-1941/ 1:100.000



Thirty-years-old Land at the Eastern Edges



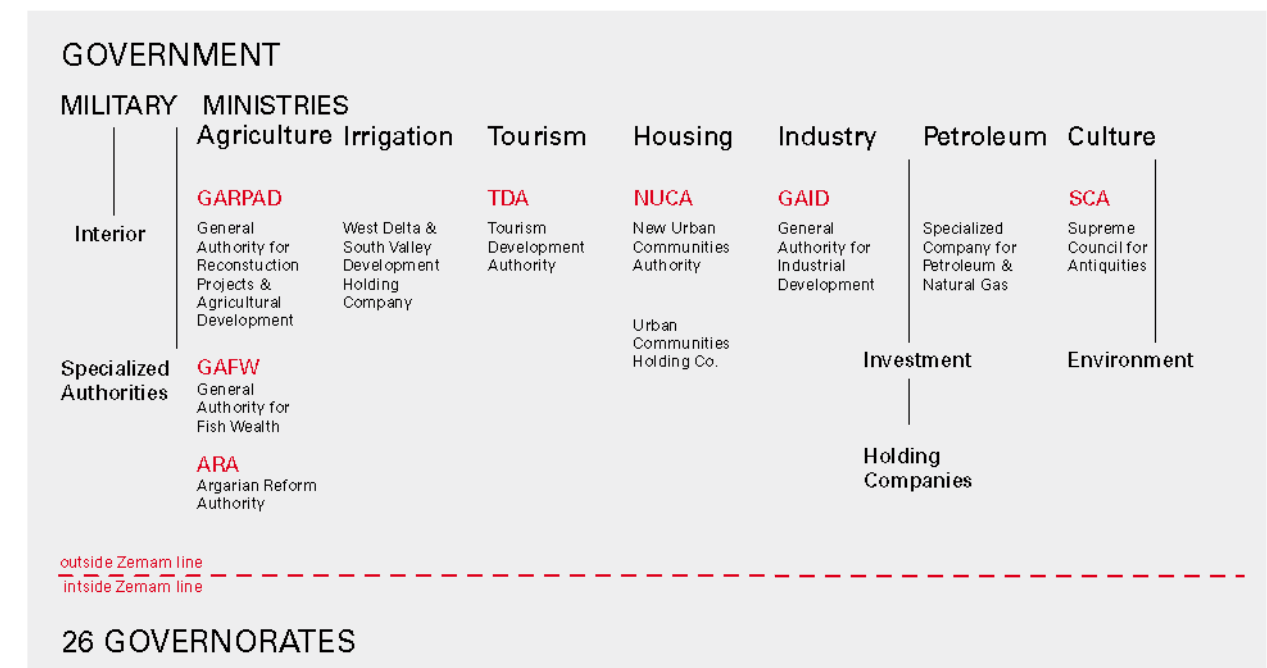
Employees in the New Lands Office in Assiut, Egypt are unable to find planning documents.

Law and No Order

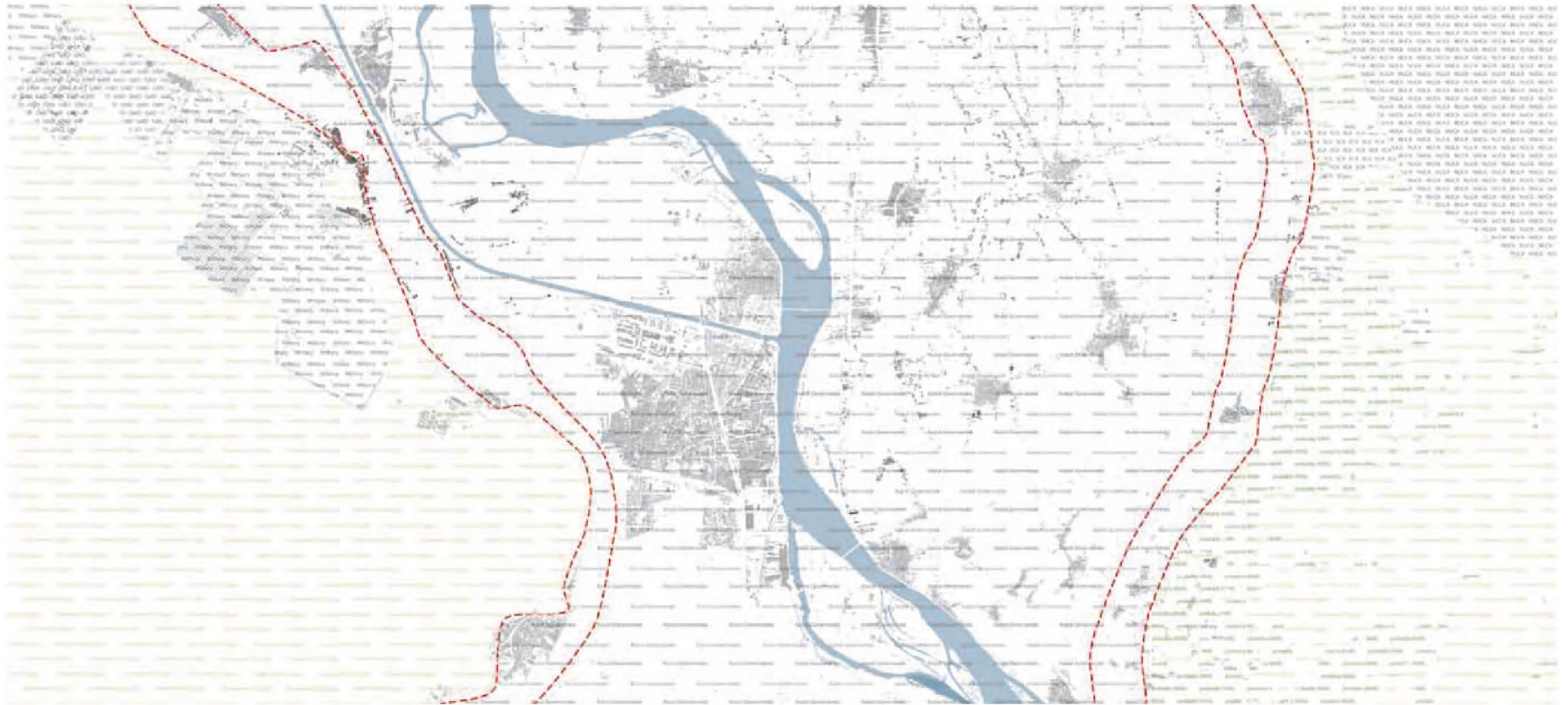
The institutional framework governing control over public land in Egypt is highly fragmented. The government entities empowered to control public land are divided along sectorial and geographic lines; therefore, their control depends on location and planned use. In the case of desert lands, control can be transferred to any relevant authority by presidential decree once a land use has been approved. By law, the hierarchy of control over desert lands traditionally rests within three main entities according to the following descending order: military, GARPAD and NUCA. In this context, efficient control, planning, availability, and quality of agricultural data in new lands become almost impossible. It does not come also as a surprise that competition between authorities to gain access to such land has been uncovered several times in the past.



Hierarchy of Control Over Public Desert

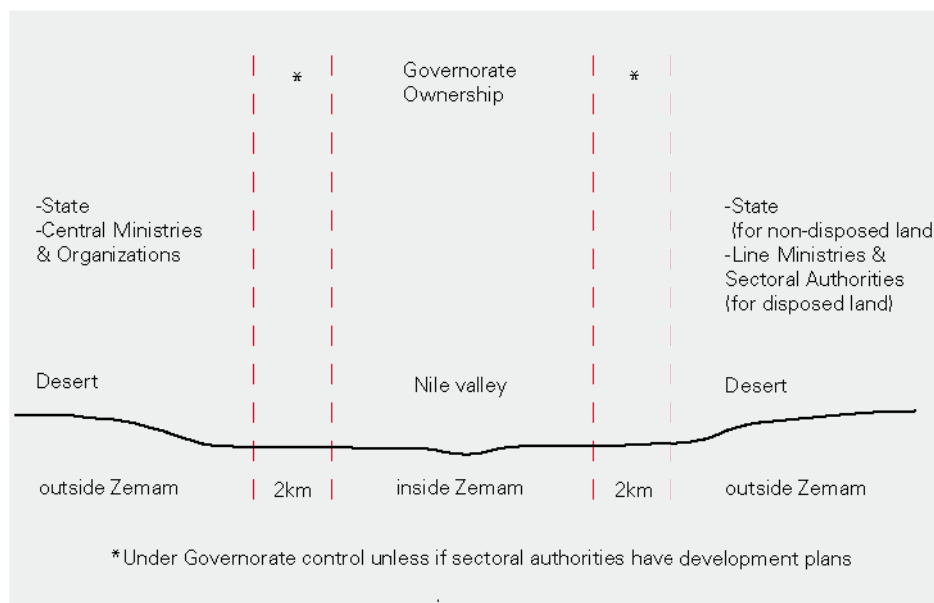
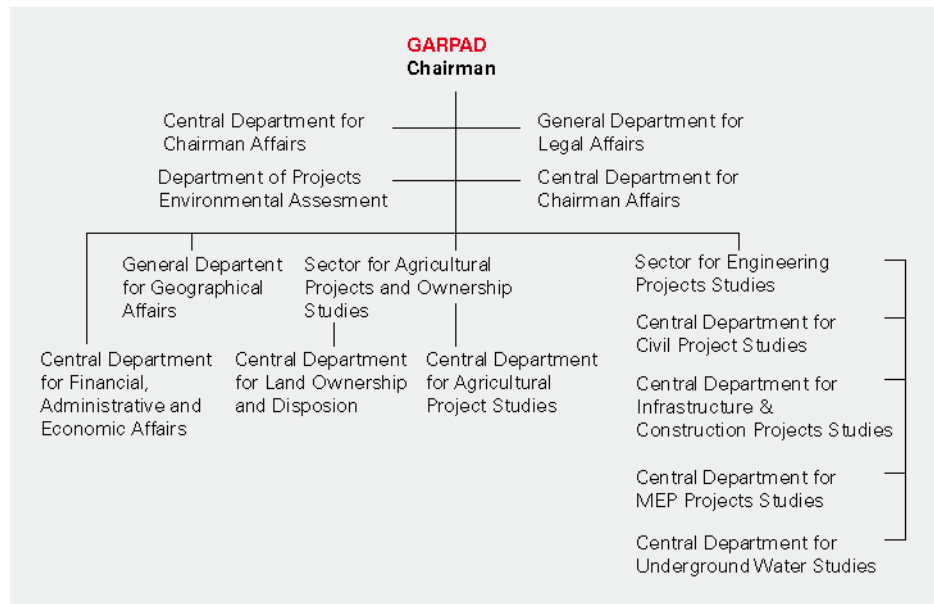


Sectorial Division of Land Control

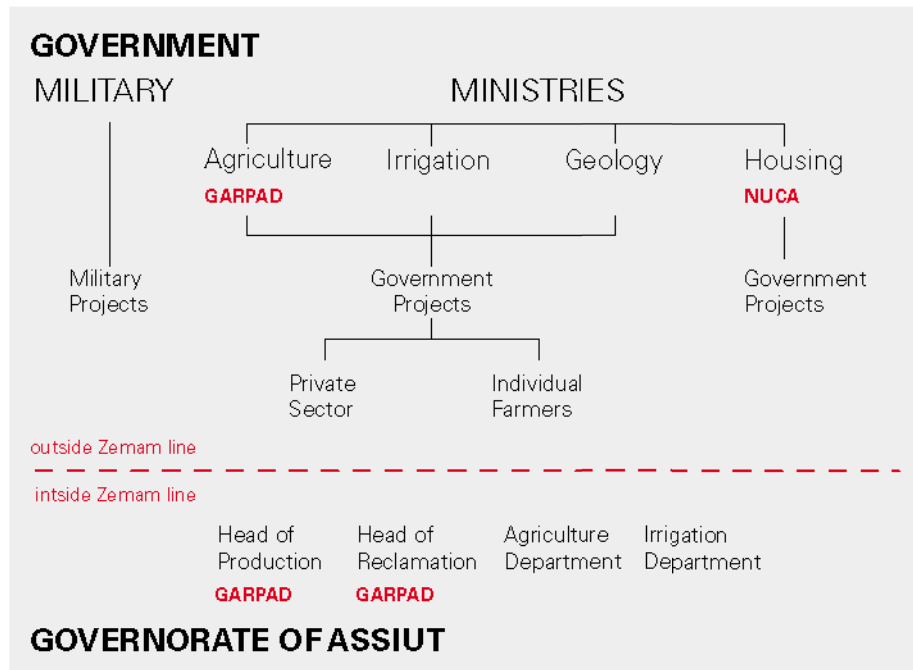


Land Control in Assiut

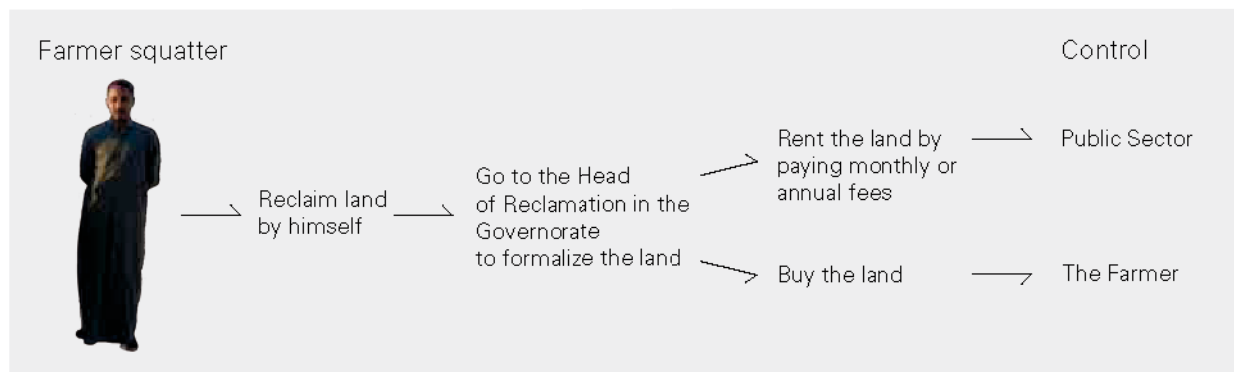
Governmental actors placed on the map of Assiut reveal a complex and unclear institutional landscape, evidenced by overlapping elements on this map.



Geographical Division of Land Control



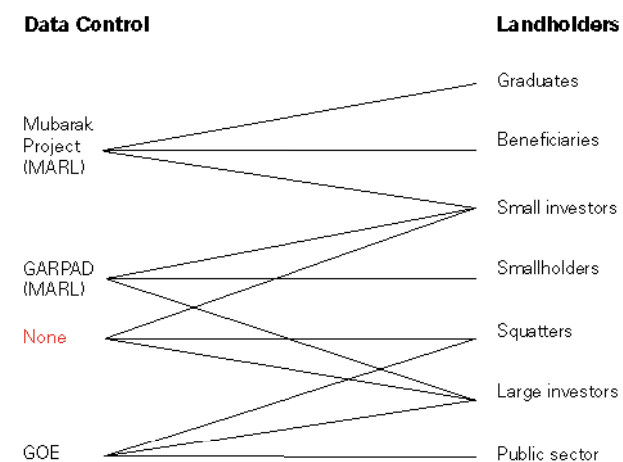
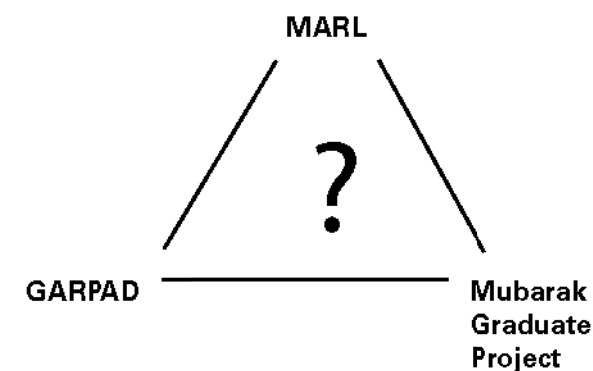
Network of Actors





Farmers participating in the Mubarak Graduates project.

The coverage of available data on New lands is very incomplete and inaccurate. It appears that at least half of the New Lands in the Nile Valley are either misclassified as old land or go unrecorded. Data reported and published for the New Lands only cover the Mubarak Graduates project, which accounts for merely 25% of all land reclaimed since 1988. Many of the problems with data coverage on New Lands arise from a lack of coordination and cooperation between the Graduates projects, GARPAD and the technical sectors of the MARL at the governorate level. Until recently, both GARPAD and the Graduates project were coordinated outside of MARL. Even now incorporated into MARL, they remain mostly independent and while they report on their activities, the information that the groups share—governorate and district statistics, sampling, and horticultural data—do not always align in definition. As a matter of fact, at the present time there is no complete system for collecting data on the New Lands and important parts of New Lands are not covered by any agricultural administration.



Data Coverage

The major groupings of land holders into which existing New Lands fall, and for which separated data may be desirable for planning purposes.

Size of Land Holdings

Smallholders	10-20 feddans
Graduates.....	5-10 feddans
Beneficiaries.....	5-10 feddans
Small investors.....	50 feddans
Large investors.....	20-30 feddans or 80-200 feddans
Squatters.....	almost 15% of all reclaimed land
Public sector.....	all reclaimed land that has not yet been allocated to one of the groups above

Smallholders: These are farmers with small holdings, landless laborers and others who received initial or redistributed allocations of reclaimed land in the valley.

Graduates: Initially these included recent university graduates, however, there is evidence that currently this group is primarily composed of high school graduates.

Beneficiaries: This group consists of various disadvantaged groups which have been targeted for special assistance, but have been resettled on to newly reclaimed land. Beneficiaries include veterans, and landless laborers.

Small investors: This group is difficult to define. It appears to mean a private investor who uses his own money to purchase and develop reclaimed land from the government.

Large investors: This group is composed of industrial and military farms and large farms owned by individuals.

Squatters: These landholders can range from holders of small parcels along canals who steal irrigations water to farmers who sink wells and invest in expensive surface irrigation systems completely under their own control.

Squatters make very large investments in reclamation and development activities and then petition the government to sell the land to them at a fairly low price. The squatters do not pay real estate taxes and their property rights are recognized in at least some form.

Public Sector: This group holds all reclaimed land that has not yet been allocated to one of the other holder groups. It cannot be ignored because this is where squatters make their inroads.

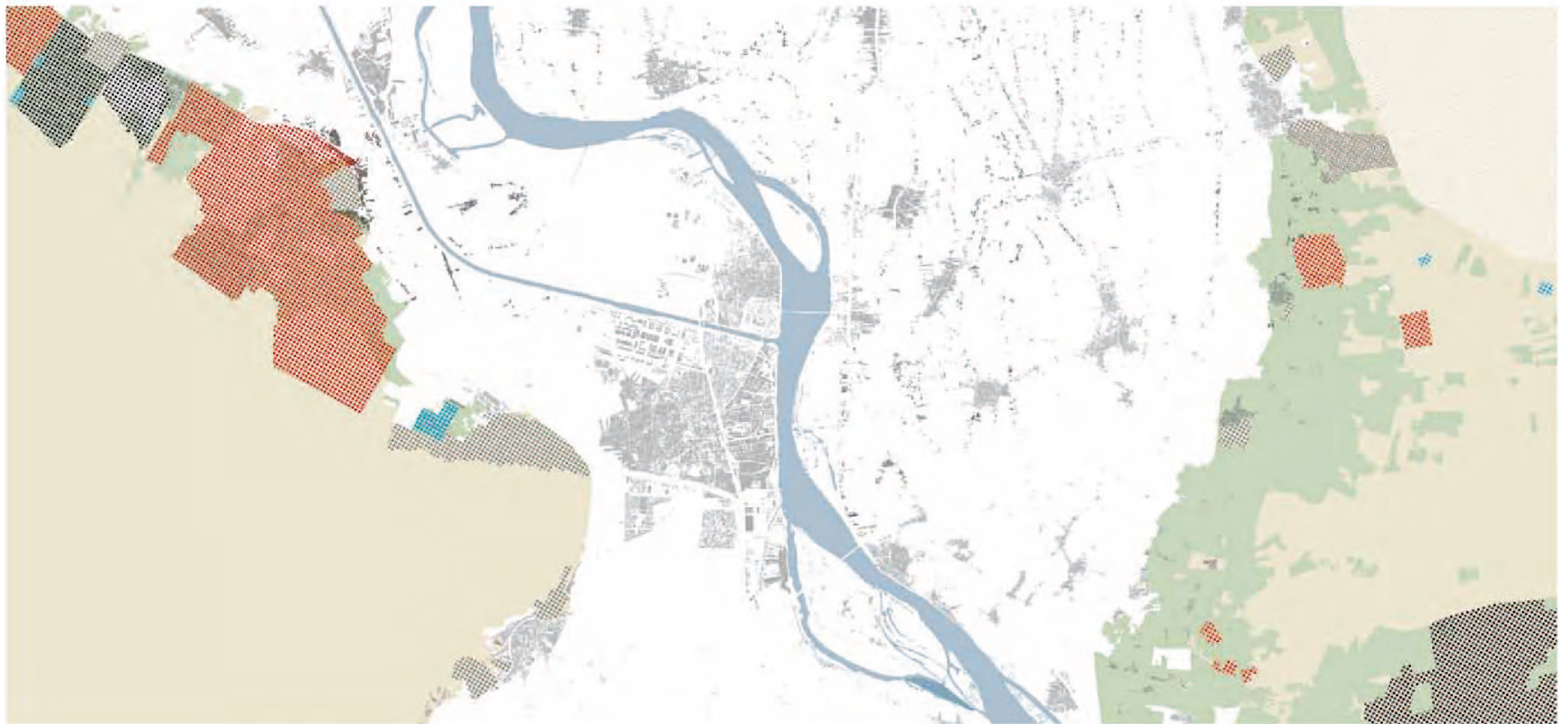




Land Ownership Along the Edges

Public or State land is divided into the State's public domain that cannot be alienated, and private domain, which can be alienated through sale and via lease (Takhsis or Haq Intifa). This category includes agricultural land rented by farmers and informal land considered as desert. By law, all desert land belongs to the Government of Egypt. Private land, such as desert city settlements and arable land bought by farmers, may be transferred freely. Waqf land is held as a trust/endowment for religious or charitable purposes. Military ownership as an exceptional case. Grey zones signify informal lands that are neither public nor private.





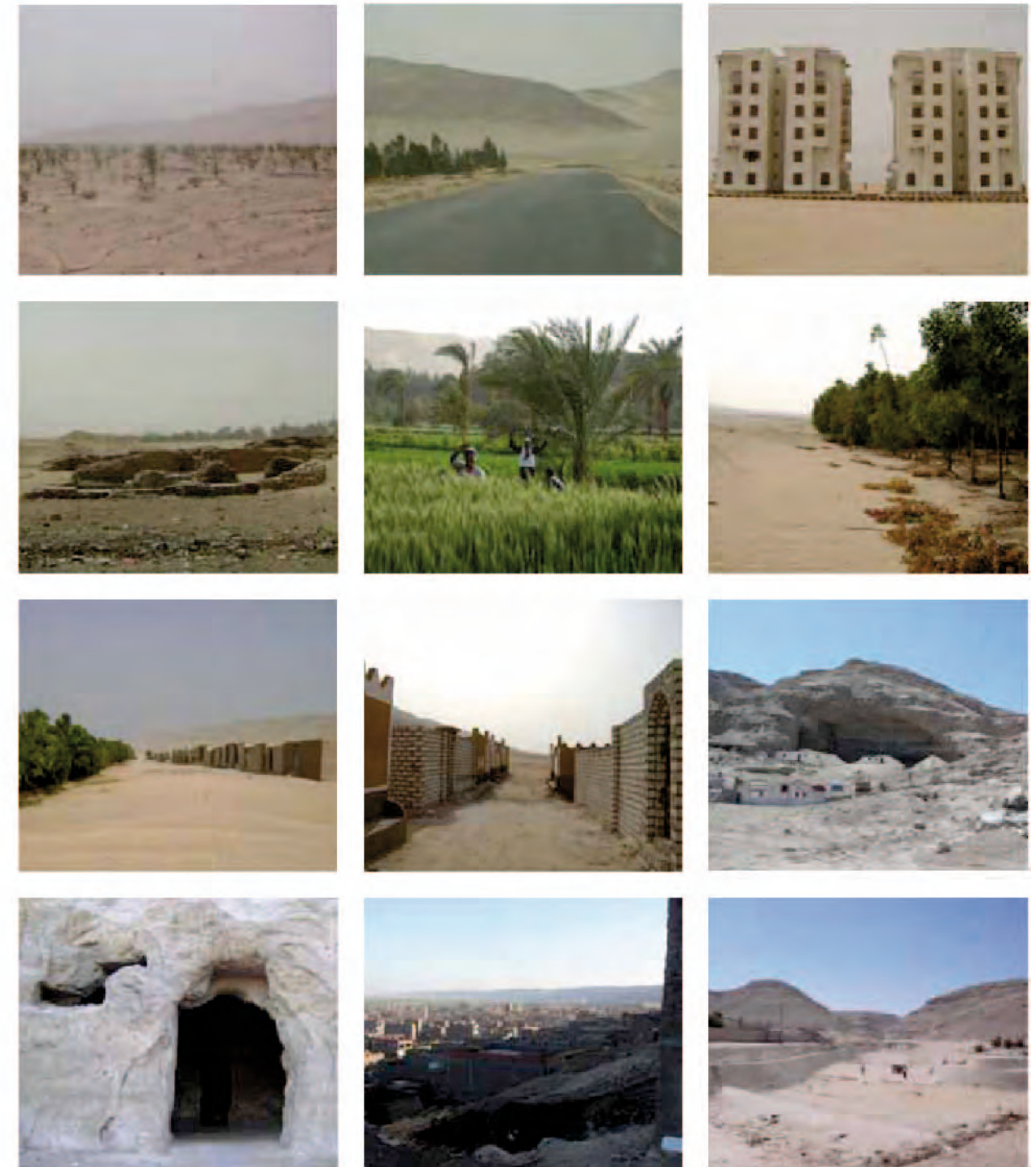
Land Use Along the Edges

This map was used as a tool to extract necessary information concerning land ownership and control in the greater region of Assiut. Apart from this, it is also important to mention that the large area occupied by military infrastructure was physically inaccessible.

- Desert city
- Antiquities
- Waste Water Treatment Stations
- Military infrastructure
- Production
- Cemeteries



Land Use on the Edges





Western Edge of the Valley from the Coptic Monastery



1



2



5



6



3



4



7



8

How to Conquer the Desert

1. Go to the desert.
2. Dig a well at least 30 meters deep or steal wastewater or join Mubarak's Graduate project.
3. Get a tractor and flatten the land.
4. Clear the soil of rocks and stones .

5. Mix the filtered soil with fertilizers or soil from the Nile.
6. Water the field together with seeds and let dry.
7. Repeat step six 2-3 times.
8. Petition the Government to sell the land to you at a low price in recognition of the improvements you have made.



Informal Land Reclamation on the Eastern Edge



Modernity

It appears that regarding the edges of the Nile Valley, Egyptians have managed to let go of a socio-cultural image of the Valley with its sharp borders—a symbol of a traditionally agricultural economy. Also, the fact that the expansion does not occur via a linear set of fields, but acts through a complex structure depending on different factors, shows a new perception of the space they are acting in. A struggle to conquer the desert has started; whether it is able to solve the demographic problem or not, it is probably the only expression of modernity in Egypt.

NILE VALLEY EDGES: COMMENTARY

The strict and immediate division between desert and arable land is a traditional feature of the Nile Valley. This is also reflected in the administration of the territory, where only arable land is considered as “land” with a private owner, while the desert is considered “no man’s land” and belongs to the state. The desert becomes land if and only if made arable. Historically, this process has been limited by the scarcity of resources (mainly water) but also by the topography of the land. The strict demarcation of Nile Valley land has long remained stable as a negotiated and proven balance between available resources and human extension. Today, with its rapid population growth, this static conception is no longer an option for Egypt. The desert has become a space for potentially infinite expansion, a projection space for both private hopes and bureaucratic number-games. The desert edge has transformed from a sharp line into a zone in which countless actors engage in a variety of uncoordinated activities. The desert edge is another guarantor for Egypt’s inner stability by providing a (symbolic) outlet, a place of seemingly unlimited possibilities, within a limited and restrictive environment.

قلب المدينة



CITY CORE

A NILE VALLEY CITY

Cities of Egypt

Districts

Forgotten Heritage

Historical Development

SEGREGATED PUBLIC LIFE

City Under Surveillance

Religion Structuring Space and Time

Segregated Spaces

UNIVERSITY: REMNISCENT MODERNITY

Hierarchical Structure

Interactive Community

SUPPLY CITY

City Core Services

ETH Studio Basel

Contemporary City Institute

Tommaso Amaboldi, Emanuel Biland

Prof. Roger Diener, Prof. Marcel Meili

Mathias Gunz, Rolf Jenni, Milica Topalovic

Christian Mueller Inderbitzin

Spring Semester 2009

CITY CORE

Alive and characterized by ambiguity, Assiut a paradigmatic city of the Nile Valley. The city core, with its many characteristics, represents this reality well. Assiut distinguishes itself from other cities of the region by its university, which also represents a parallel society.



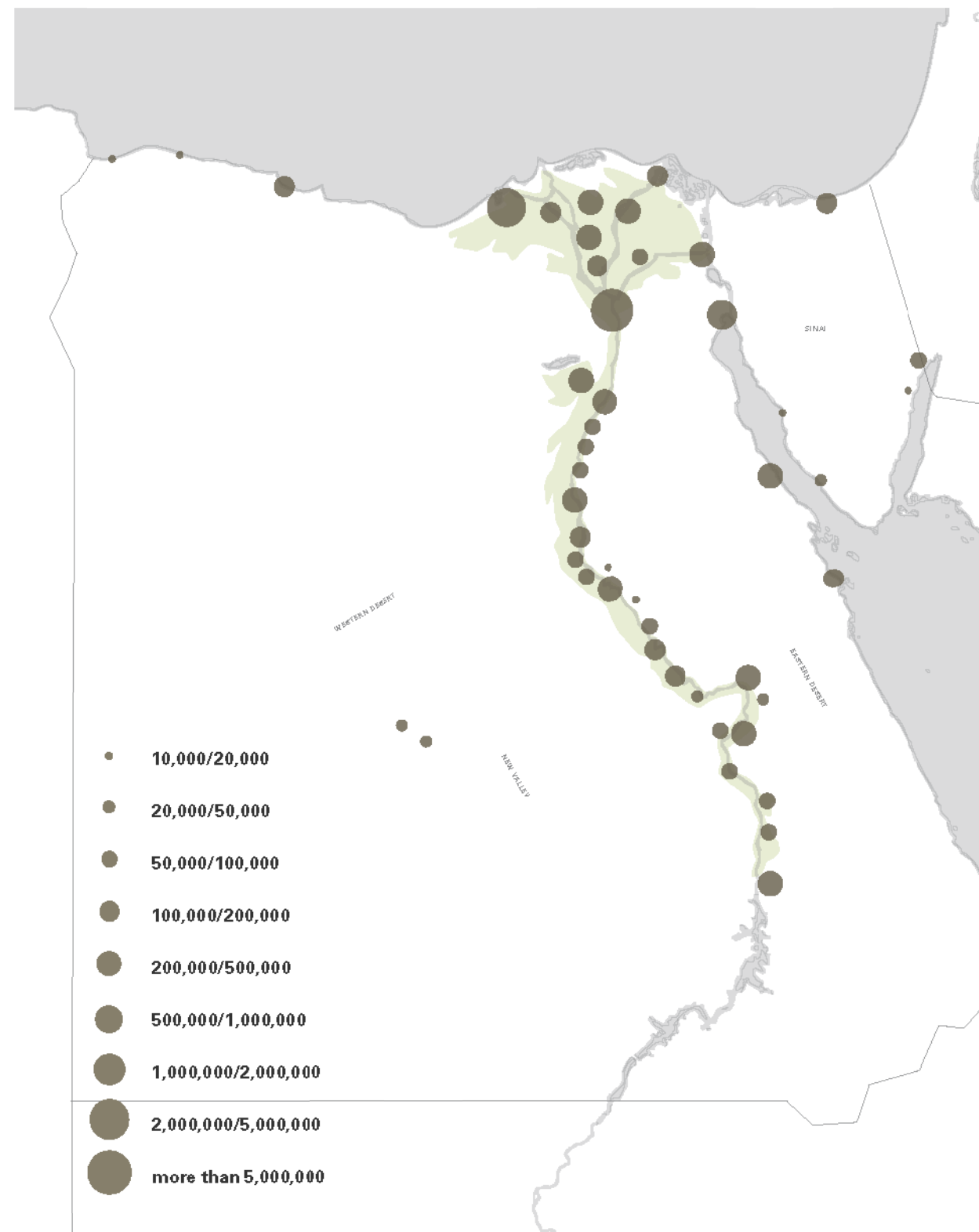
A NILE VALLEY CITY



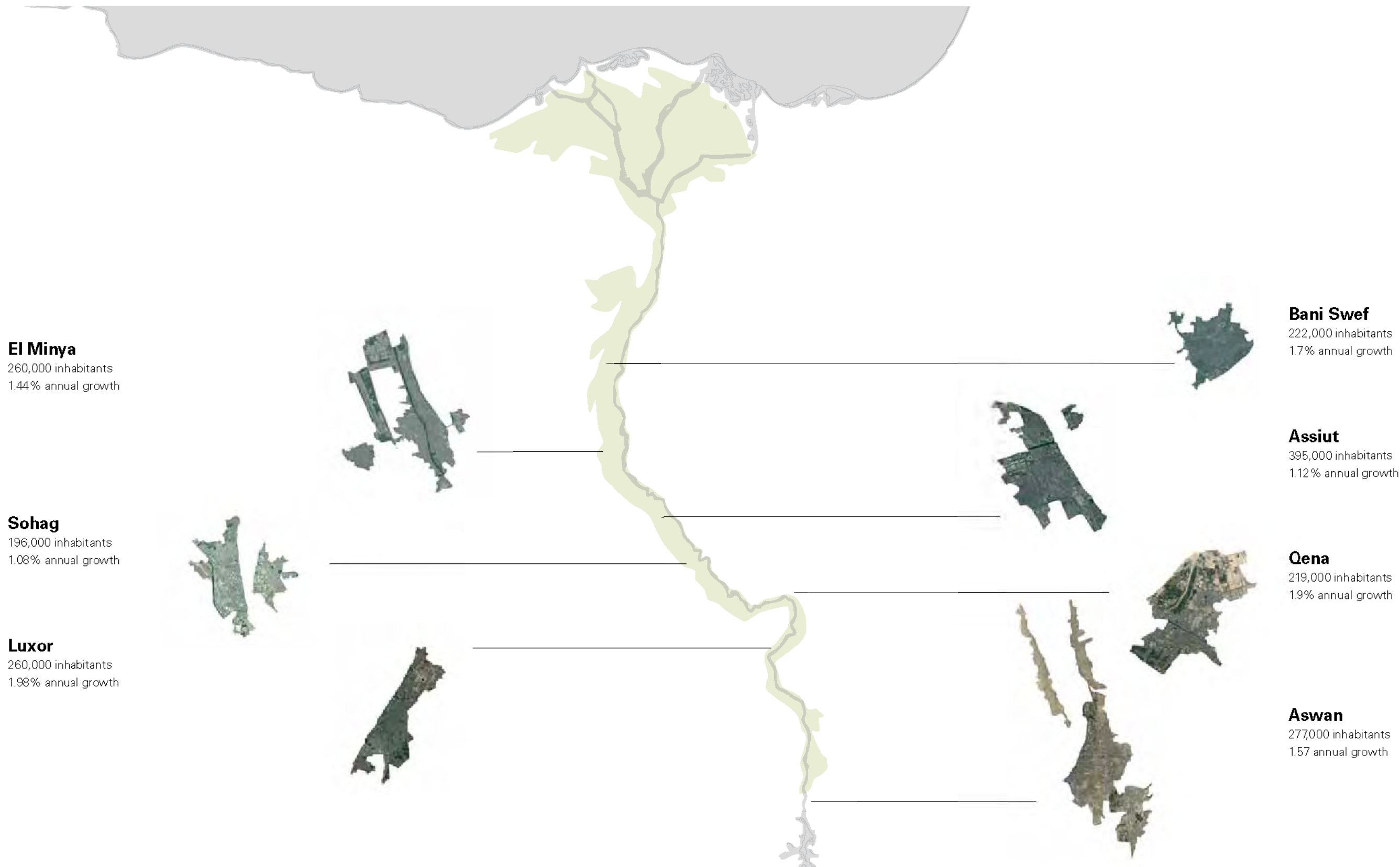
Assiut
 11.2 sq km
 395,000 inhabitants
 35,200 inhabitants/sq km
 1.12% annual growth



Basel
 22.75 sq km
 165,529 inhabitants
 7,321 inhabitants/sq km
 -0.67% annual growth



Cities of Egypt



El Minya
260,000 inhabitants
1.44% annual growth

Sohag
196,000 inhabitants
1.08% annual growth

Luxor
260,000 inhabitants
1.98% annual growth

Bani Swef
222,000 inhabitants
1.7% annual growth

Assiut
395,000 inhabitants
1.12% annual growth

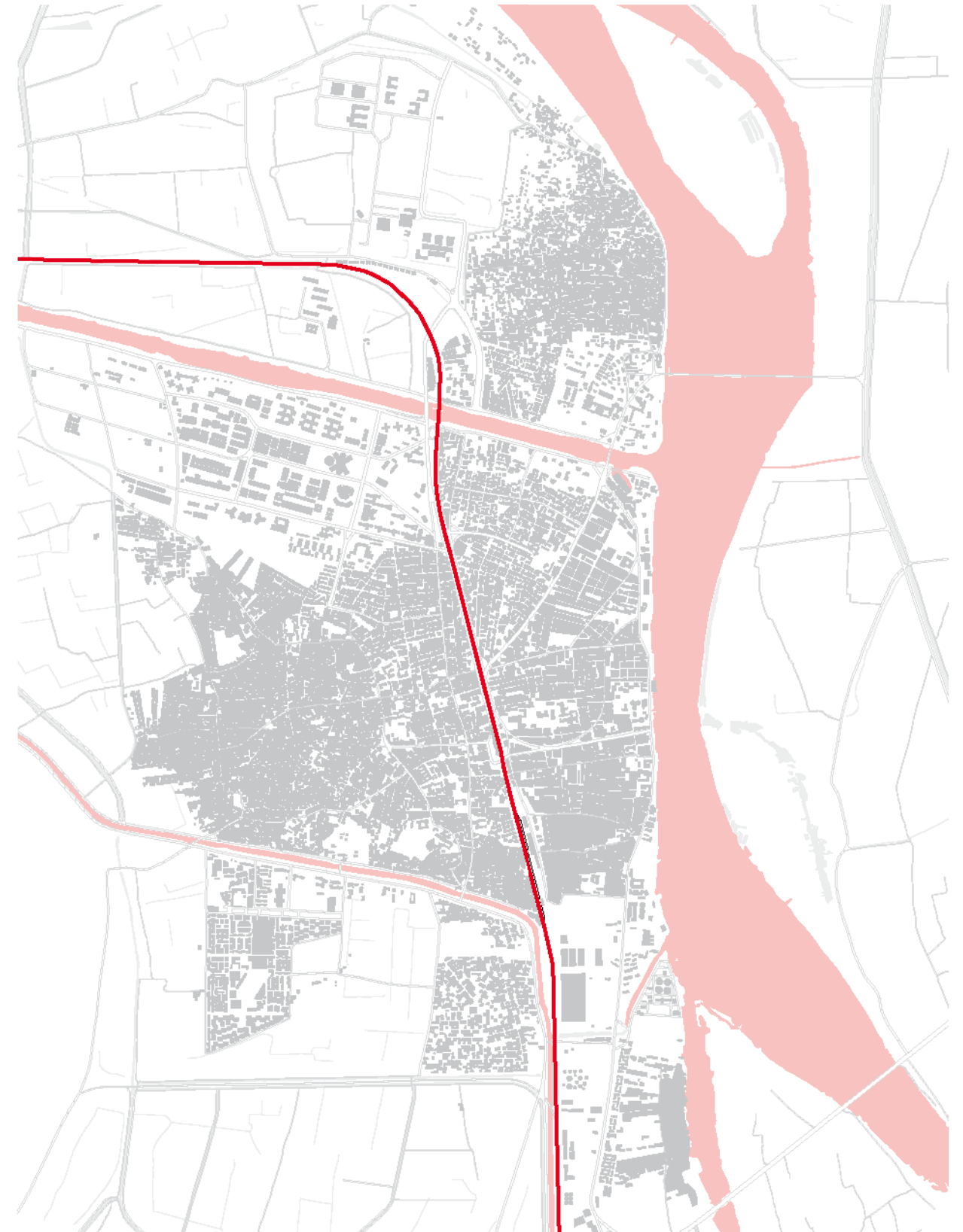
Qena
219,000 inhabitants
1.9% annual growth

Aswan
277,000 inhabitants
1.57% annual growth



Confining Elements

Assiut's bounds are determined by strongly confining elements: natural obstructions such as the river and the hills, and artificial constructions such as canals and the railway.





Districts

There are 13 distinct districts in Assiut. With narrow streets and open markets, the Old City represents features of traditional Islamic architecture and planning. Downtown holds a fundamental role in all matters related to city mobility and economy; it is a central area which contains all commercial, transportation, and entertainment-related activities. Qulta exemplifies the modern phenomenon of luxury villa housing degrading into densely populated low-income housing. Mohafza is considered the most developed area in the city, containing many governorate buildings. Firial represents a modernized Assiut with concrete building, modular streets, and low population density. Mubarak is a relatively new district, created in 1973 with support from the Egyptian Housing and Construction Bank. Lastly, Hamra is characterized by low-income and informal housing.





1



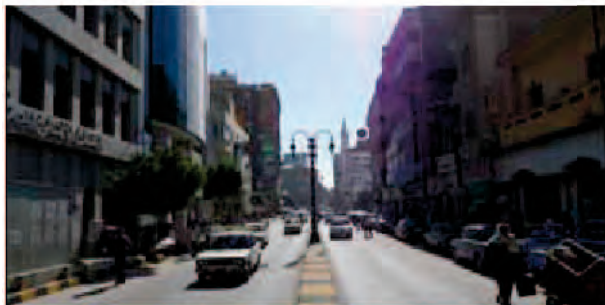
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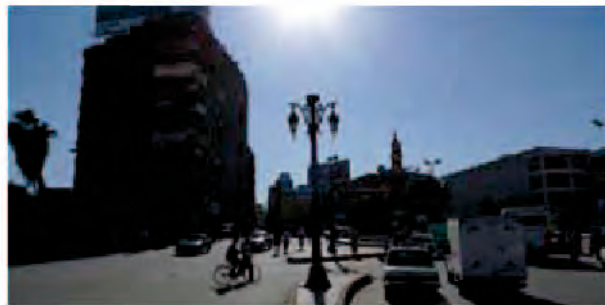
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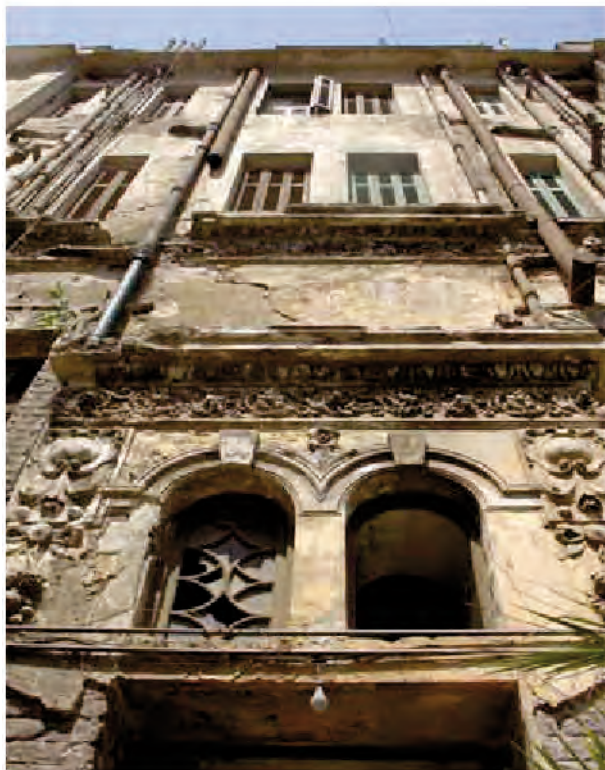
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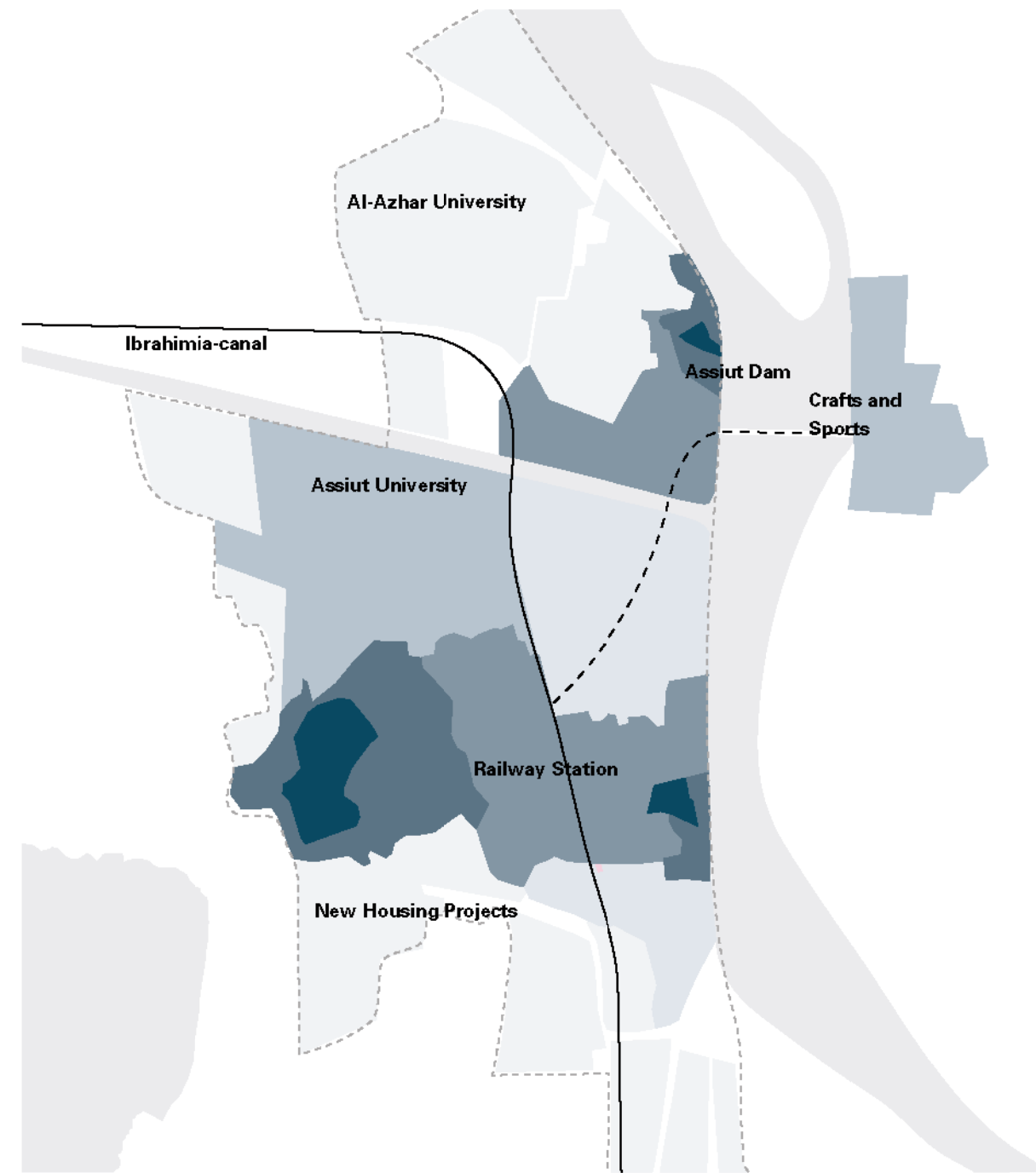
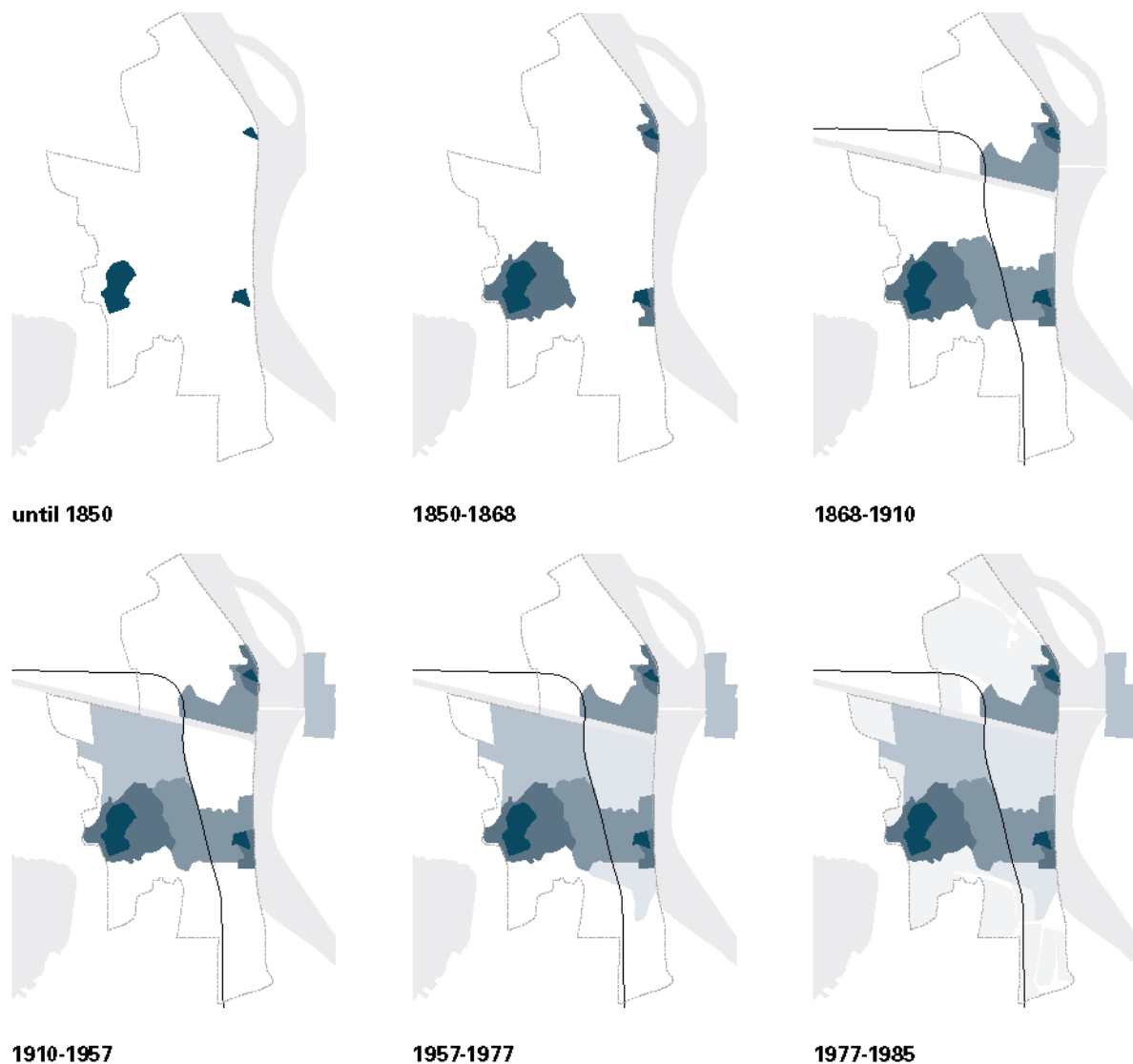


Section through the City



Forgotten Heritage

Historical city fabric is not easily recognizable in Assiut. The city seems to be more concerned with matters of everyday life rather than its history. Nevertheless, there is an uprising effort to renovate historical buildings such as Wikalas` (a common inner courtyard house type) for touristic reasons. The city has demarcated 122 buildings as historical, most of which are large solitary villas of a distinctive colonial style. A building law prohibits the destruction of buildings older than one hundred years. Consequently, some private colonial buildings remain, however, they are left unkept.



- earlier
- until 1868
- 1868-1910
- 1910-1957
- 1957-1977
- 1977-1985

Historical Development of Assiut

The foundation of Assiut goes back to pharaonic times. An important destination for travelers, traders and camel caravans, Assiut held Egypt's largest slave market until 1850. Until 1868, Assiut was a small town as well as two villages (El Hamra and El Walidiya) near the Nile. Between 1868 and 1910, the city underwent a remarkable expansion, especially toward the east the north. In this period, the Ibrahimia Canal (1873), the Assiut Dam (1901), and the railway were built. Between 1910 and 1957, the city expanded in the northwest and south direction, on both sides of the railway. Assiut University was founded in 1957. Between 1957 and 1977, city development clustered around the University area. Also, craft enterprises and recreation space were established on the right bank near Assiut Dam. Between 1977 and 1985, additional expansion occurred on northern and southern agricultural land. Al-Azhar University was founded on the right side of the Ibrahimia-canal in 1975. In the south, two new housing districts were established in 1985. In the same year, a building law was passed to forbid construction on agricultural land, stipulating that Assiut should expand vertically rather than horizontally.

SEGREGATED PUBLIC LIFE

Public life in Assiut is defined through a conglomerate of social, political and religious aspects and rules. A fundamentalist background consequently results in a highly but unequally controlled cityscape. Islamic thinking strongly influences society and structures daily life. These aspects together with distinct social classes results in a segregated public life.



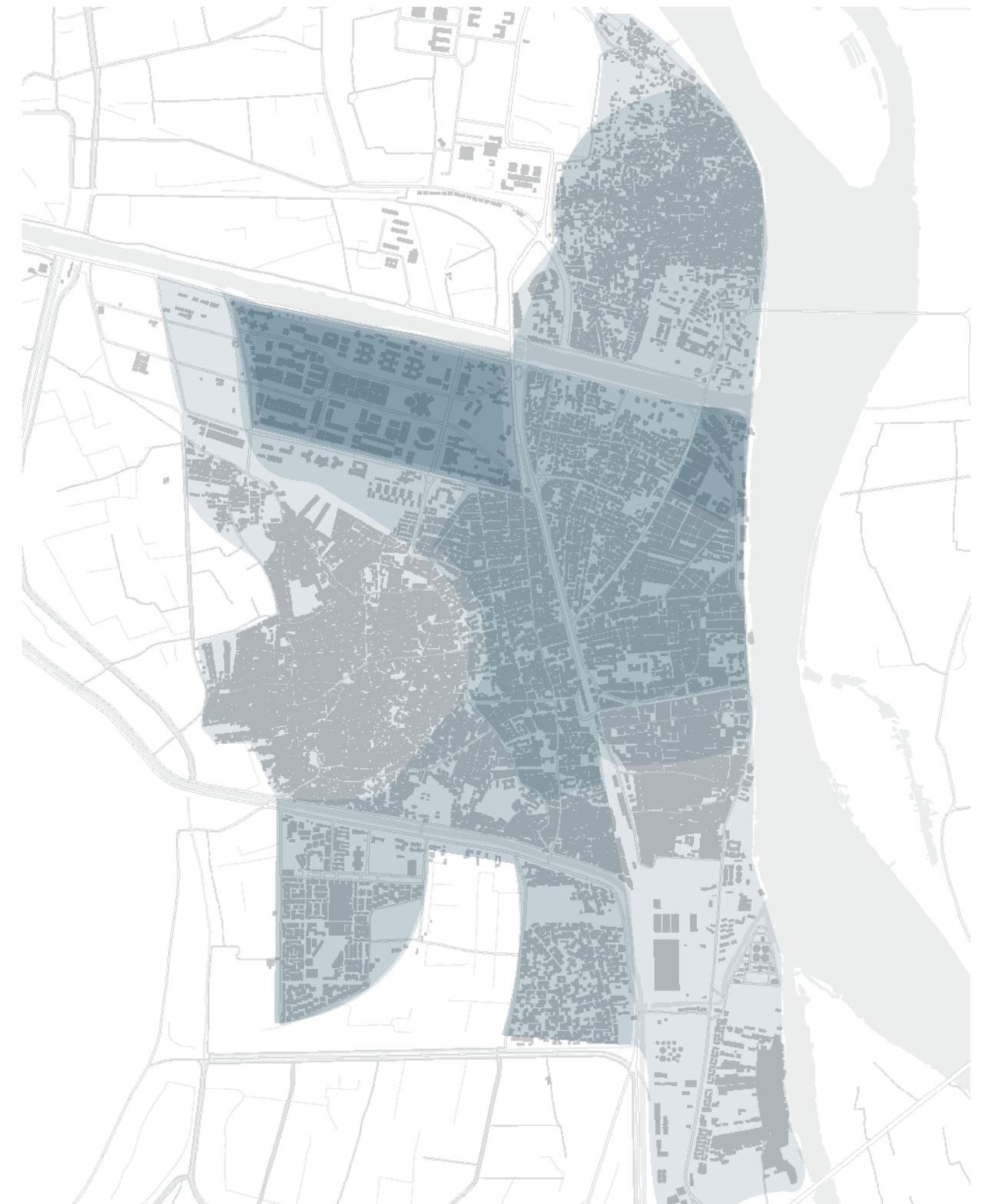


Small observation stations, camouflaged into the immediate background, are placed in strategic crossings for police to have an overview of city happenings.

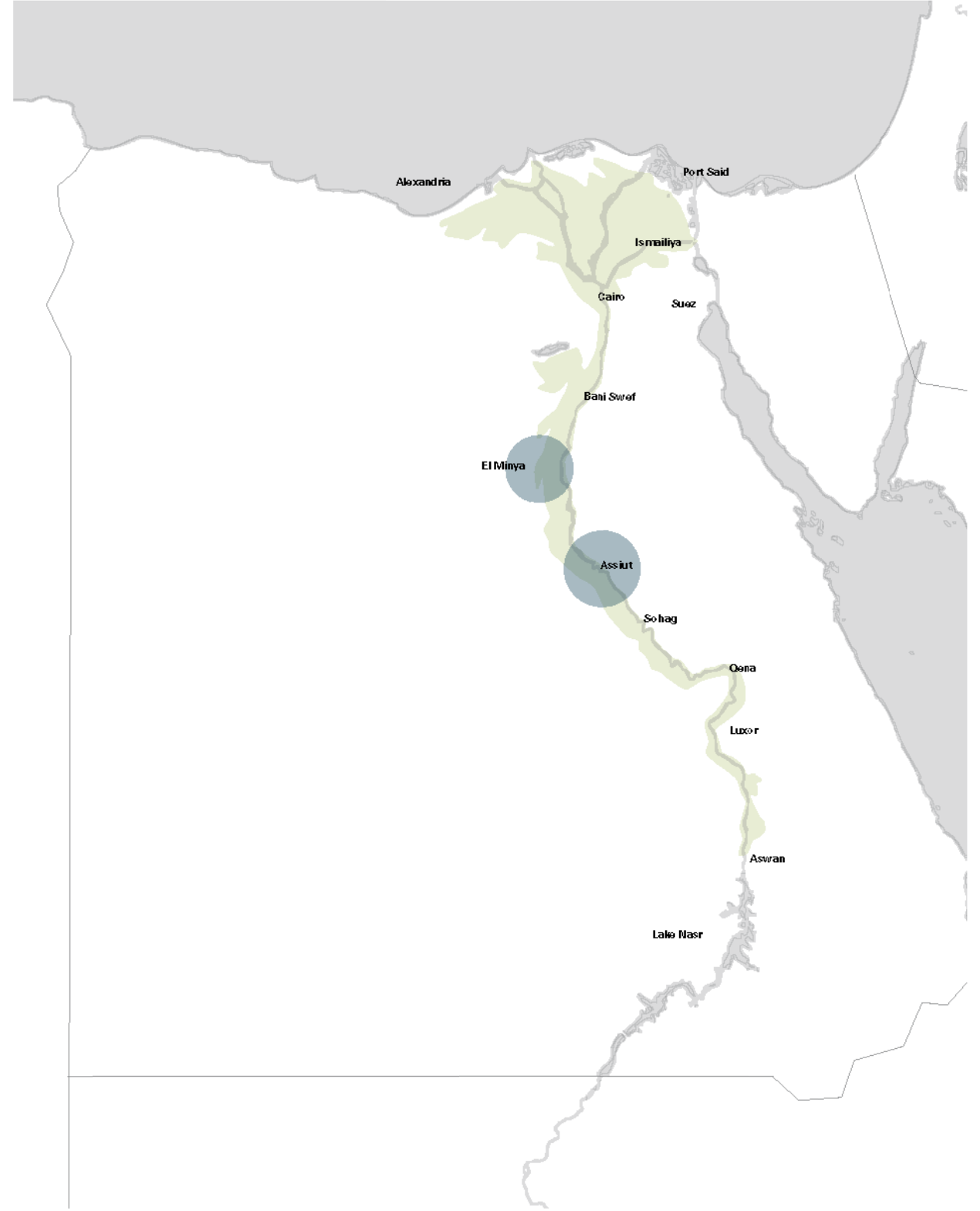
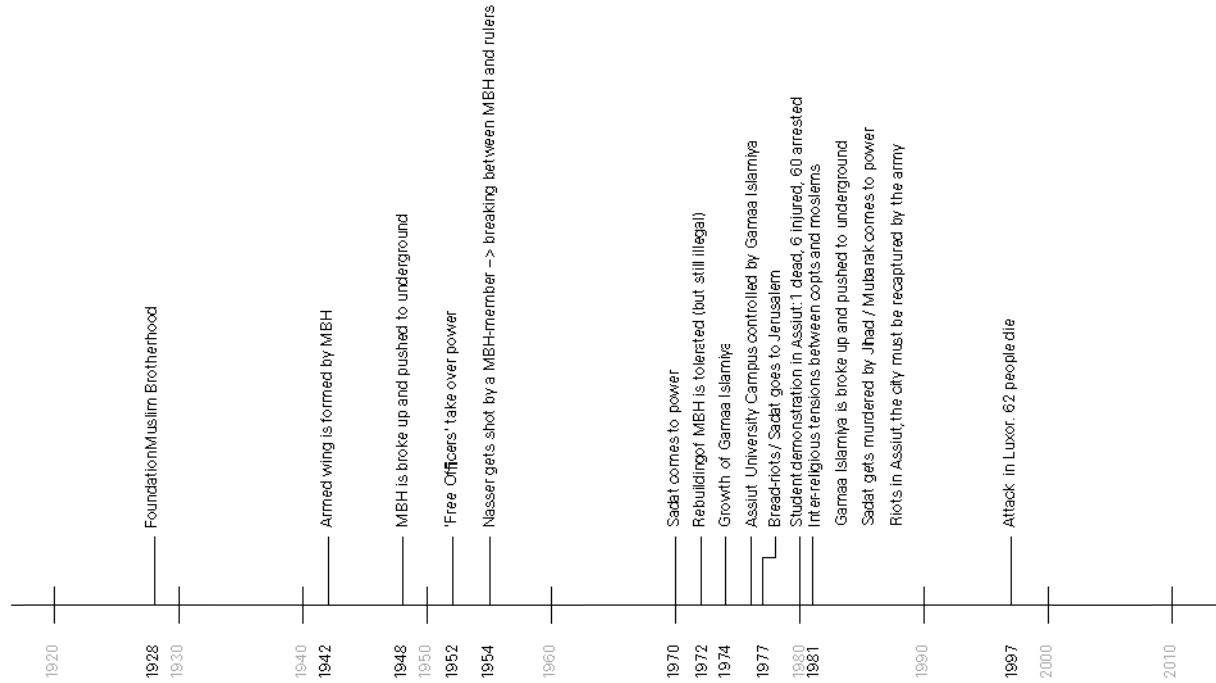
Most uniformed police officers are heavily armed. Tourists and other foreign groups must be constantly escorted by at least six officers in Chevrolet pickups.

City Under Surveillance

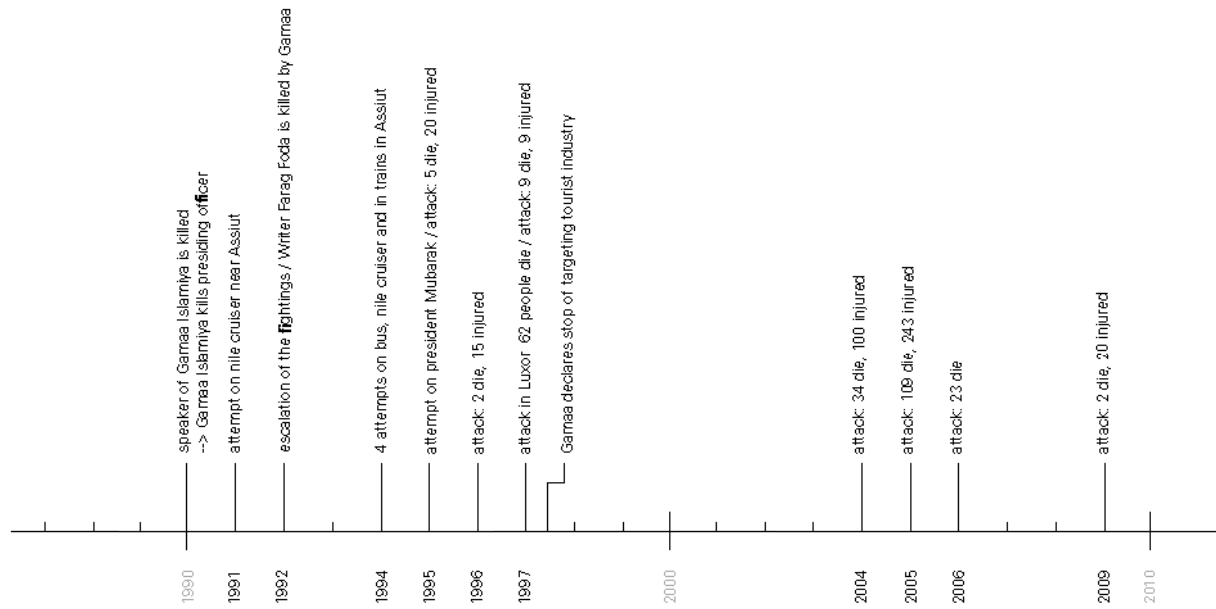
In the nineties, an increase in fundamentalist attacks in Egypt was ascertainable. Besides El Minya, Assiut is considered a fundamentalist hotspot. President Mubarak's policies attempt to mute the situation via a strategy of repression, however, attacks victimizing tourists still occur. All of Assiut is controlled by police through a surveillance system integrated into the city. However, different intensities of control can be found throughout the city. The poorer Old Town district seems to be of less interest.



Intensities of Control



Fundamentalism in the Last Century



Fundamentalism in the Past Two Decades

Fundamentalist Hotspots



Islam

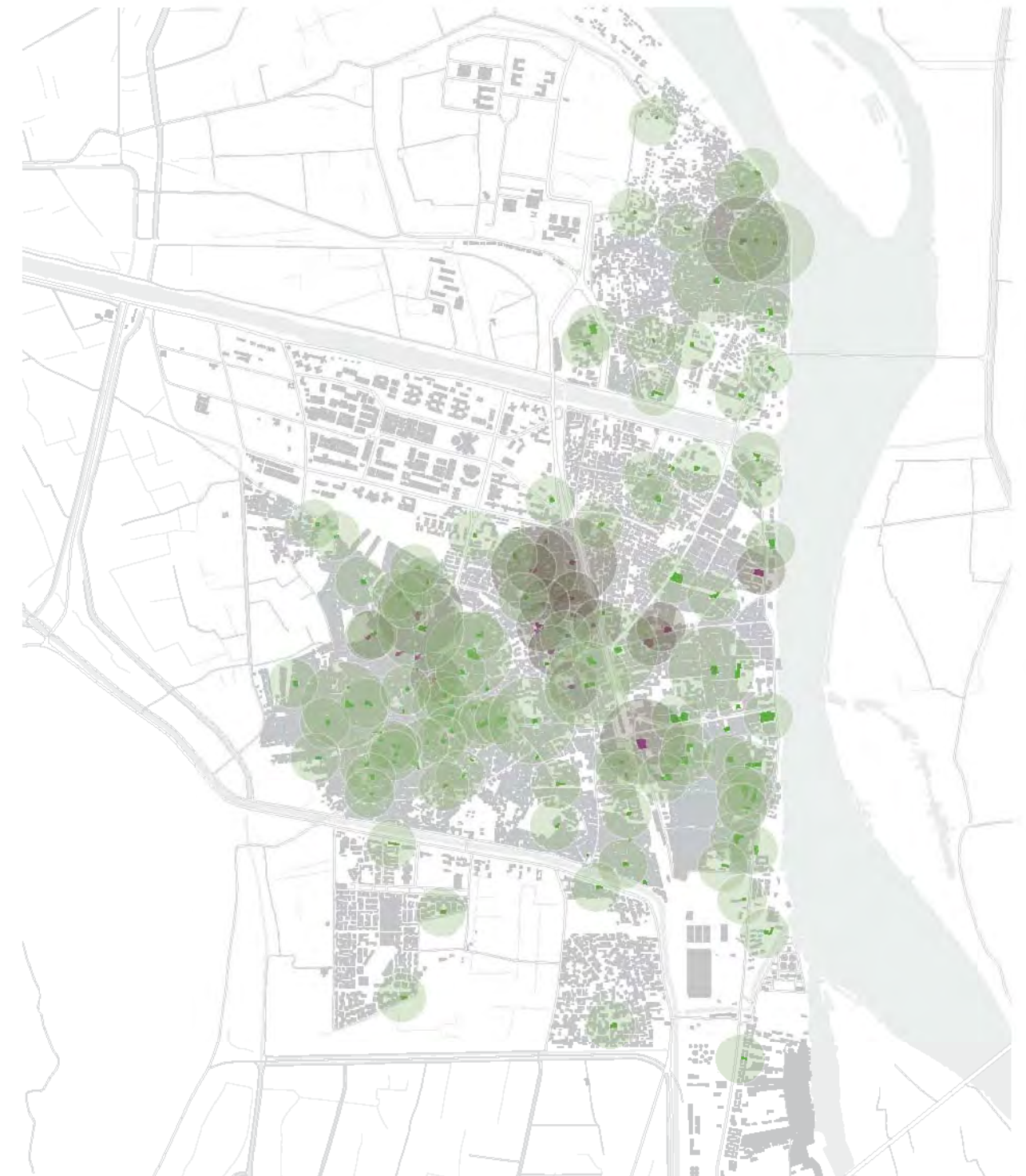
Assiut: Muslims 82%
 Egypt: 64,000,000 Muslims
 Muslim members of Parliament: 443

Christianity

Assiut: Coptic Christians 18%
 Egypt: 10,000,000 Coptic Christians
 Coptic members of Parliament: 1

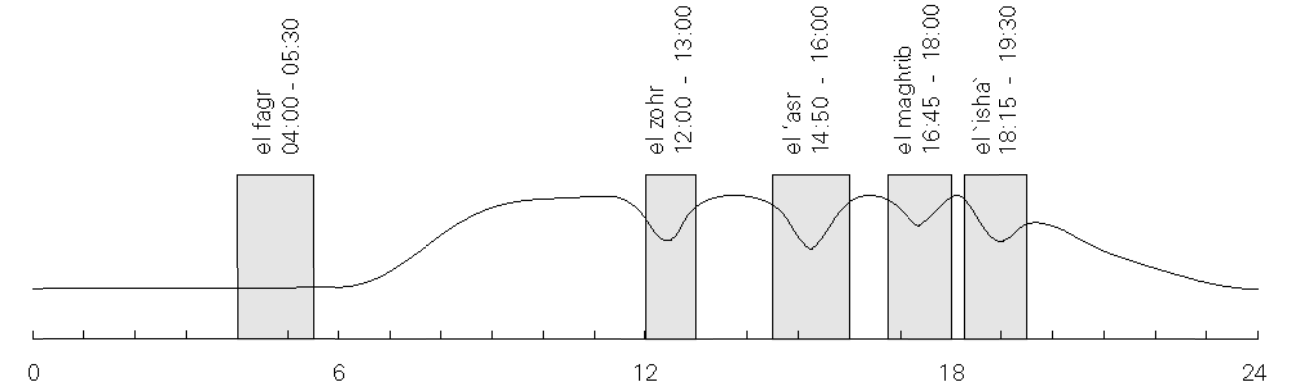
Religion Structuring Space and Time

The state religion of Egypt is Islam of Sunni character. Assiut's religious population mainly consists of Muslims and Coptic Christians, with an insignificant percentage of other religious communities. Assiut has one of the highest percentages of Coptics in Egypt. Religion strongly orders and influences public life in Assiut. Mosques and churches are quite mixed in location; there is no specific Coptic district. However, Muslims and Christians generally associate with people sharing their respective religion. Churches have a bounded front yard where public life takes place in a more exclusive setting. For Muslims, daily life is structured by religion into five prayer times throughout the day.



mosques
 churches

Religious Integration



1



2



3



4



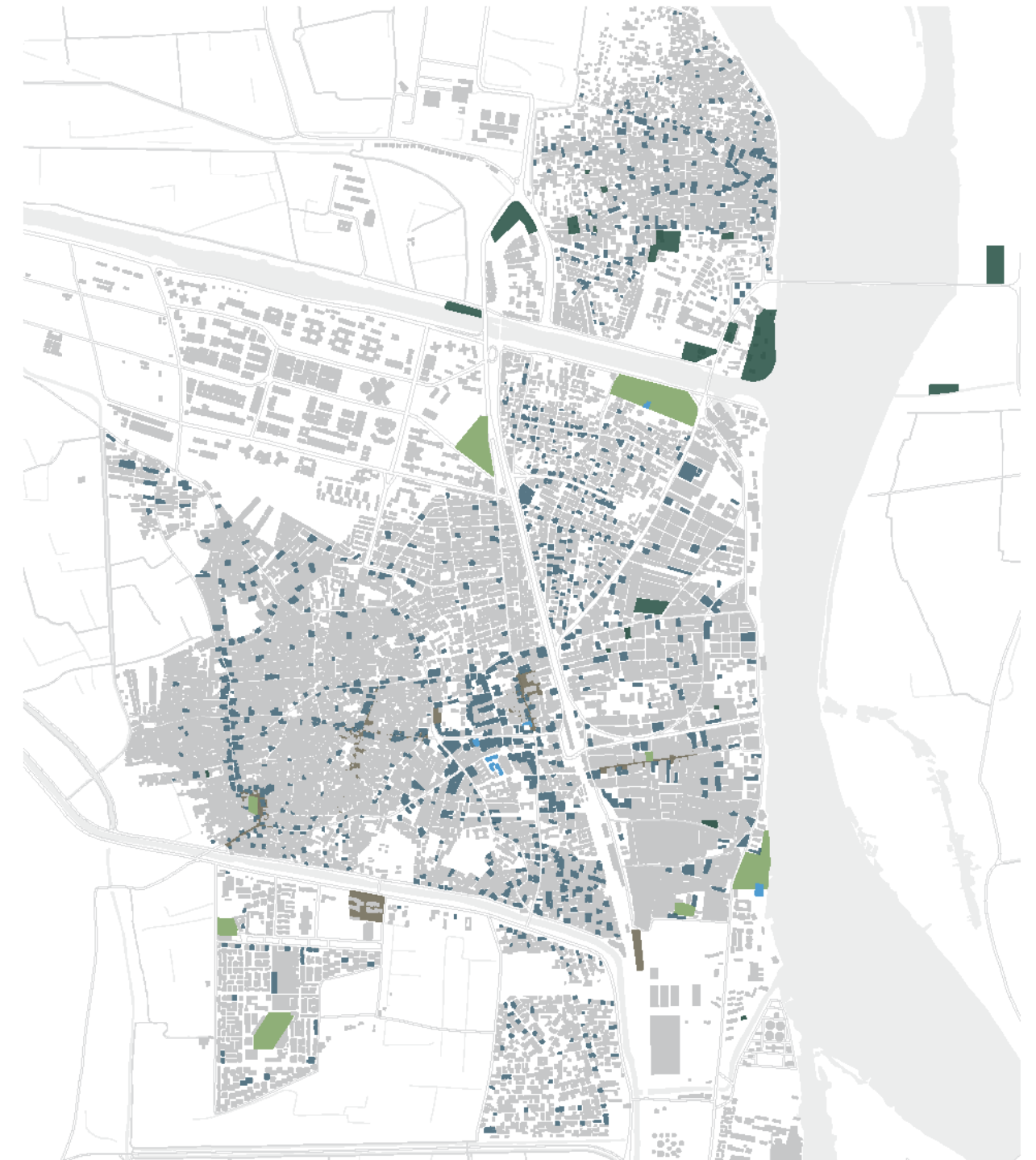
5

- 1. Coptic church interior
- 2. Mosque interior
- 3. Mosque spire
- 4. Assiutel, the only venue where alcohol is served
- 5. City activity measured in relation to prayer times



Structuring Everyday Life

The presence of Islamic religion in the city is unmistakable. Mosques broadcast prayers over public speakers all over the city. Taxis, buses and minibuses as well as in shops also play religious recordings during prayertime. The presence of religion is highly visible in the city fabric, as seen in the prevalence of mosques and churches. Coptic churches also have their own visible, yet introverted spaces for contemplation. Religion also relegates vices such as alcohol to "tourist" areas, such as the Assiutel.



Segregated Spaces

City life has the tendency to segregate into different social communities. Daily life in the Old Town occurs mostly in the streets, under simple and sometimes impoverished circumstances. Coffee shops and tea houses are populated by an exclusively male social group, while women are more often found at the markets. Higher end establishments such as clubs are specially adjusted to specific user groups.

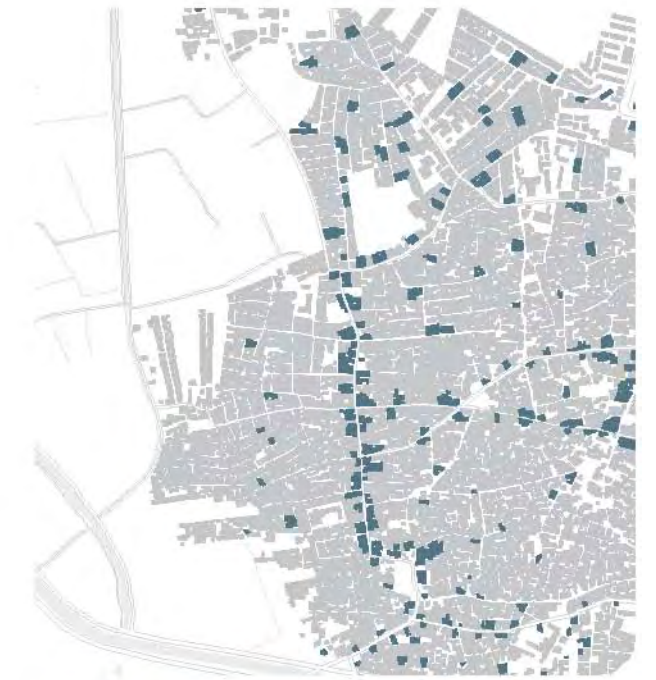
- Coffee shops
- Clubs
- Culture
- Green area
- Markets



Neighborhood Life

The Old Town features a congenial light-heartedness. People live amongst themselves and daily life happens in the streets. One barely finds people from other districts of the city. The district itself is characterized by rural activities.





Coffee and Shisha

Many coffee shops and shisha bars are spread around in the city, especially in the Old Town. Having coffee and smoking shisha is a male-dominated recreational activity.





Shopping and the Market

From daytime until late evening there are many non-food markets in the streets. More attended by female customers, while the sellers are mainly men, the market seems to hold unspoken rules for women moving in public. Often, they are accompanied by other women or family.





Communities and Clubs

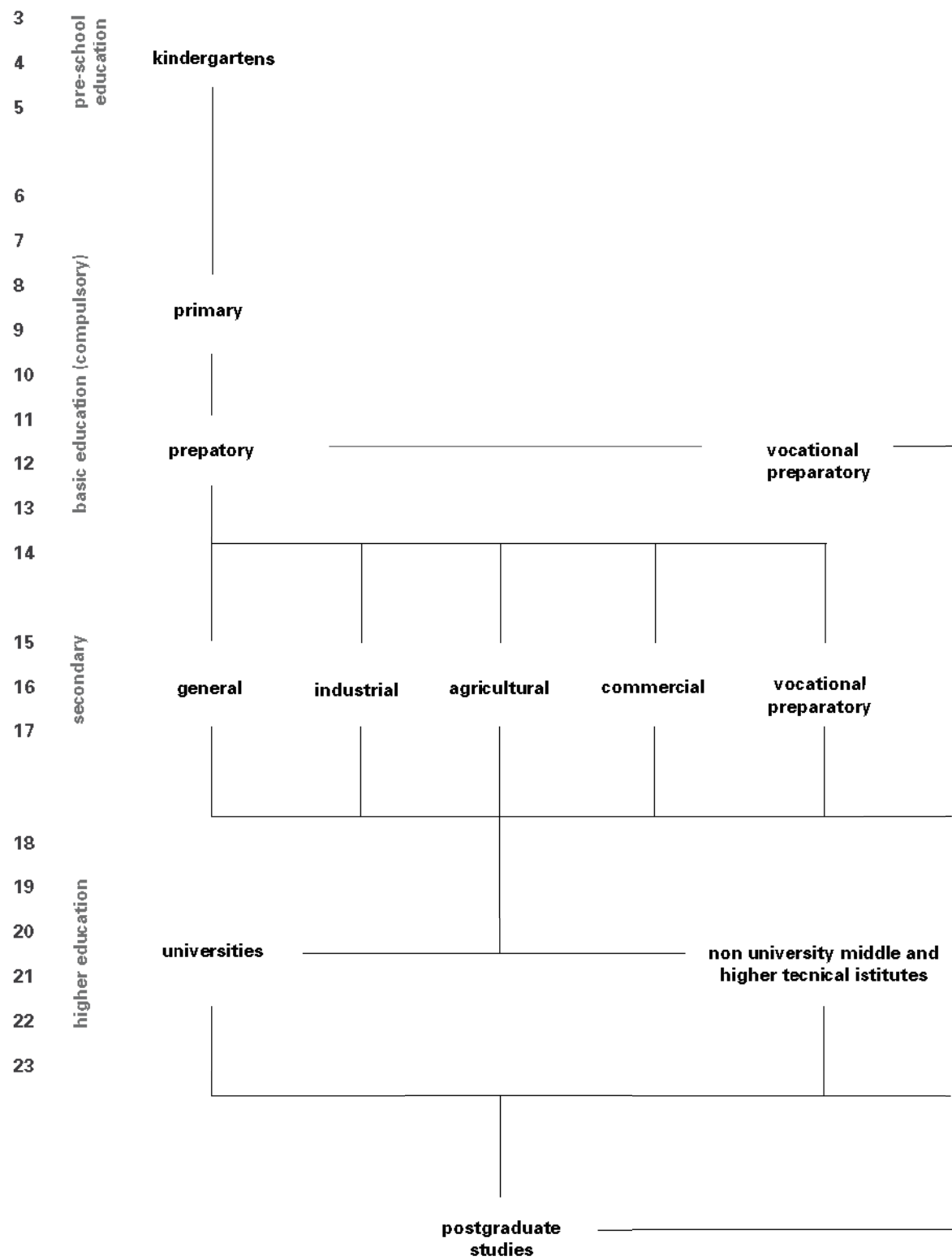
The mid to upper class spend much of their free time in clubs. Almost each occupational group of a certain level has its own club in the city. Enclosed by a fence, these members-only establishments provide everything necessary for recreation within. For instance the engineer's club provides a large clubhouse with green space and access to the Nile. It also holds a private restaurant and a meeting room.



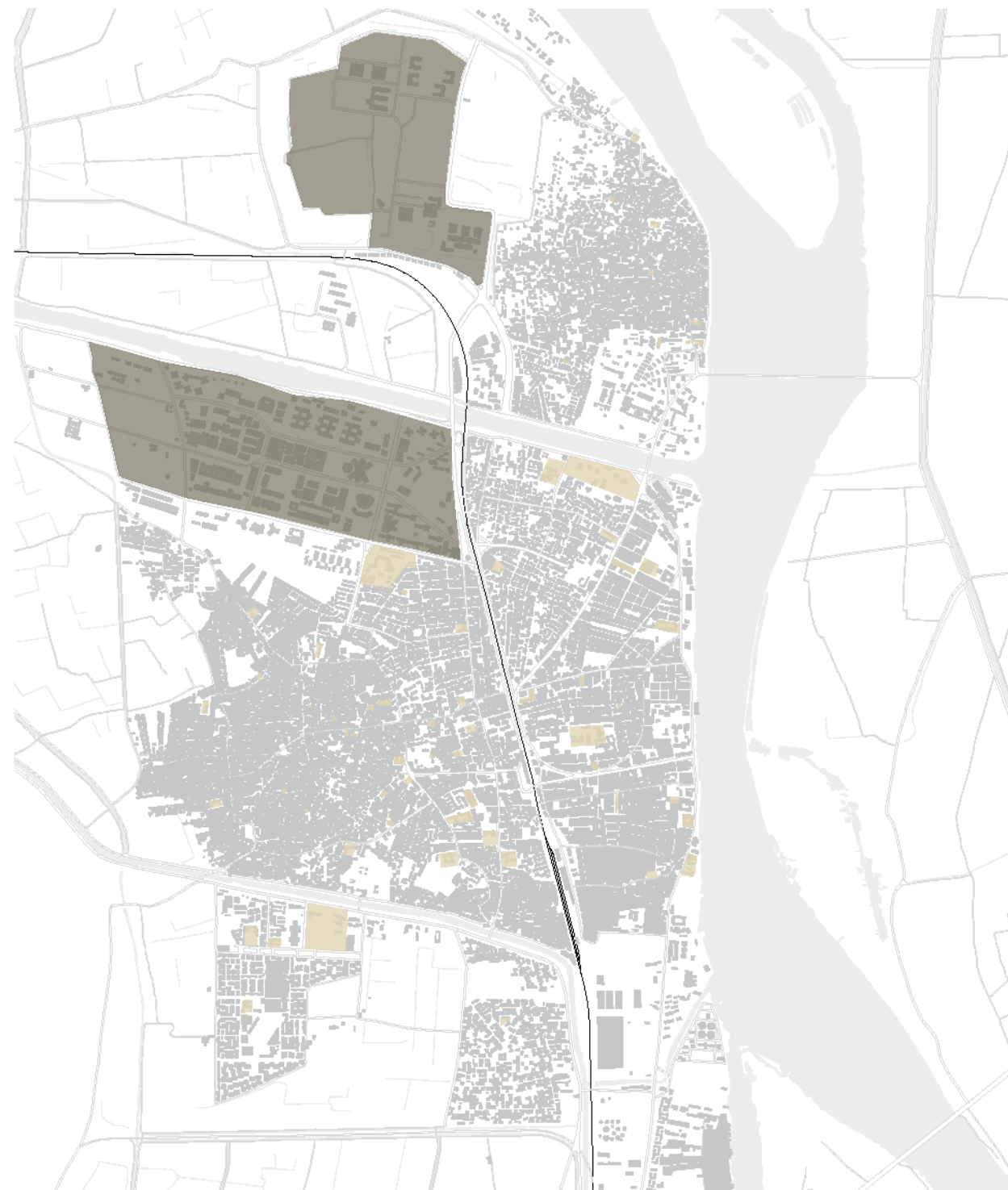
UNIVERSITY: REMINISCENT MODERNITY

Since 1949, when the University was first proposed, a strong, hierarchical community has developed on campus. Serving over 100,000 students and employees, Assiut University offers many services for members of this community; it effectively has developed into a city within the city, with a modern plan of growth, a distinct architectural style, and self-sufficiency in its internal resources.





Educational Structure



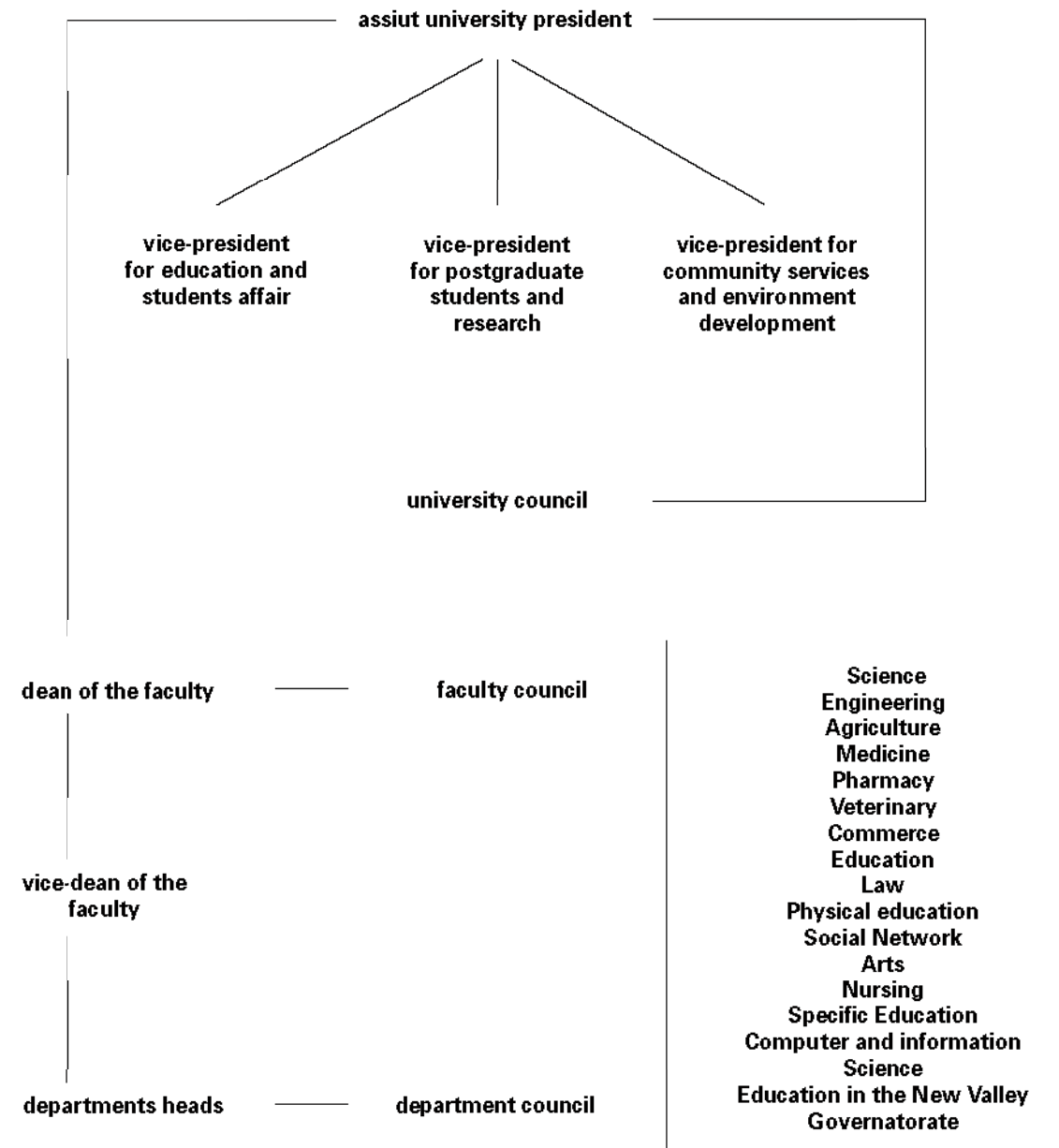
- University
- School

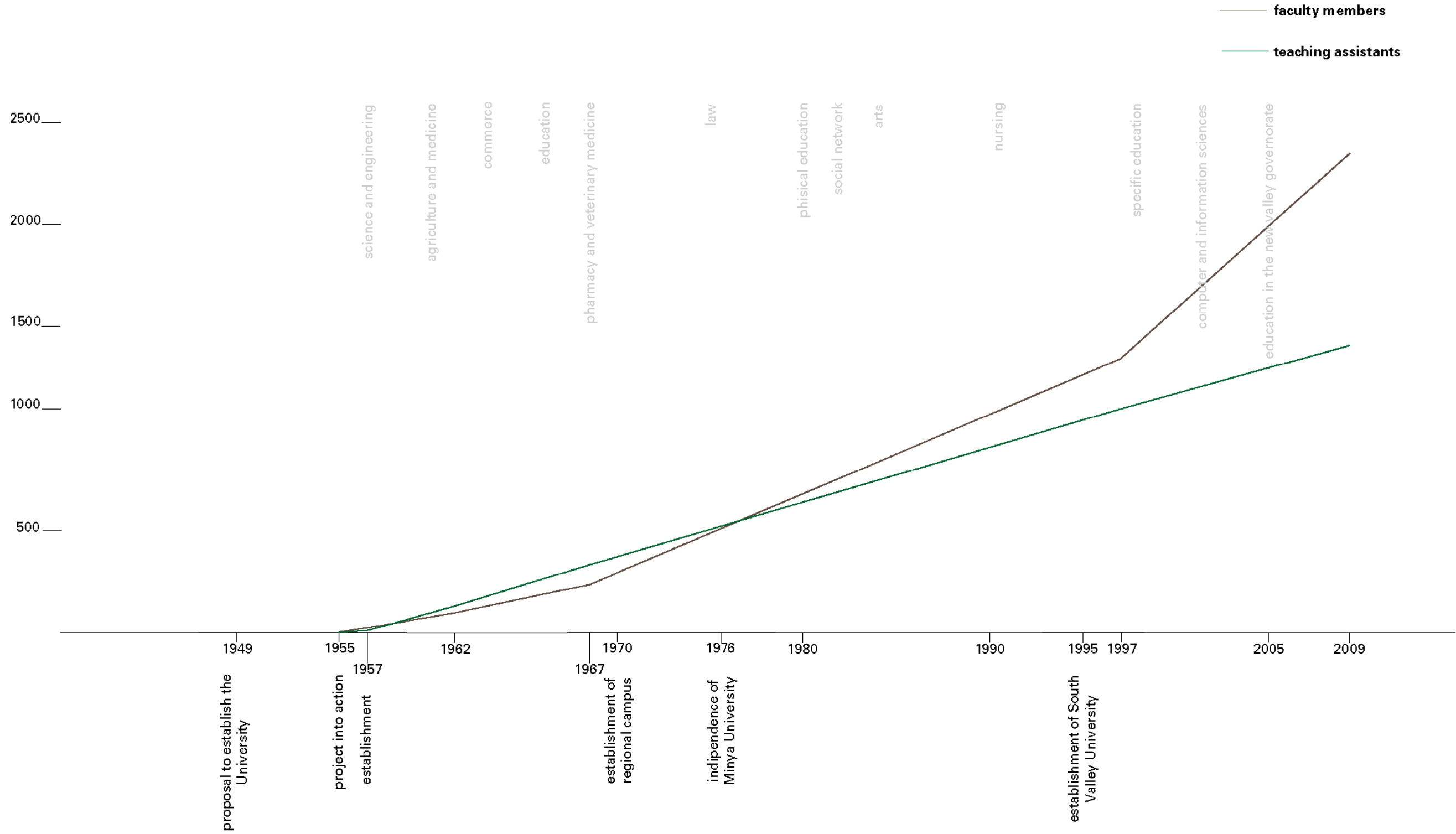
Over-Proportioned Campus



Hierarchical Structure

The university's structure is headed by a council led by the president along with three vice-presidents. Assiut University is the third largest public university in Egypt with 2,274 faculty members, 1,354 lecture assistants, 11,756 administrative staff, 3,876 service assistants, and 70,000 students





Departmental Development



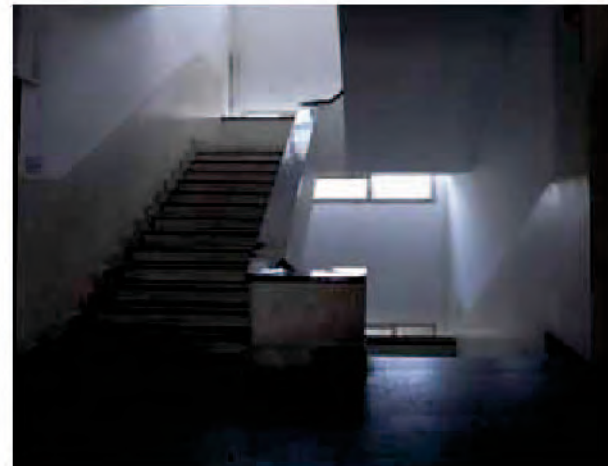
City Within a City



Architectural Grammar

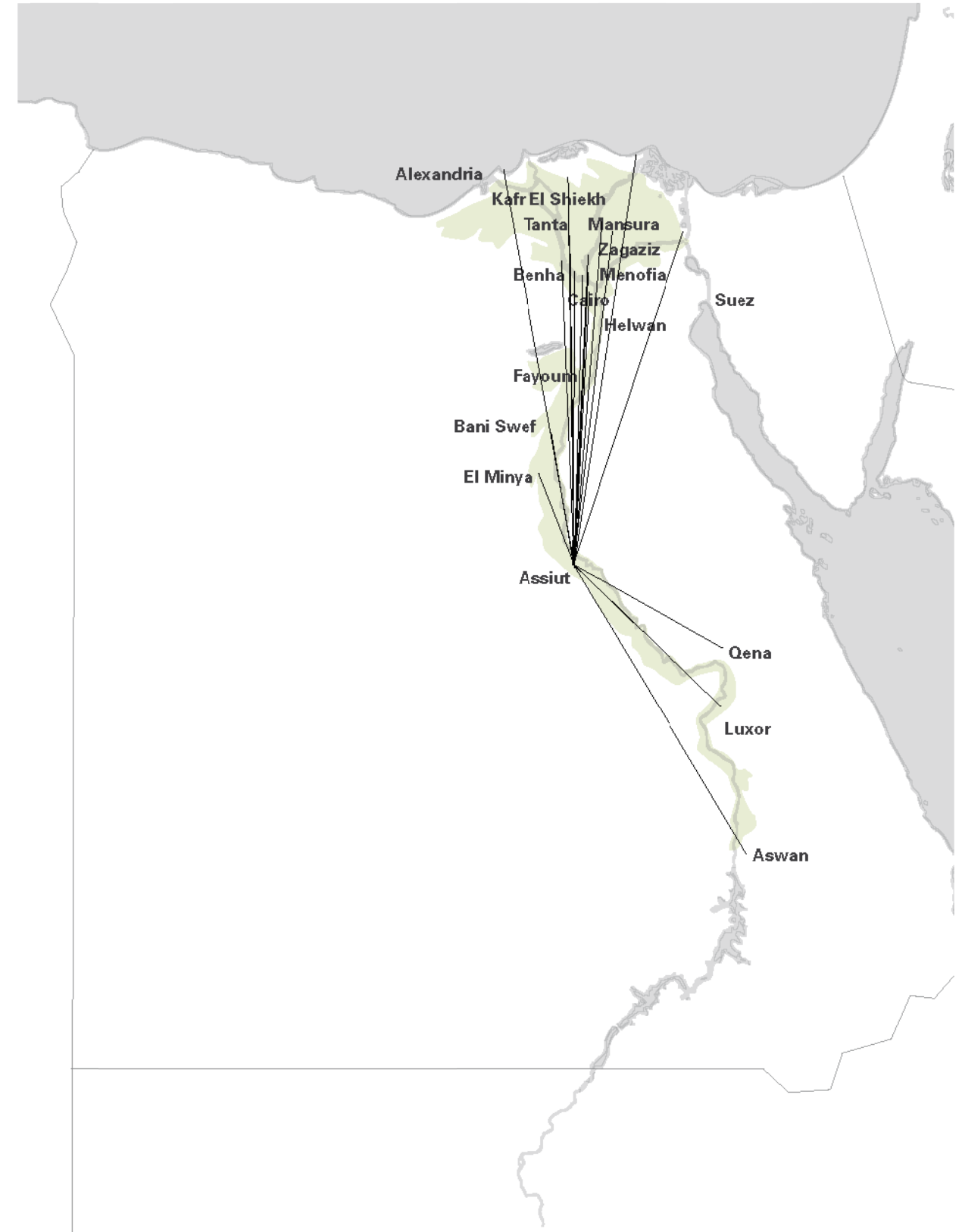
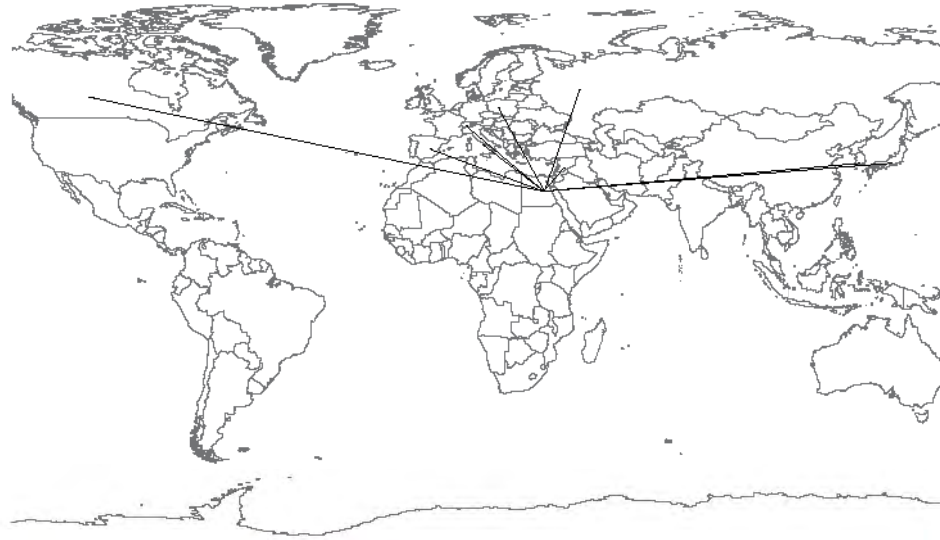
A modernistic urban plan characterizes Assiut University: abundant green spaces and stylistically similar buildings unite the campus into one scheme.





Maintained City

A strong wall divides the university and the city into two worlds; the border is material and abstract. Within, meticulous maintenance results in cleanliness and orderliness on campus, well under the surveillance of campus police.



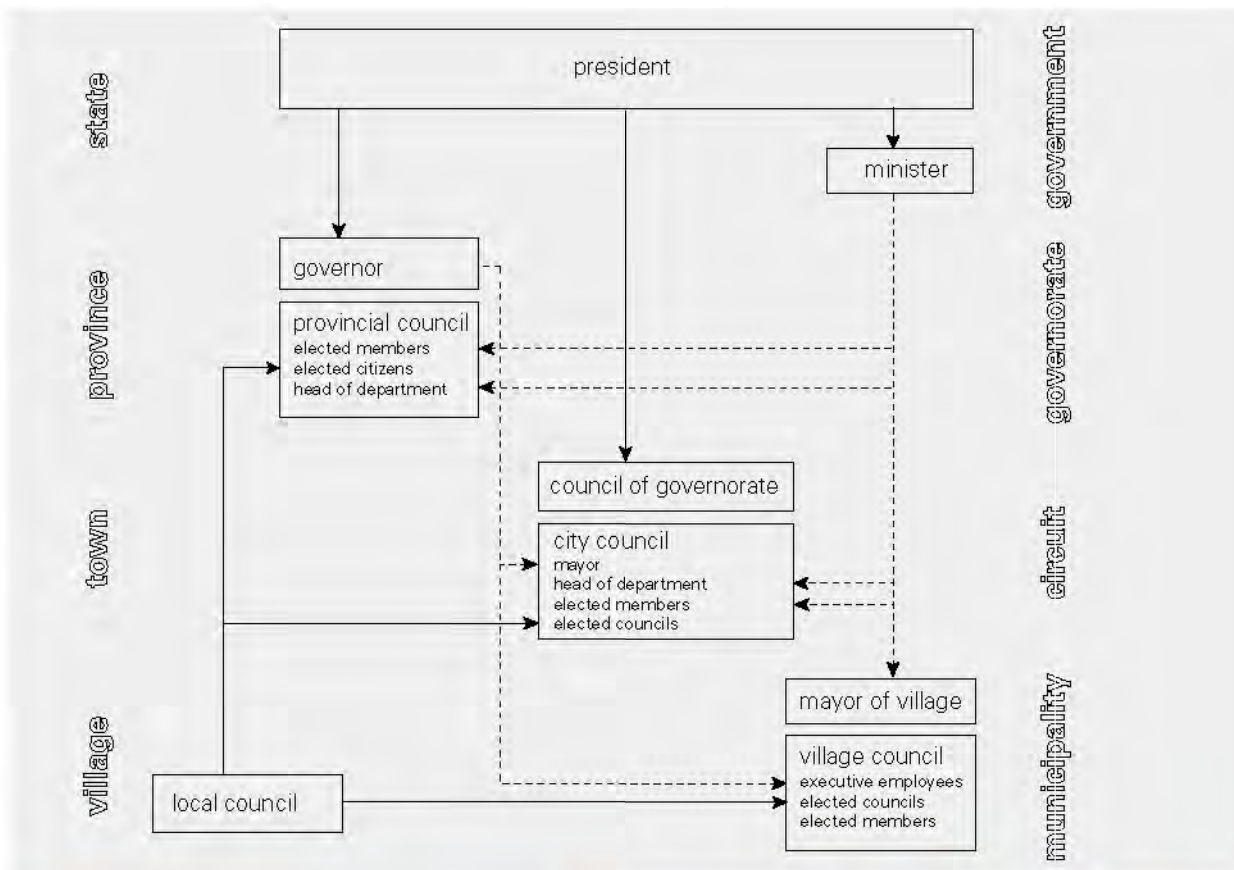
Relations

The university has different connections to the outside. Most are within a national network between private and public universities through the Egyptian Universities Network. The University also is international connected to Canada, Italy, Japan Poland, Russia, Spain, South Korea, Switzerland, and Syria.

SUPPLY CITY

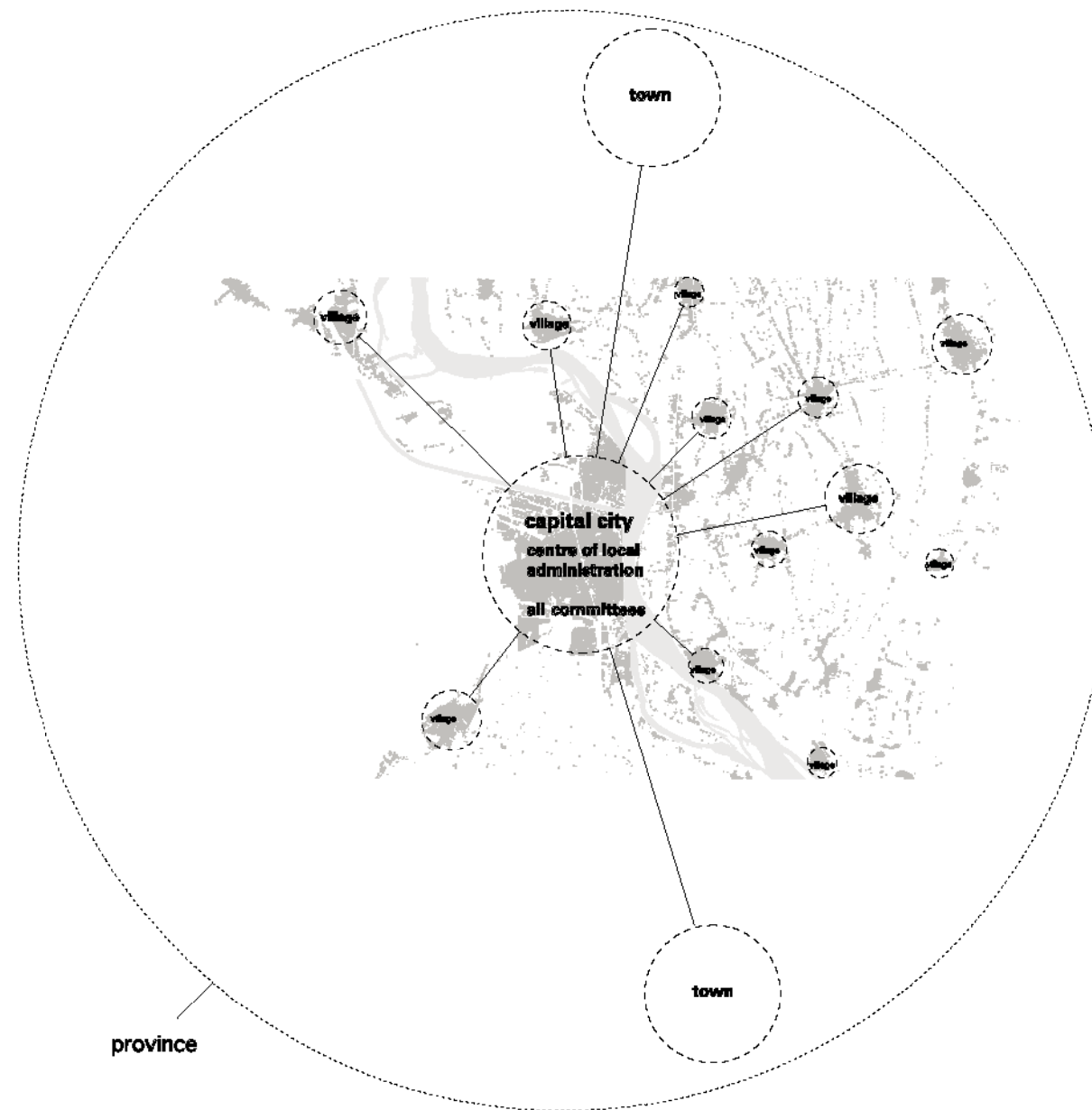
Transportation, politics, industry, agriculture, markets, public services and the University make Assiut a supply city. Its role is important on a regional rather than national scale; the city provides just the services required by the region but without any higher meaning. One can say it works like a functional hub or a supply city, with the exception of the University—the largest in Upper Egypt—acting as a national attractor within the Nile Valley.





Administration

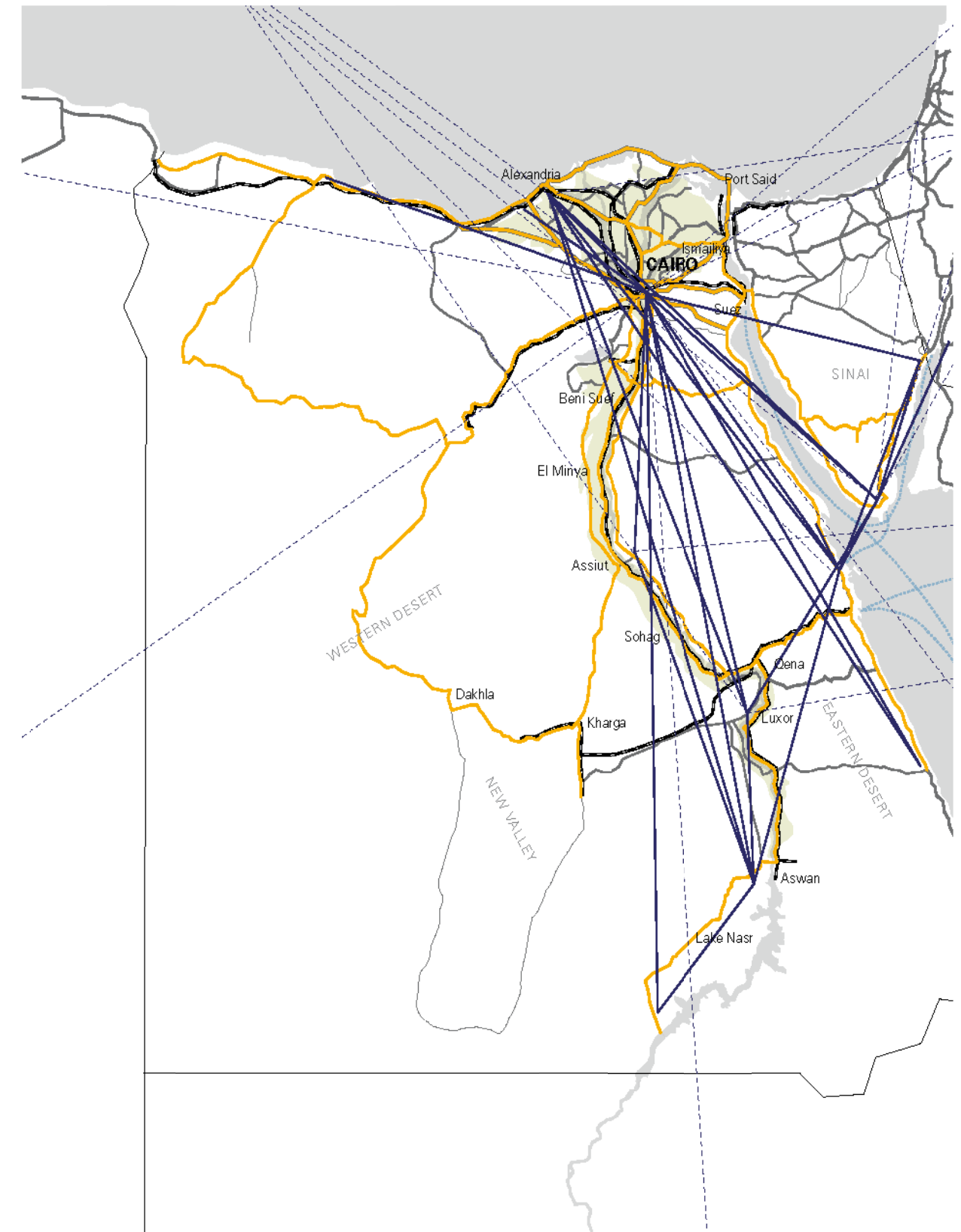
On a political level, Assiut functions on a level of local administration. Egypt's centralized government follows strict hierarchy. As a governorate capital, the city administers local issues, but steers other affairs toward Cairo. In turn, circuit cities, towns, and villages of Assiut governorate are administratively subordinate to the governorate capital.





Nile Valley Hub

In terms of mobility, Assiut acts as an important node in the Nile Valley. In Assiut, a small airport offers a direct connection to Cairo three times a week. Minibus connections provide local connections but the main national form of transportation is the train.





Agriculture and Industry

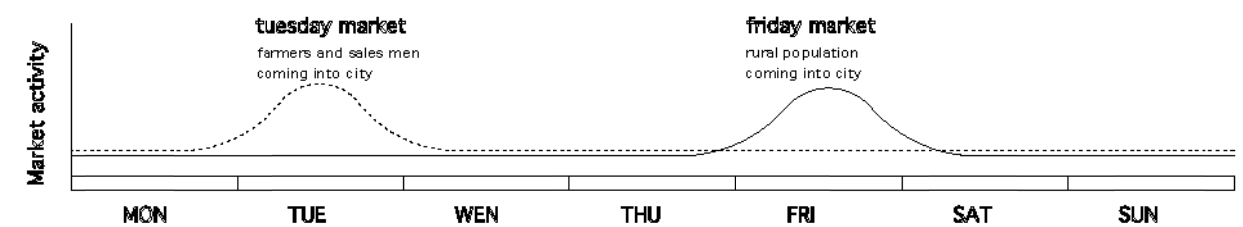
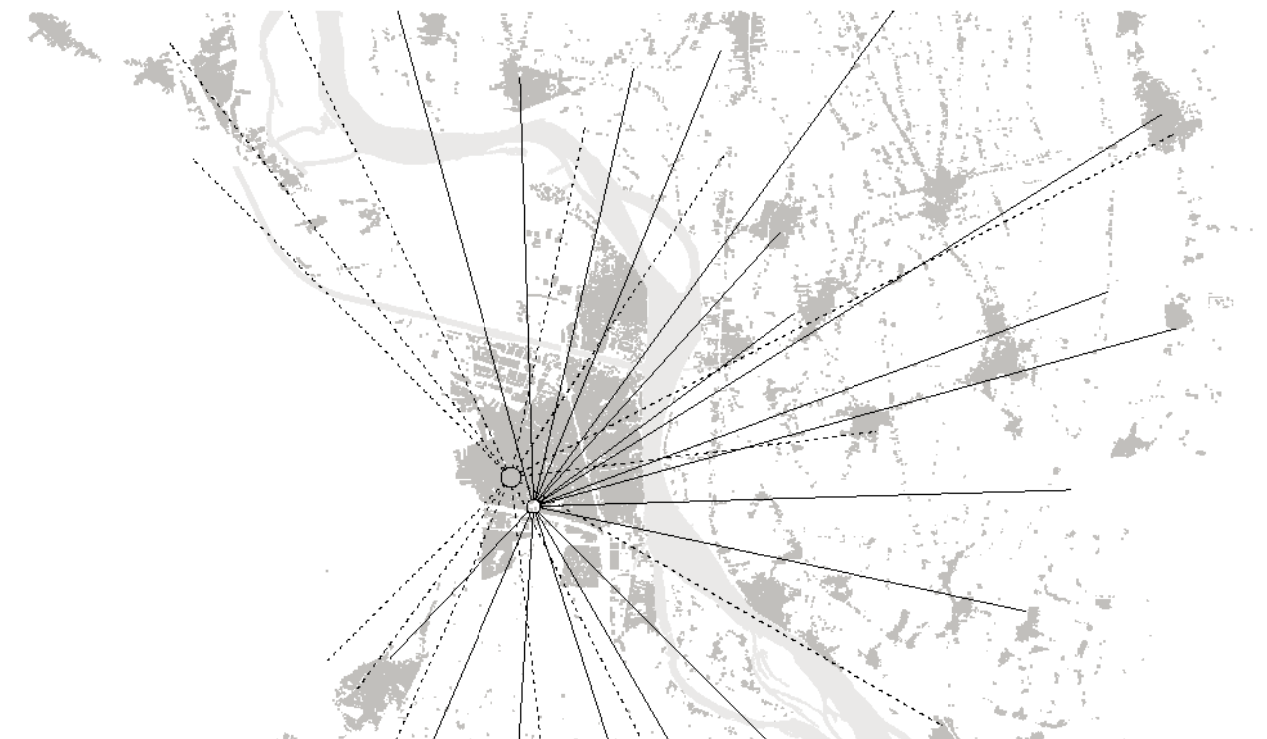
The most important economical sector in Assiut is the service sector with 42.8%, followed by the agricultural sector and the industrial sector. Agriculture is the main income resource for almost 5% of Assiut citizens. Industrial activities in Assiut consist of factories, workshops, and crafts.





Markets

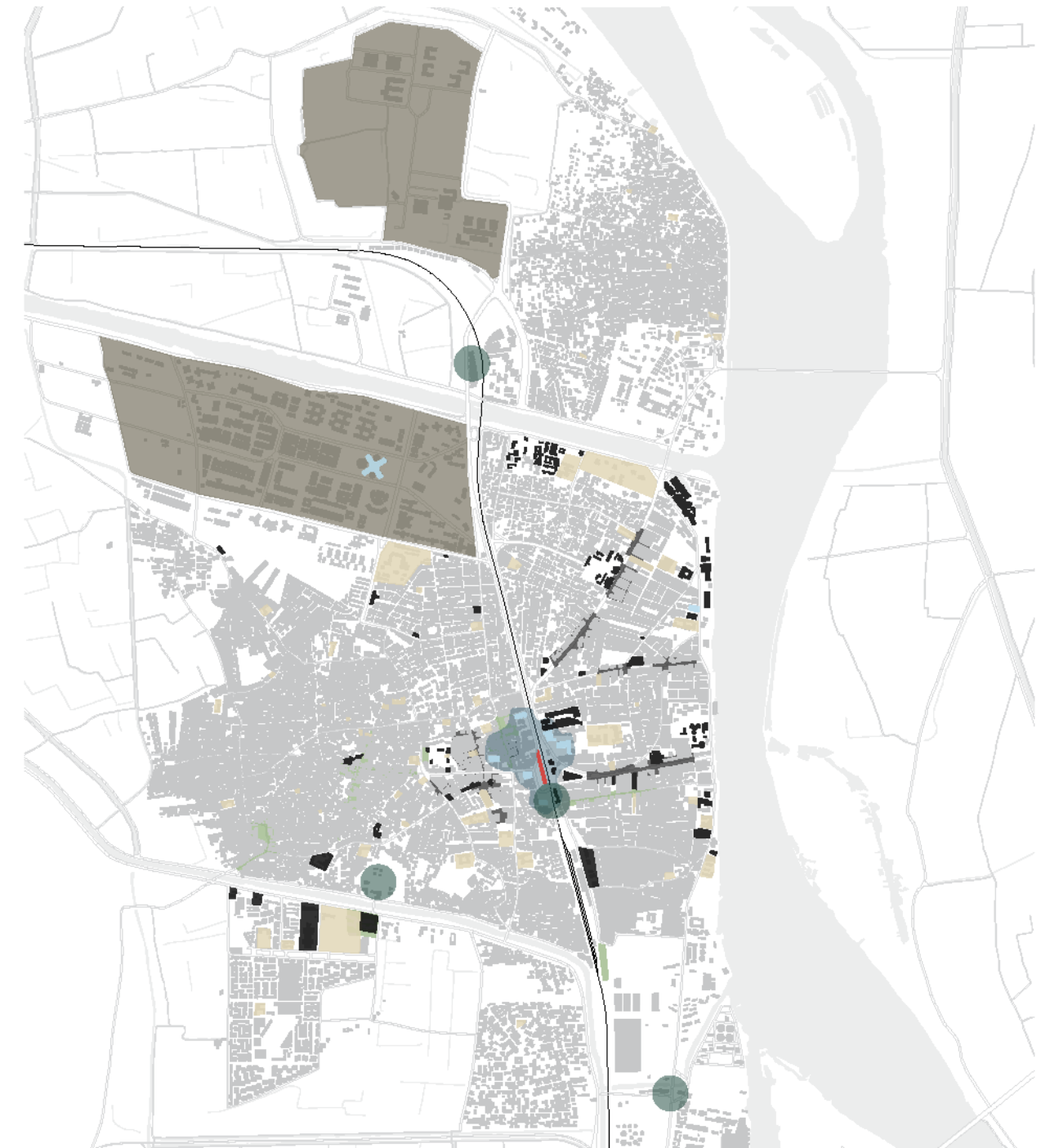
Assiut holds regional relevance as a market site. Every Tuesday, farmers and salesmen come to the city and sell mainly agricultural goods in a large market at the southern city edge. This location is strategic in its connection to the railway and main street. Another market with regional relevance is the Friday Market, when the rural population of Assiut governorate comes to the city to purchase goods that are not available outside the city.





Facilities

Lending to its role as a regional hub, Assiut not only offers many services for city inhabitants but also for residents of the governorate. Services are offered in a variety of facilities, including markets, governmental institutions, hospitals, schools and universities.

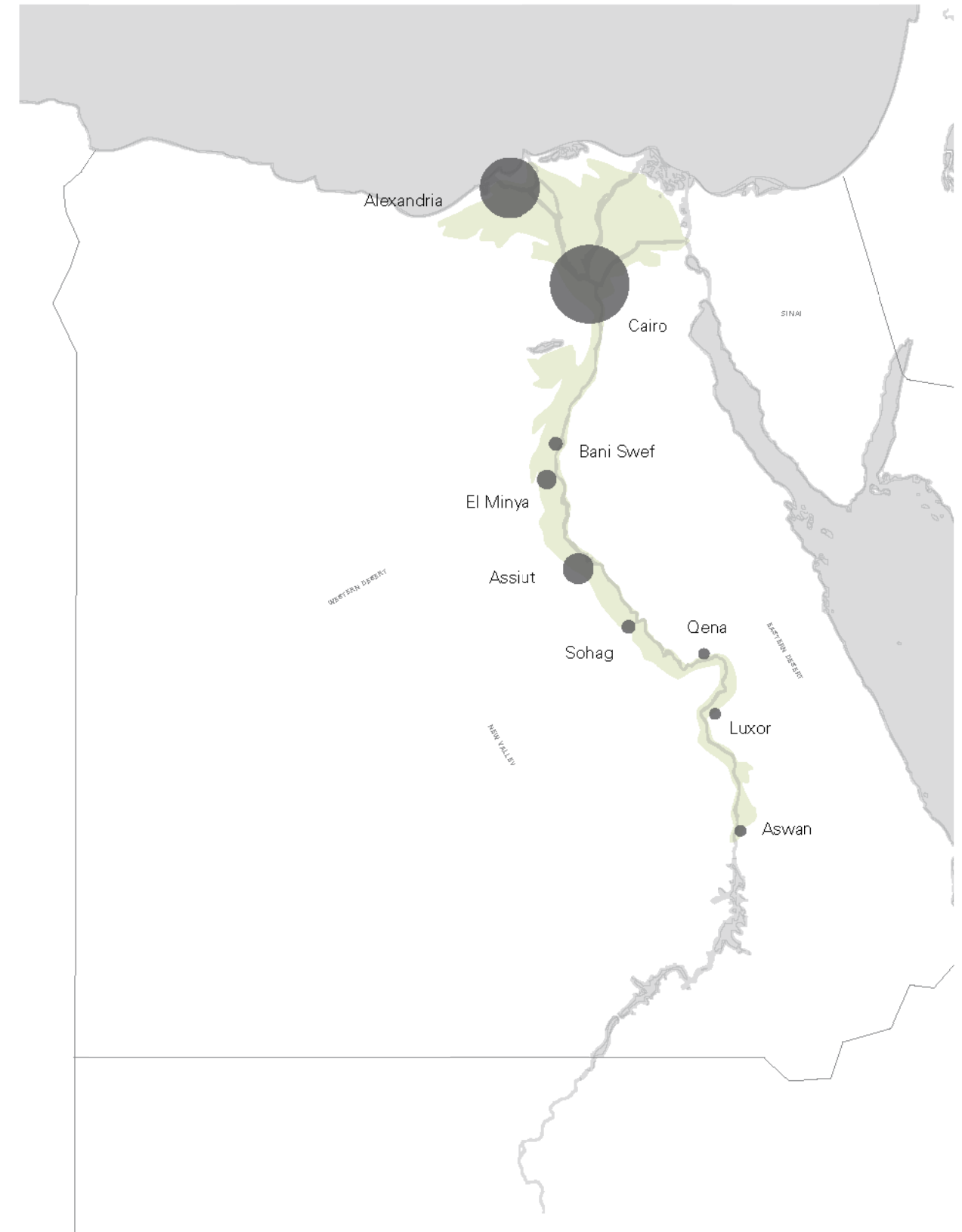


- Schools
- Universities
- Gov. buildings
- Bus station
- Bus station



Education as Attractor

Assiut University is the third-largest university in Egypt after Cairo and Alexandria and the largest in Upper Egypt. With 70,000 students, it is a university with a supra-regional meaning. Many students come from other parts of the Nile Valley to study at the university. The public university serves as a reference model for other universities of the region such as El Minya, Sohag, and Aswan.



CITY CORE: COMMENTARY

The city of Assiut belongs to a series of small and medium sized cities that form the actual framework of the «urban topography» in the Nile Valley. These cities function as a very evenly distributed network of services almost as envisioned by Walter Christaller's Central place theory. Accordingly Assiut is not a city in the sense of an economical or cultural center that stands in contrast to rural life but rather a «bigly grown» village, in which urban services are accumulated. It provides an infrastructure for the exchange of goods and services as well as financial, medical and educational support. This thesis of a non-city can be supported by several observations. Firstly, the almost total absence of any global impact as well as the lack of cultural facilities and institutions are surprising. Life in public and private spheres is dominated by traditional and religious patterns, which distinguish only little from the everyday life in so-called rural communities. Further on, it is characterized by a high degree of segregation and privatization of spaces. This fact is also reflected in the role of Assiut University, which does not interact with the city but functions as a self-contained «modern ideal city». Urban interaction is additionally constricted by a strong police presence and

control. Finally, there seems to be a general lack of awareness of an «urban culture» as there is for example almost no concern for the cultural heritage or the history of the city.

حدود المدينة



CITY EDGES

CITY EXPANSION

Edge Definition

Edge Activities

Edge History

Boundary Character and Case Selection

INFORMAL EXTENSION OF THE OLD TOWN

Actors and Development

Law and Informal Housing Strategies

Informal Construction and Building Techniques

Trouble of Informal Settlements

PUBLIC HOUSING ON THE EDGE

Actors and Development

Typologies of Public Housing

Site-and-Service Project

SYMBIOSIS BETWEEN INFORMAL AND FORMAL

Actors and Development

Decaying Village and Public Housing

Booming Informal Housing

BOUNDARY BALANCE

Tradition as Background

Prices as Activator

Calibrating Informal and Formal

ETH Studio Basel
Contemporary City Institute
Mulan Sun, Yungfang Xu

Prof. Roger Diener, Prof. Marcel Meili
Mathias Gunz, Rolf Jenni, Milica Topalovic
Christian Mueller Inderbitzin

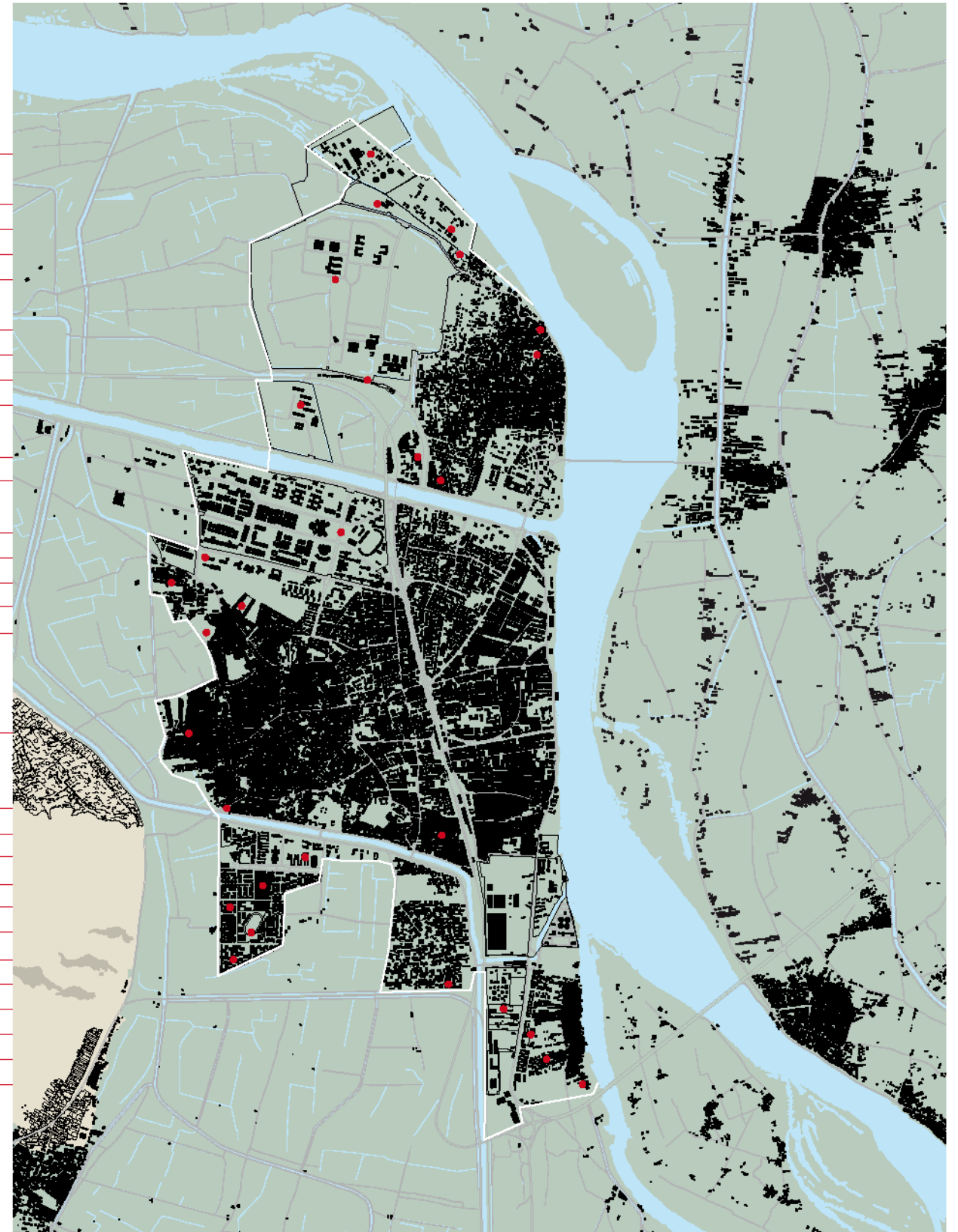
Spring Semester 2009

CITY EDGES

Assiut lies in the middle of the Nile Valley—almost in the middle of Egypt—with a perimeter about 24 km, and a population of 40,970 growing at 2.6% per year. On the amorphous zone between urban and rural, the most active energy and dynamics are contained under a banal surface. Here, a struggle between city expansion and agricultural land protection, a competition of uncontrolled and controlled developing, and a pendulum of lifestyle between traditional and modern are happening.



		power station
private housing		
housing of power station	girls' primary school	
	al-azhar university	
informal housing		
el wilidya old village		
public housing	dormitory of university	
		medical center
nasr highrise	Assiut University	
	hospital of university	
informal housing		girl's city
		vacant land
informal extension of old town		
		fruit market
informal housing	decorative industrial school	
site and service project		
economic housing		stadium
intermediate housing		
moalmeen housing association		industrial area
public housing		
informal housing		
el nazle old village		



Edge Definition

City Edges without Zoning Plan?! In 1985, the city edge was defined as the limit for outermost building. The rigorous prohibition of building beyond this edge impacted informal housing on the edges. But the pressure inside the border is almost unendurable.



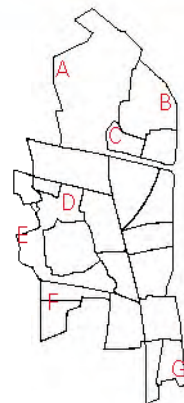
A Wall



B Old village



C Highrise buildings



Edge Activities

Due to a strong population increase since the mid-20th century and ongoing urbanization of the entire valley, Assiut is constantly expanding into surrounding agricultural land. Most of such developments are informal. During the 1970s and 80s, the government tried to direct city expansion by developing different types of public housings, but these efforts are now largely diminished.



D Waste



E Informal housing and agricultural land

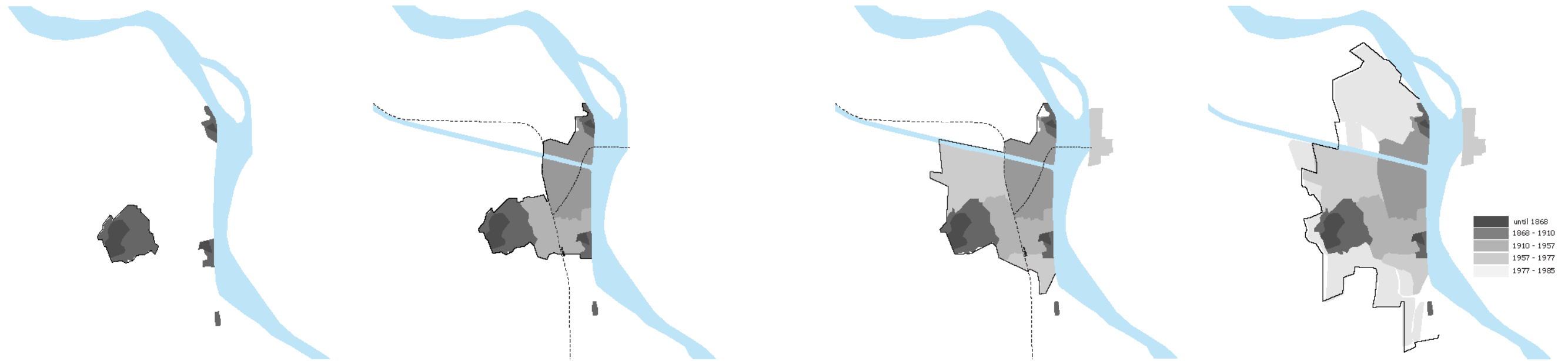


F Public housing



G Riverbank



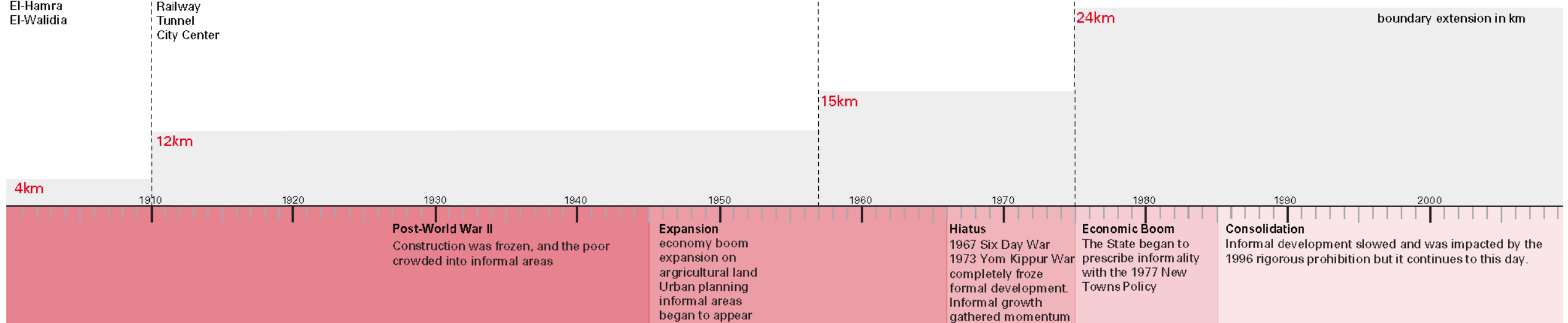


old town 52.7m
above the sea level.
El-Hamra
El-Walidia

Ibrahimia Canal
Assiut Dam
Railway
Tunnel
City Center

1957 Assiut University

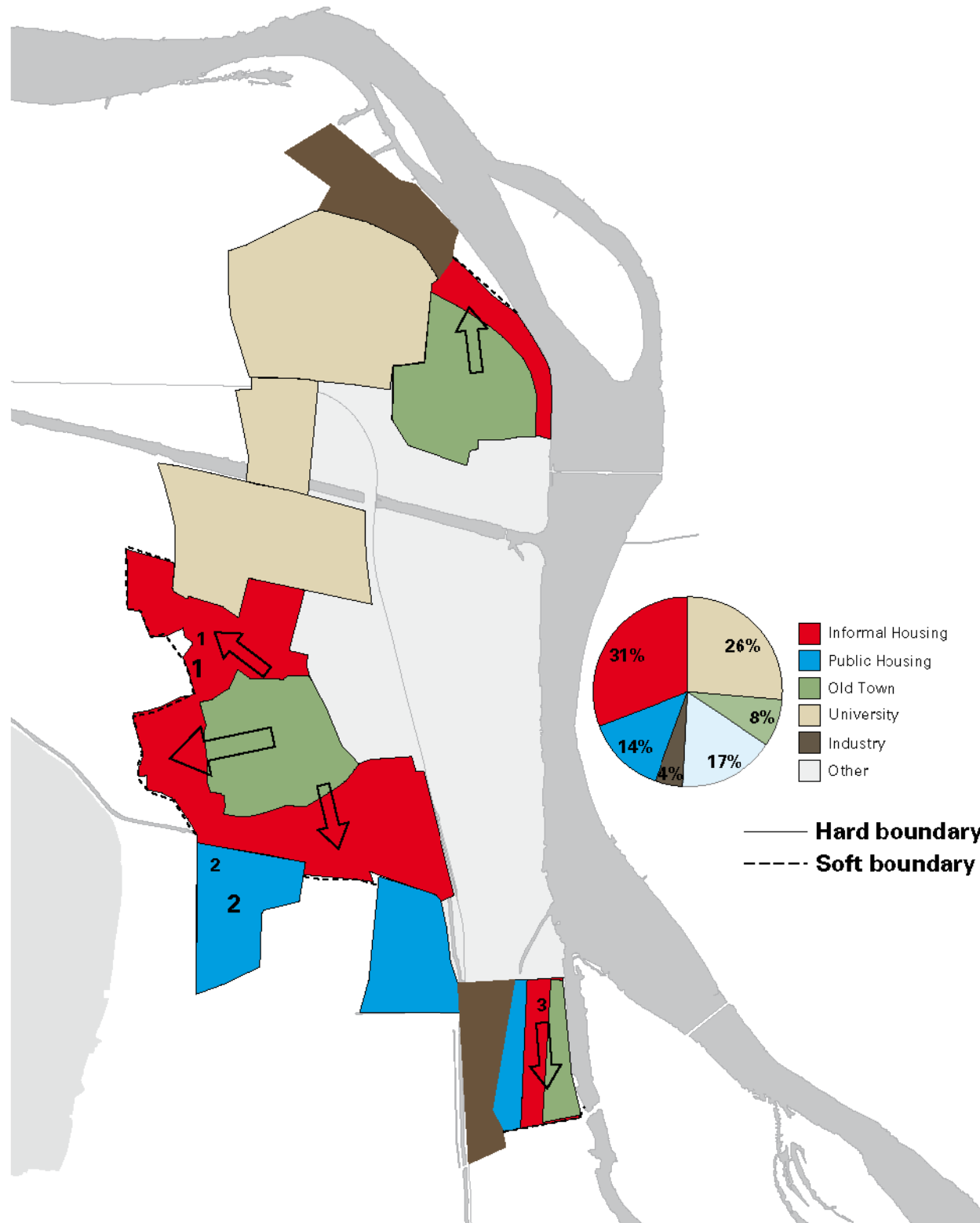
1975 Al-Azhar University
Public Housing Project



Edge History



A Visible Boundary?



Boundary Character and Case Selection



Case 1: Informal Extension of the Old Town in City West

Informal expansion on mostly agricultural land continues at a rate which is three times that of "formal" expansion.



Case 2: Public Housing on the Edge in Arbeen

The planned residential satellite town neighboring the city was built in 1970 on Assiut's prime agricultural land.

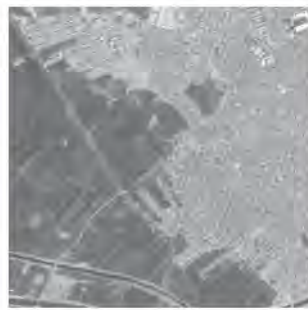


Case 3: Symbiosis between Informal and Formal in El Nazle

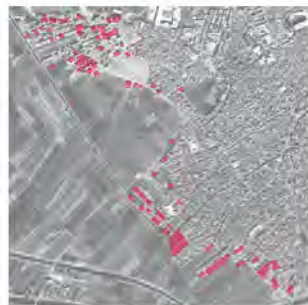
As public housing and the old village decay, the informal development in between continues at an amazing speed.

INFORMAL EXTENSION OF THE OLD TOWN

Informal settlements on agricultural land are defined as private residential buildings constructed on land purchased from farmers in areas where there were no subdivision plans and where building permits were not given. At the edge of the old town, people are building up their living area with their own hands, under a traditional ideal image. When a boundary was set; some buildings became illegal and some legal. Under pressure of over-population and land limitation, the image of an ideal life in the city becomes distorted. The ideal environment shrank to a large enough house, a well-furnished room, amidst slum-like surroundings.

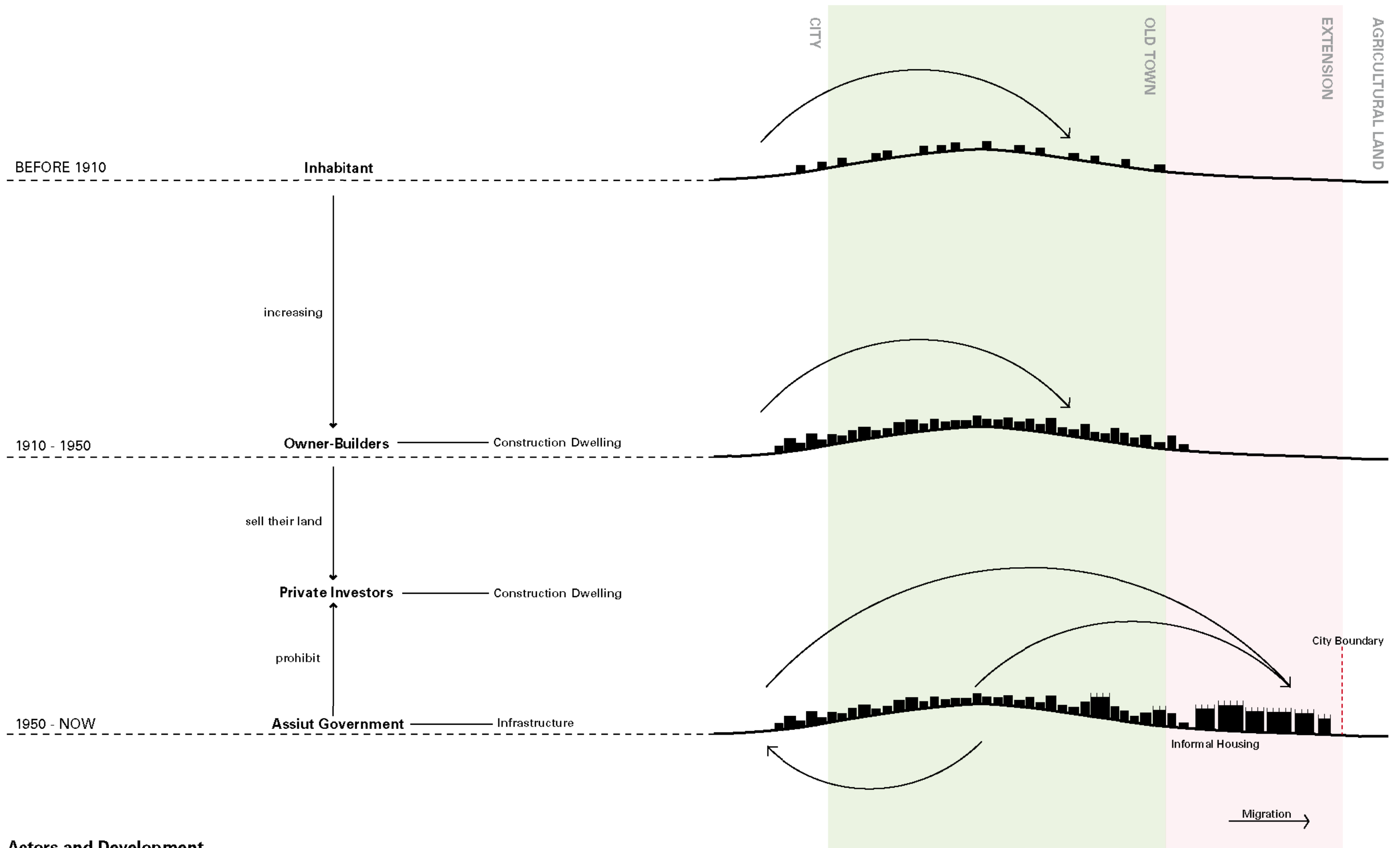


2002

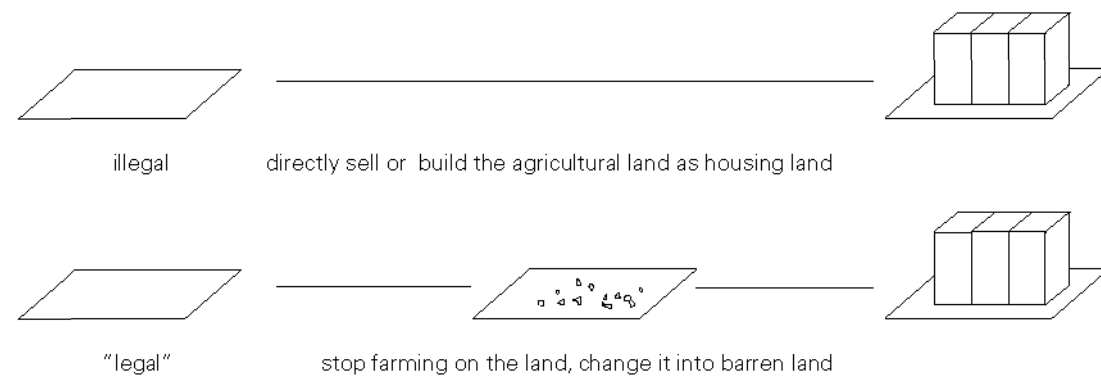


2009





Actors and Development



AGRICULTURAL LAND



BARREN LAND



INFORMAL HOUSING

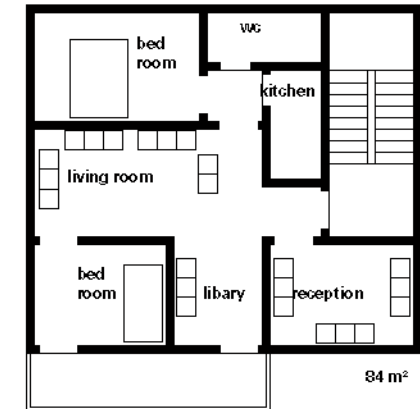
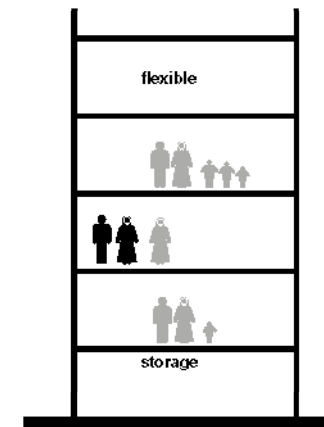
In Egypt, about 70% of informal houses are built on agricultural land. Faced with urbanization pressures, owners stop cultivating the land for a period of time until it becomes "Bur" or barren land, a status that they seek to officially document through complex, bureaucratic, time-consuming, and costly procedures to circumvent laws prohibiting construction on agricultural land. The land is then subdivided and sold for housing construction. These figures reveal how agricultural landowners have largely succeeded to manipulate laws, in a process that is subject to much rent-seeking.

The planning law: "PHYSICAL PLANNING ACT (eg) / PROVISIONS OF THE ACT " Article II states that it is forbidden to establish any building or facilities outside the boundaries of the approved urban areas of the cities, villages or regions that have no approved strategic planning. The division of lands outside the approved urban areas is also forbidden with exception of the following:

- a) Lands used for projects that help in developing agricultural and food industries...part of the framework plan issued from the Council of Ministers after submitting it to the Minister of Agriculture.
- b) Agricultural lands located outside the boundaries of towns and villages upon which a private house or public building after the approval of the agriculture minister.

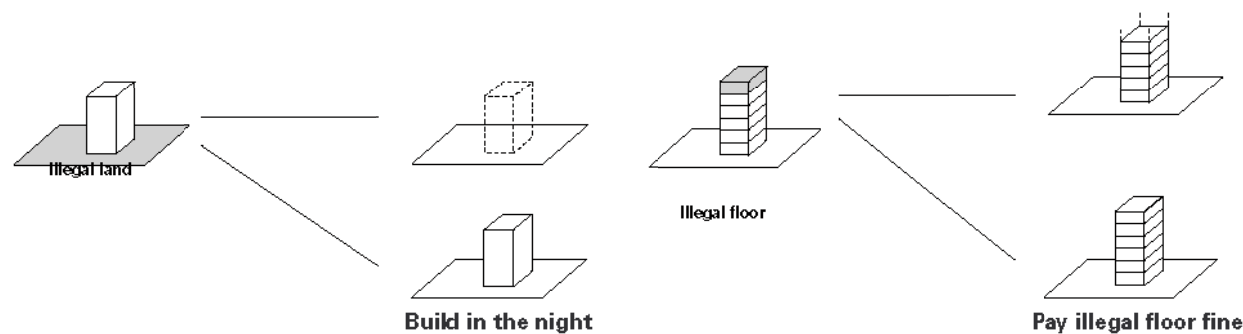


The Use of Barren Land
A rubbish lot and a playground for children.



An Image of Ideal Dwelling

This family formerly lived in the old town and came here in 1998 to build their new house; construction continues today. Three generations live in five floors with an area of 85 m² over a 110 m² plot. The fourth floor is illegal. Over-height buildings are common; as land prices increase, everyone makes full use of the land. The sweet family enjoys city west life and are proud of their salon-like reception room and painted frontage. They describe their ideal house, in the same way that many would tell: "The whole family lives together, close to relatives. Parents build up a house, each floor as a complete unit: one floor for themselves, and one floor for each son. As more sons come into the world, they add more floors to the house. Sons marry in this house. When their children grow up, they will build a new house as their parents did for them, generation after generation. The most beautiful time is when the whole big family sits on the roof terrace, enjoying the summer nights of a city on the Nile."



Illegal Land Building Strategy

After introducing the law to protect arable land from un-planned occupation, it is now illegal to build on agricultural land. The informal house on agricultural land should be removed without question. But when it is finished, there may also exist a back-stage "trade" to accept its existence.

Building Extension Strategy

According to the construction law, the maximum building height is 1.5 times the width of the street. The over-height floor would be removed if the government finds it under construction, however, if it is already finished, the owner can choose to pay a fine to keep the floor.

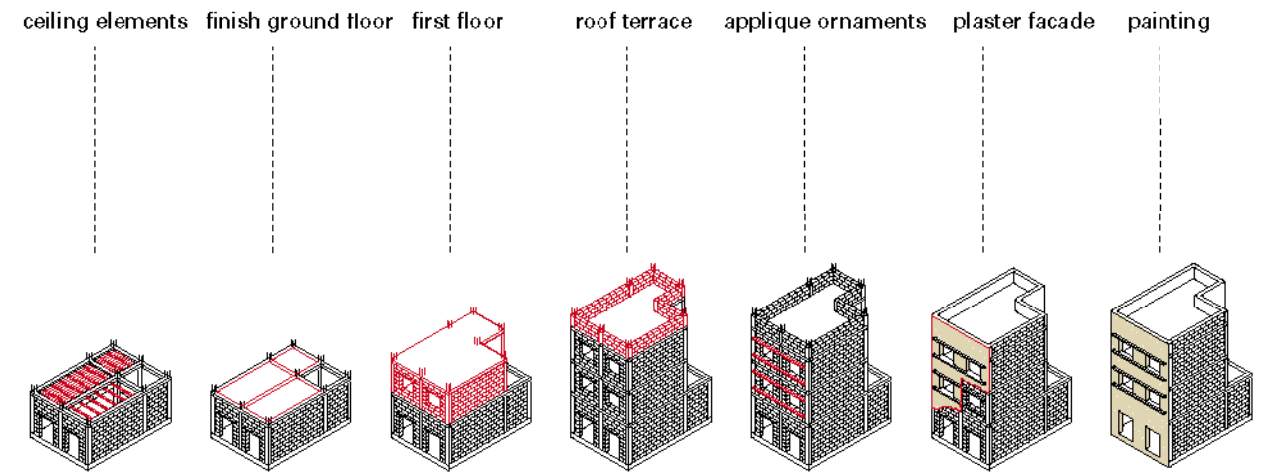
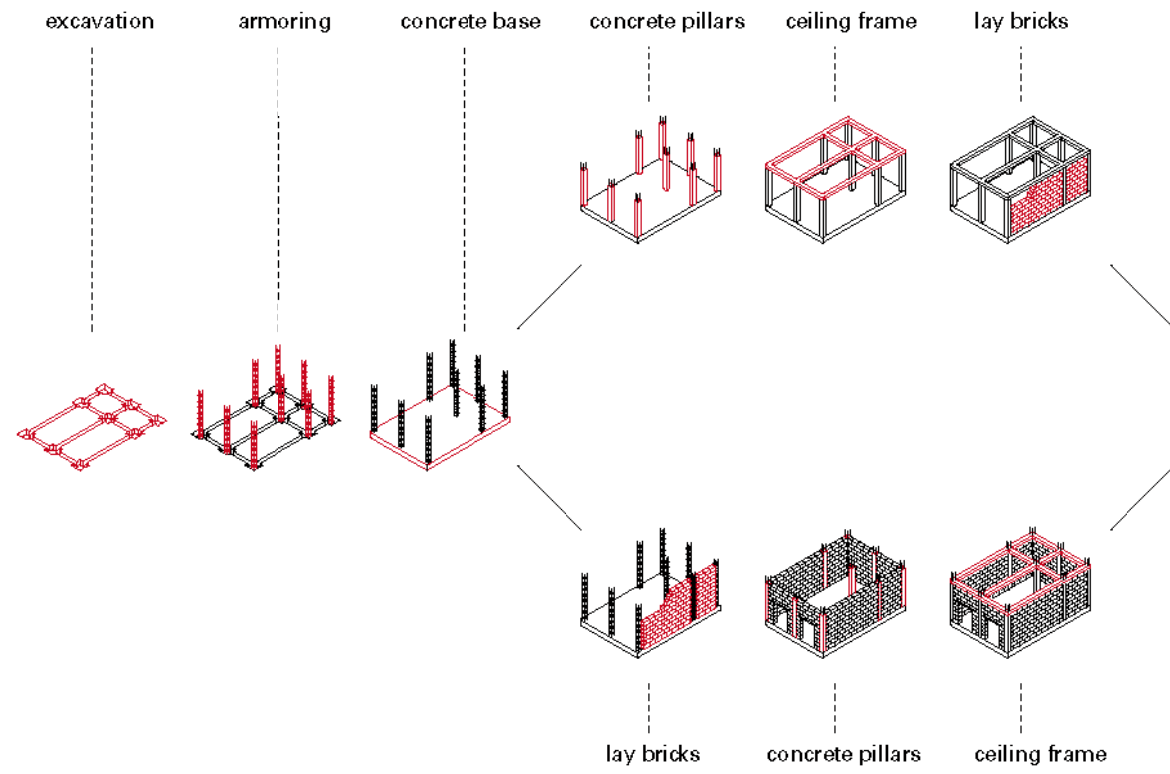


Informal Construction and Building Techniques

The owner-built housing construction process is financed entirely by individuals and families. Financial sources include savings, informal loans from friends and relatives, conversion of family assets, and auto-finance through sale or rental of early units. Remittances from Egyptians working abroad have been an important source, especially in the 1970s and 80s. The dominant mode of progressive building—room by room and floor by floor—allows the rate of investment to be tailored to family finances. The owner-builder normally relies on local masons or engineers for design, and will purchase materials, hire labor, and supervise construction themselves. They invest considerable time and effort in understanding the details of the process and local market realities. As a result, building costs are less than similar construction by the private sector and government. They avoid heavy costs of building permits, although this is somewhat offset by the need to pay bribes to local authorities. Good construction is more or less guaranteed since it is the builder himself who will own and “consume” the product.

Organization of Owner-built Housing

Construction began 20 days ago. The floor of the basement is just finished. The owner of the house is retired and comes to the site almost every day. The cost to build a house varies greatly. The construction from of a ground floor from start to finish generally costs 30,000 LE. Sample prices of most often used materials are as follows: bricks produced by a factory in small village 25 km from Assiut city, 220 LE/100 bricks; steel produced by a large factory in a new town such as Sixth of October, 3200 LE/ton; gravel from quarries found in many cities of Assiut governorate within a 9 km radius, 300 LE/m³; cement produced by Cemex, 520 LE/ton.

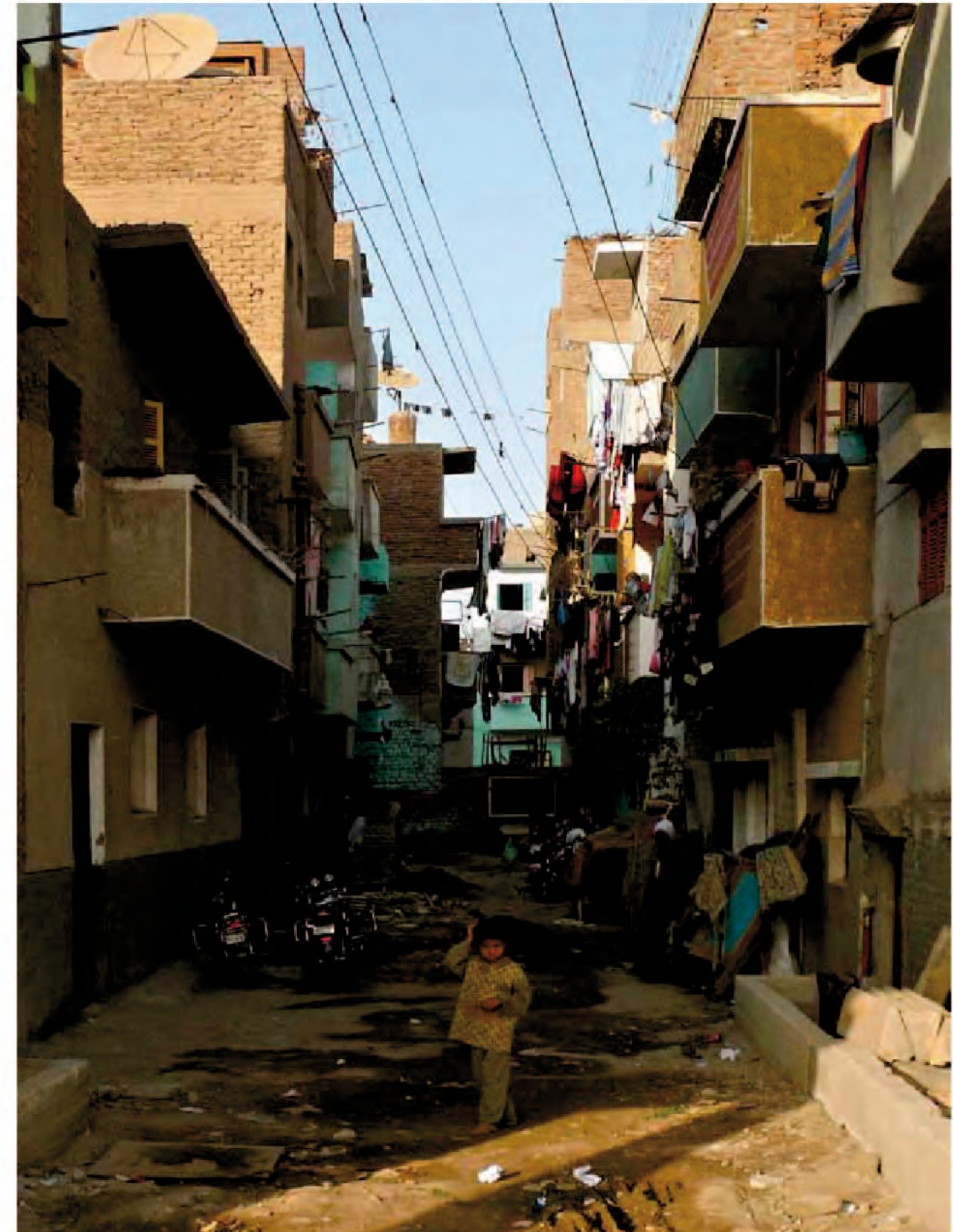


Informal Construction Process



Trouble of Informal Settlements

The main characteristics of informal areas are a product of their extra-legality, i.e. the complete lack of physical planning or control. These areas lack neither organized street patterns nor public space. Most streets are very narrow (2-4 m wide), except where canal and road right-of-ways allow for arterial streets. Land parcels are generally small, averaging from 80 to 120 m². Buildings have no set-backs, and the entire parcel of land is built upon (except for narrow light wells). Informal settlements suffer from poor accessibility, extremely high residential densities, and insufficient schools and other government services. Also, due to the ever-increasing densities, water and wastewater networks are seriously overloaded. Municipal authorities tend to concentrate road paving, traffic and solid waste collection services in "formal" parts of town, leaving the informal areas to fend for themselves.





Good Condition of Infrastructure in Informal Area Signals Formalization

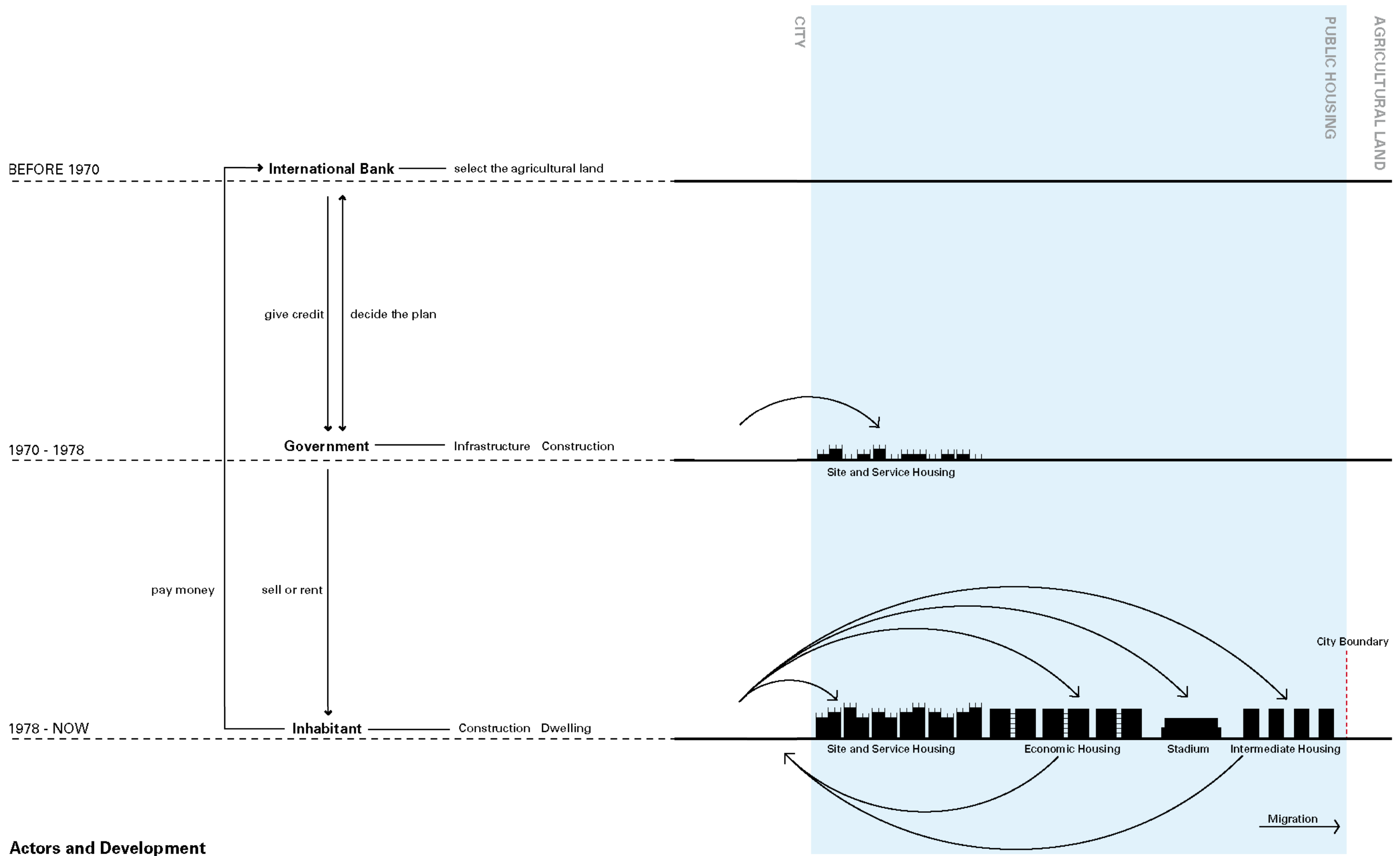
PUBLIC HOUSING ON THE EDGE

This 65-feddan-large project lies in the south of Assiut, bounded by the Naja Hammadi canal (formerly al-Mallah) in the east and a 20-meter-wide main road. Another 50-m-wide main road lined with a 132-kilovolt power line sets the northern boundary. To solve the housing shortage and protect agricultural land from desertification, the government and the International Construction Bank signed a contract of cooperation in 1978. The site of the project happens to fall on the best agricultural land in Assiut, and this point rises many questions regarding why this location was chosen by experts of the International Bank; these projects are in the first phase and already the frame of development is transported to a frame of destruction. The original land-owning farmers lost their land in the beginning of a new urban dwelling experiment. On the formerly best agricultural land, these dwellings commence a clearly defined boundary. The chosen beneficiaries are acclimatizing themselves to it.



2009



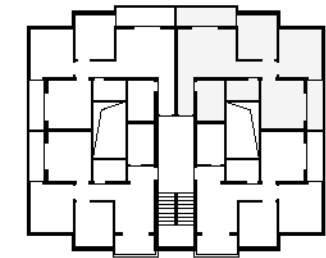


Actors and Development



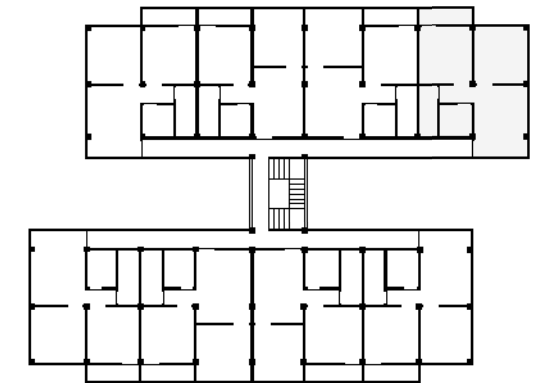
Intermediate Housing

6 floors, 120 m²/unit, 3 bedrooms and 1 living room



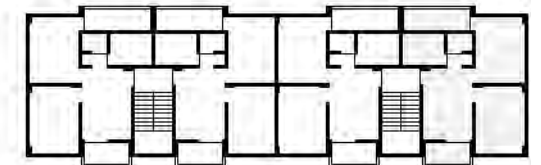
Low-income Housing I

6 floors, 30 m²/unit, 1 bedroom and 1 living room



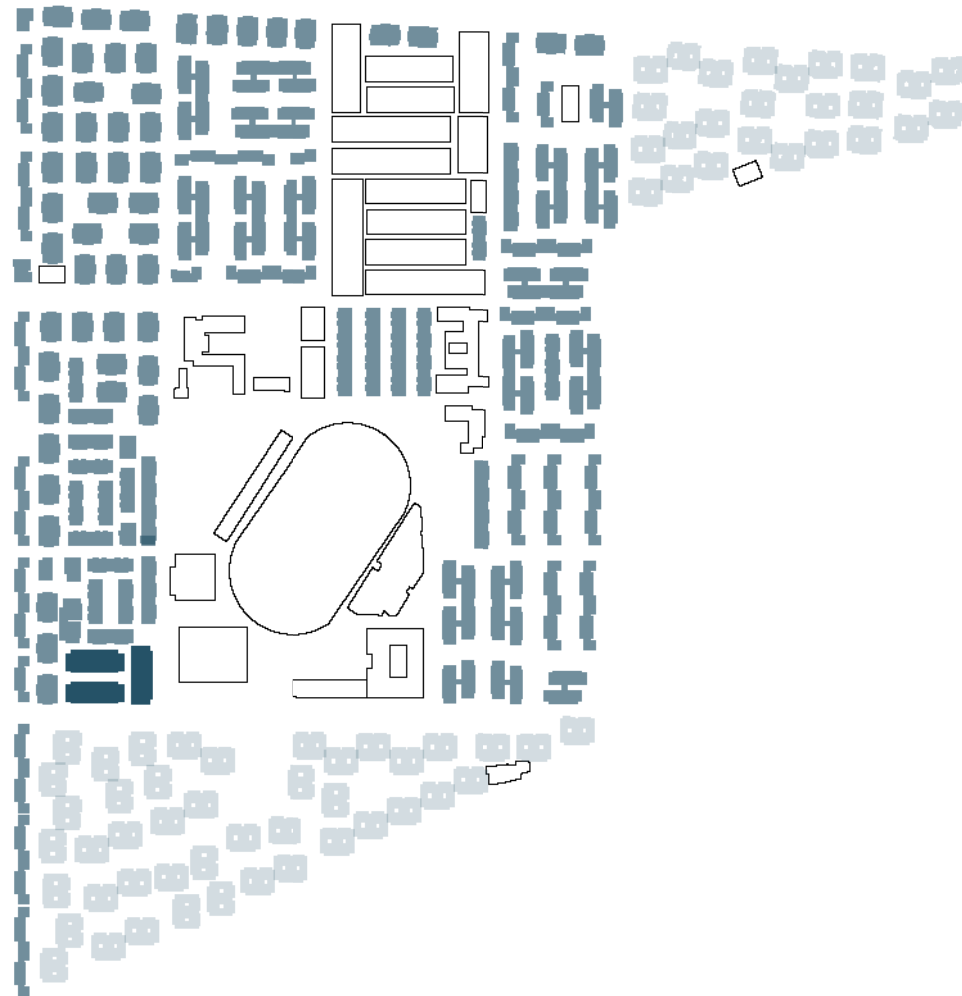
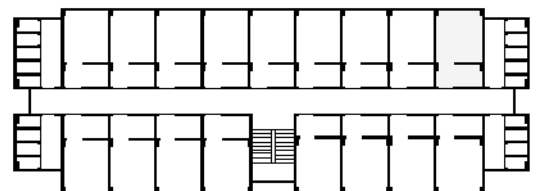
Low-income Housing II

6 floors, 75 m²/unit, 3 bedrooms and 1 living room



Emergency Housing

For homeless, 25 m²/unit, bathroom at the end of corridor



Public Housing Typologies



Quality of Life in Intermediate Housing

Better structured than affordable housing and some private gardens is available.



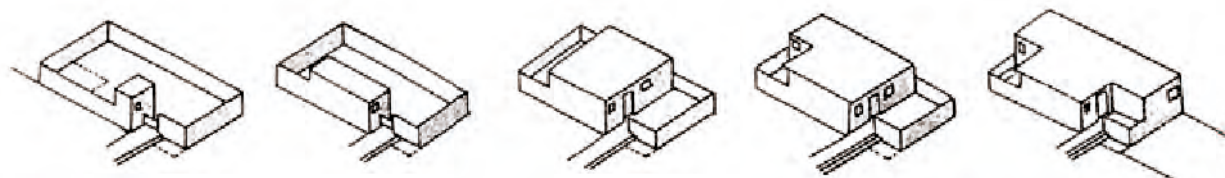
Quality of Life in Low-income Housing

Only the building structure was built by the government; residents had to build their own balcony, window, and interiors.



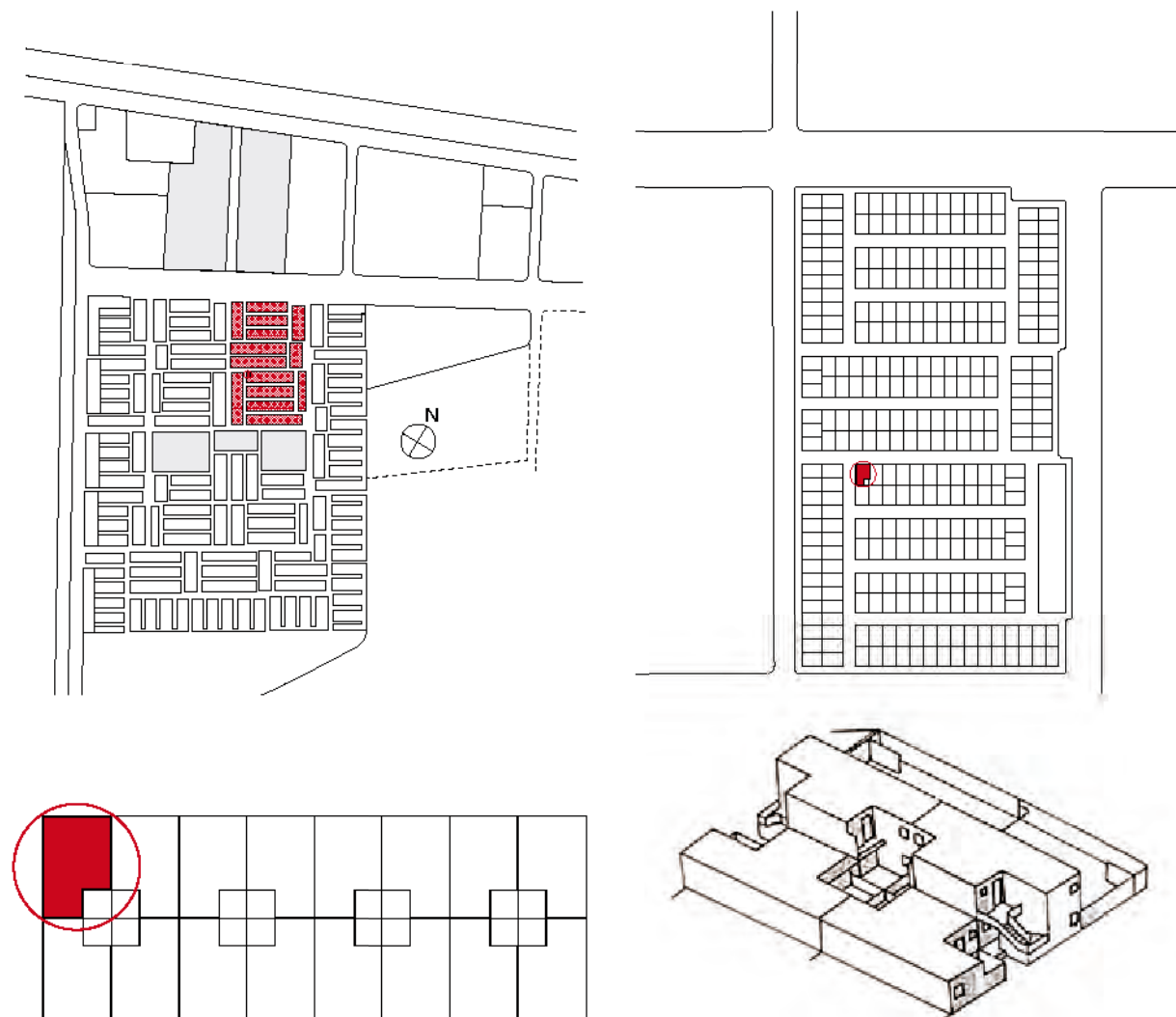
Mobile Market and Ground Floor Shop

Kitchen Extension and "Do-It-Yourself" Balconies



Site-and-Service Project

The site-and-service project in Assiut is one of three chosen projects for urban development. Its development is directed by the International Bank—through loans—in Egypt (Cairo, Alexandria and Assiut). The contract to start the work was signed in August 1978 between the International Bank and the Egyptian Government on the basis that the Doksiades office would be an associate for the general structure of the construction planning by preparing the first plan for the project. The first costs were estimated to 2,668,500 LE in 1977.



The project contains 2,637 planned site-and-service housing units, but only 293 units were constructed horizontally (dimensioned at 9x6 m), and 579 vertically. The local authority of Assiut governorate withdrew from finishing the project, even though there was full infrastructure in every level of the project. The disagreement between respective experts of different governmental authorities contributed to the lack of completion. The lack of conviction to follow through with the site and service-housing concept is unfortunate, considering how such housing could lead to the area's transformation by providing much more housing units, which would be advantageous for inhabitants.



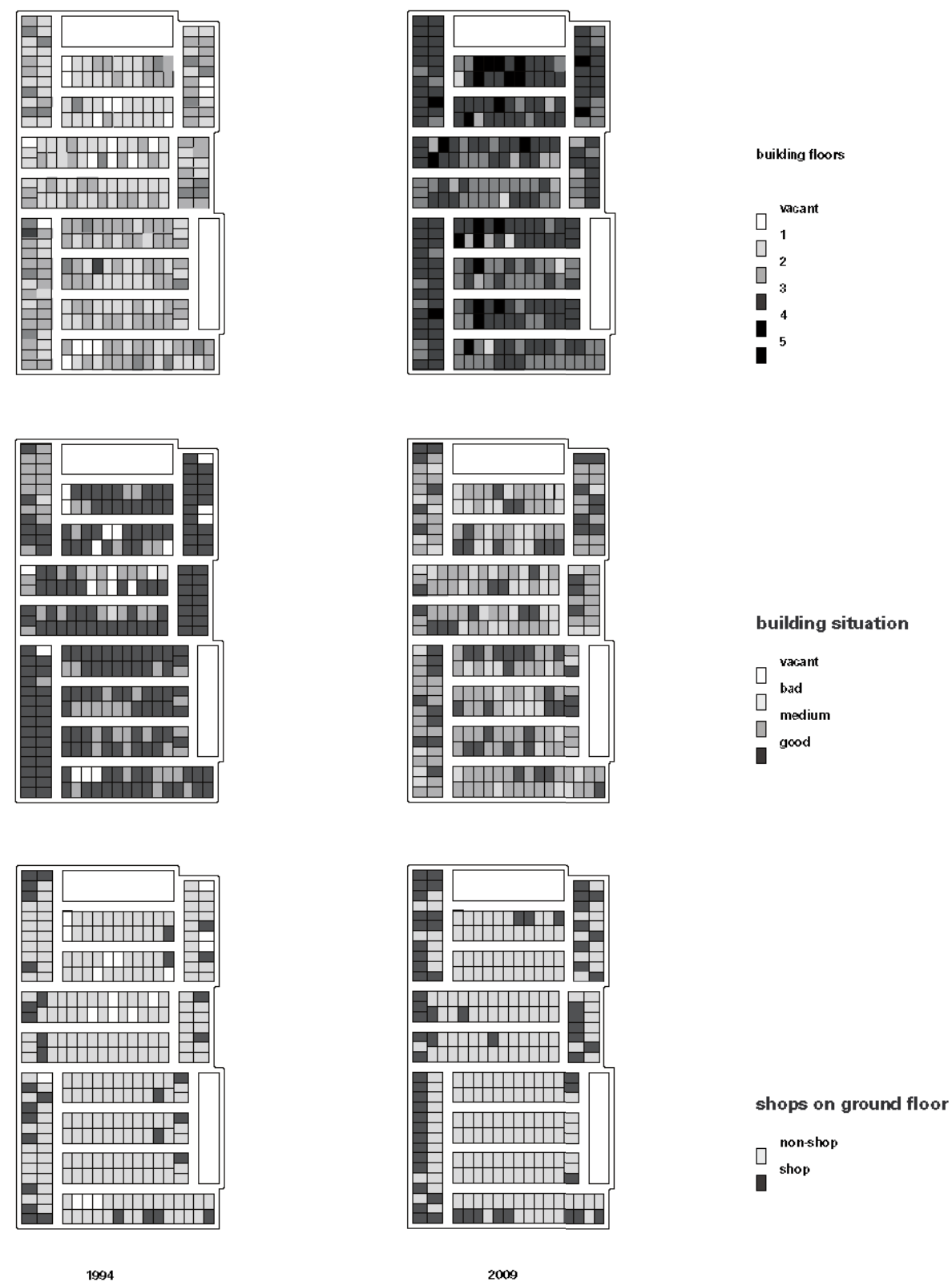
Success and Failure

The project succeeds in cutting investment costs to the minimum and allowing individual households to tailor the housing development according to their own circumstances. The cost structure minimizes subsidies while at the same time relates to household affordability levels, neither creating slums nor causing a huge fiscal burden on the government.



Site-and-Service Project in 15 Years

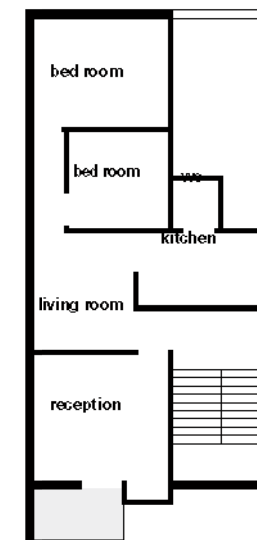
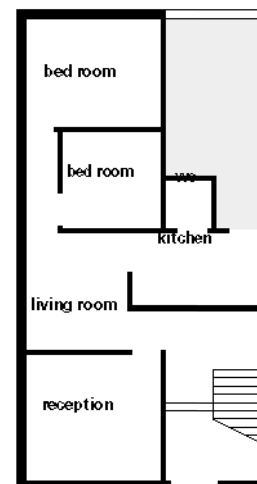
Ground floor usage for trade activities has developed to 63 lots from 34 in the past 10 years. A portion of the ground floor has been used for trade activities like grocery stores, restaurants, coiffeurs, shoe-repair, and these activities are concentrated on the main streets. In 63% of the lots, the density quote is very high while 26% are considered of medium density, 8% low, and 3% uninhabited. The population of the entire site is 16,087 inhabitants belonging to 287 families, averaging 5.7 persons per family. As this project is rapidly increasing, on the other hand, the rate of buildings in good condition reached only 31% compared with 69% of ten years past. Some lots correspond with the common level of private public housing pieces in the city of Assiut, and some of them exceed it. But the average condition is decreasing due to lack of maintenance.



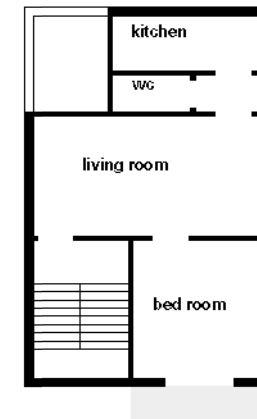
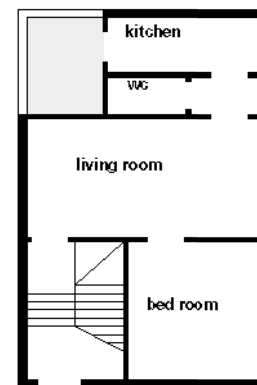


“I am very satisfied with my house.”

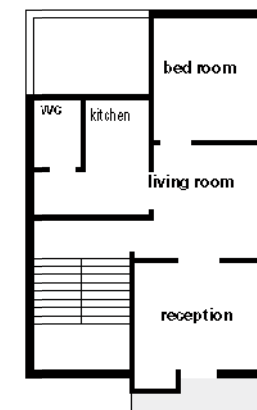
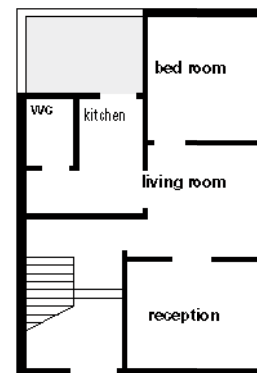
An old couple has lived here since 1986. They have a 54 m² plot and built the house step by step. As of now, their house has four above-ground floors, with the first floor for themselves, two floors well-furnished for two sons, and a top floor for flexibility. The four daughters will later marry and move elsewhere. The self-built house gives them the feeling of private ownership and complete independence, with the possibility of expansion in the future. Also the life here is quite convenient with nearby shops and public services. However, there are still some points of dissatisfaction such as the lack of water pressure and proper ventilation of middle rooms. The house was constructed through the self-initiated efforts of individuals without governmental financial support and it is still developing.



72 m²



54 m²



45 m²

Ground Floor

First Floor

Reference House Types

SYMBIOSIS BETWEEN INFORMAL AND FORMAL

Together with the decay of public housing and the old village, informal development in between continues at an amazing speed. At the south end of Assiut city, an old village has lain on the Nile for more than 700 years. In a parallel location, a band of social housing was built for city homeless people 25 years ago. The social housing and the village share weak infrastructure and insufficient service. The area in between was uncovered as a place with less strict construction control and was thus deemed the ideal location to continue the construction of dream dwellings. The whole district was later adopted into the city. During urbanization, some come, some leave, and some must stay.

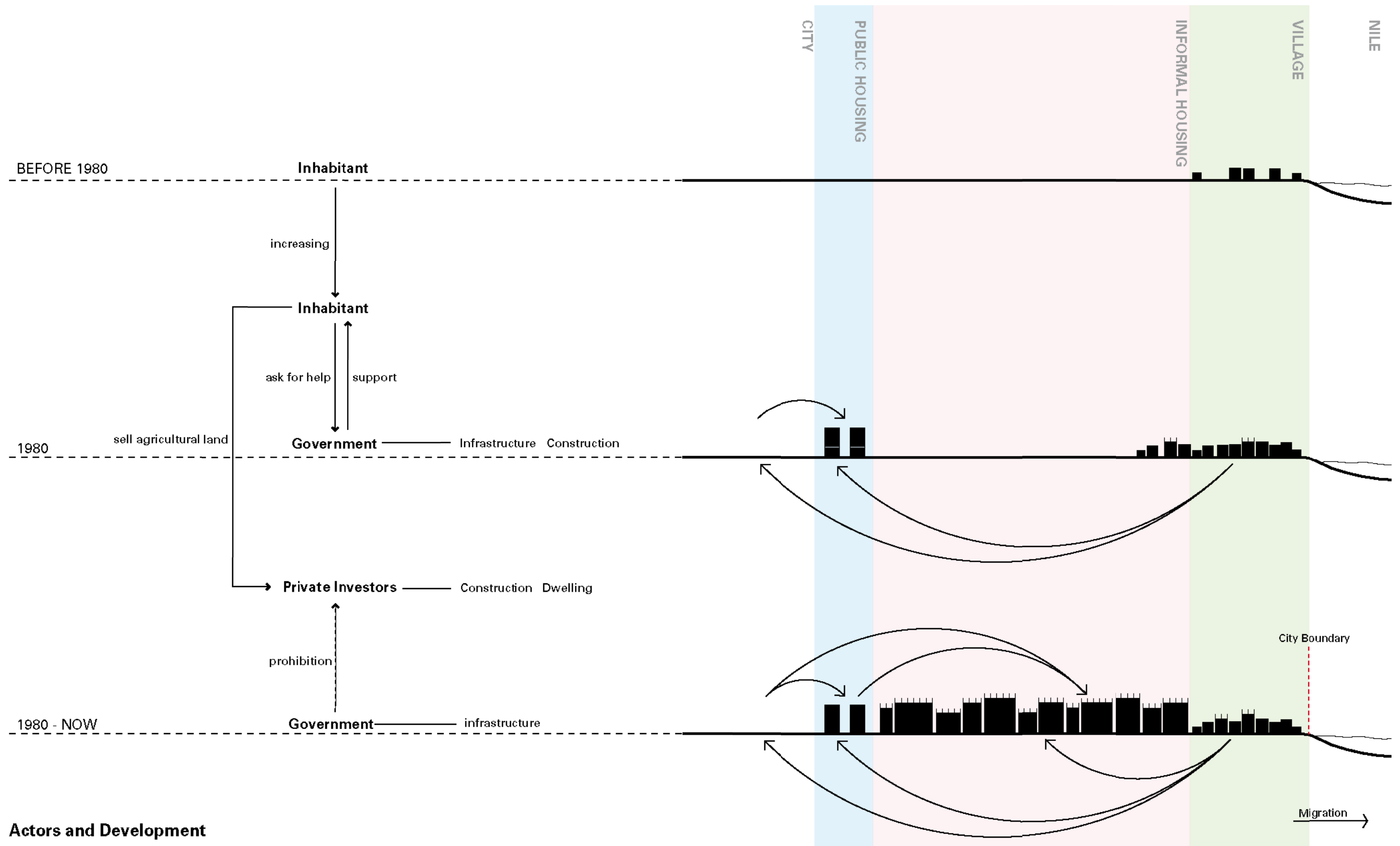


2002



2009





Actors and Development



A Decaying Village



Decaying Public Housing



“We would leave if we had money!”

A family with one old mother with her four married sons live in an old house on the Nile. The house has only one floor with one bed room and one living room. The entire village can access electricity, but not every household connects to water supply and drainage facilities. This family could not afford to build a pipe; they handle plumbing the traditional way, using two deep holes in the courtyard: one for drinking water and the other for waste water. For them, the beautiful landscape of the Nile is not attractive anymore. It is only a river, forever there. As farmers they can hardly feed the family, necessitating that other family members find jobs in the city. Suffering from lack of services and basic infrastructure, increasing numbers of villagers are selling the land and moving out, leaving the village behind.



“Public housing is temporary for us.”

An old woman lives with two sons in a 75 m² apartment, with two bedrooms and one living room. Her husband died in an accident. With government subsidies and financial income of one son, the family makes ends meet. The family has lived here for about 25 years since their old house in the city collapsed. There is not much communication between public housing inhabitants and the villagers. People mostly work in the city and farmers come only to sell land production. The government built the house and rents it at very low price to people who lost shelter as a result of structural failure/collapse and in the aftermath of natural disasters (earthquakes, floods, etc) or wars. After 25 years, the buildings are old and some structural steel is exposed. But the only thing the government can do is paint the wall along Main Street.



Booming Informal Housing



“I have never lived with another family in one house, and I never will!”

The man standing on his own construction site lives in another nearby house. He bought a piece of land about 170 m², and is building a house with four floors for his three sons. 15 years ago, the family moved here from the city. Compared with the public housing here, the man prefers to live in a self-built house because of its flexible quality, since there is only one type of public housing, which he deems too small and inflexible. Basic infrastructure such as electricity, water, drainage is already covered in this area. There are no construction permits. Everyone just buys a piece of land and builds a house. This was a village, and recent years it was adopted to the city. There are no building laws here.

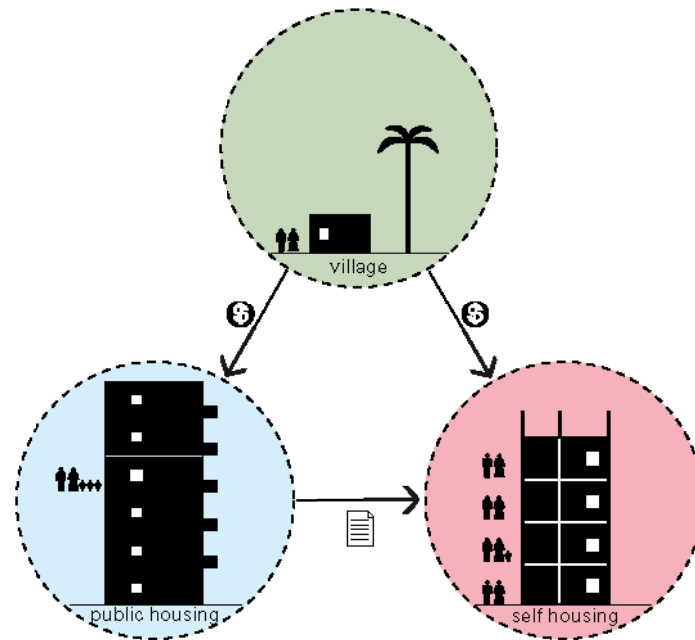


“It’s much cheaper to build a house than to buy a modern apartment in city.”

The farmer lives with his wife, four sons and daughter in a newly-built house with three floors on a 100 m² plot. He came from the village and moved here because the old house was too small. The new building high-rise apartment buildings are very attractive to him with their new construction and modern life, but they are also too expensive. It is much cheaper to buy a piece of land and build the house himself, and also very comfortable.

BOUNDARY BALANCE

Between 16 and 21 million urban inhabitants today live in informal areas and squatter settlements (depending on the definitions used), amounting to 45–60% of the urban population. In Egypt, there is a great difference between living in cities and leading a distinctively urban way of life. Merely living in the city does not always mean living in an urban way, for many towns and cities lack a distinctively urban character. From the national point of view, it is possible to identify two patterns of living: urban and rural. Within a definitely urban area—Assiut for example—one usually finds a portion of the population living in rural pattern. Conversely, within a rural area one may find people whose lifestyles are urbanized. “Urban villager dwellers” can be found in urban Egypt, and likewise “village town dwellers” in rural areas. Urban village dwellers constitute a large proportion of migrants from rural areas.

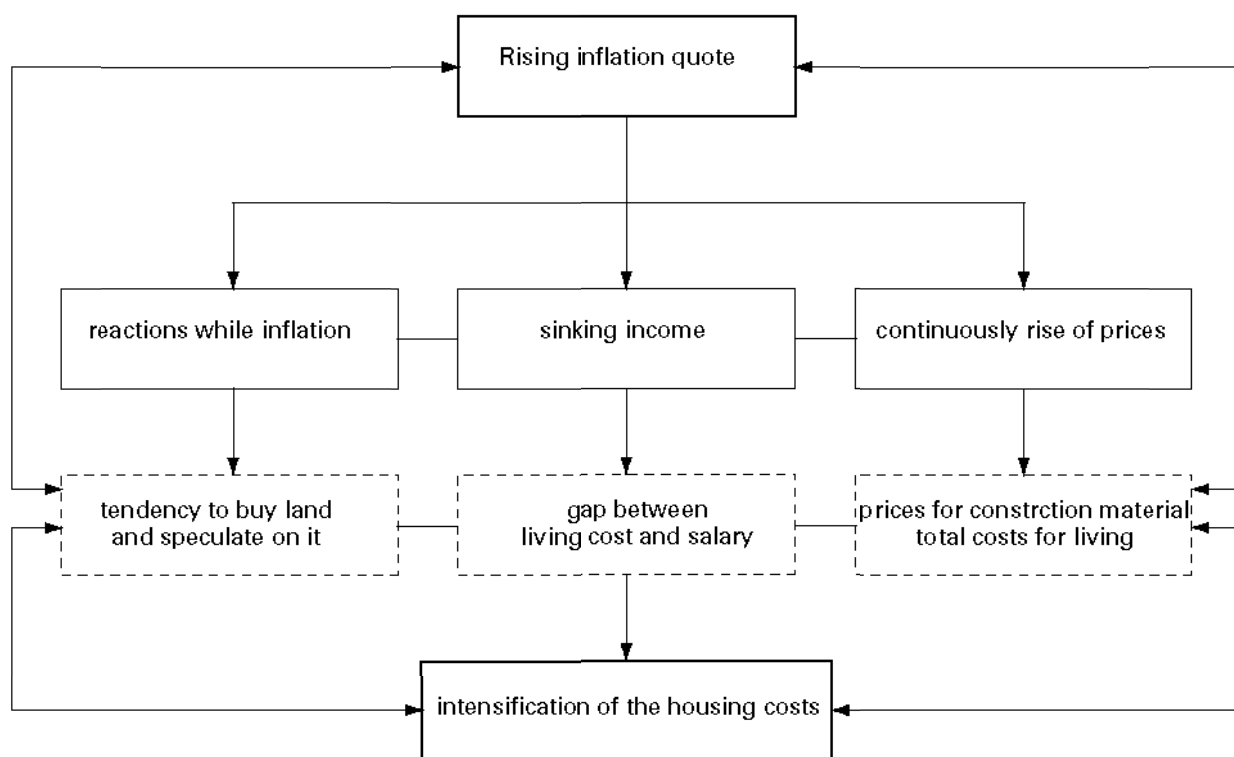


Tradition as Background

First of all, it is important to realize that the Egyptian population tends to stay where it is. As seen in concurrent investigations of Egypt’s housing sector, there is little urban residential mobility, housing choices are unaffordable to the vast majority, housing markets are partly dysfunctional, and for most Egyptian families, the move to a new location is often a once-in-a-lifetime decision, usually at the point of marriage. Urbanization in Egypt began with the increase of population. Urban development is constructing in the village. In housing shortages, some people moved into public housing, a transition space for them. With the growth of family size and improvement of family situations, they moved again; some chose to live in informal housing and the traditional way of living. Families care about home ownership, they dedicate themselves to a house for the family and forthcoming generations.

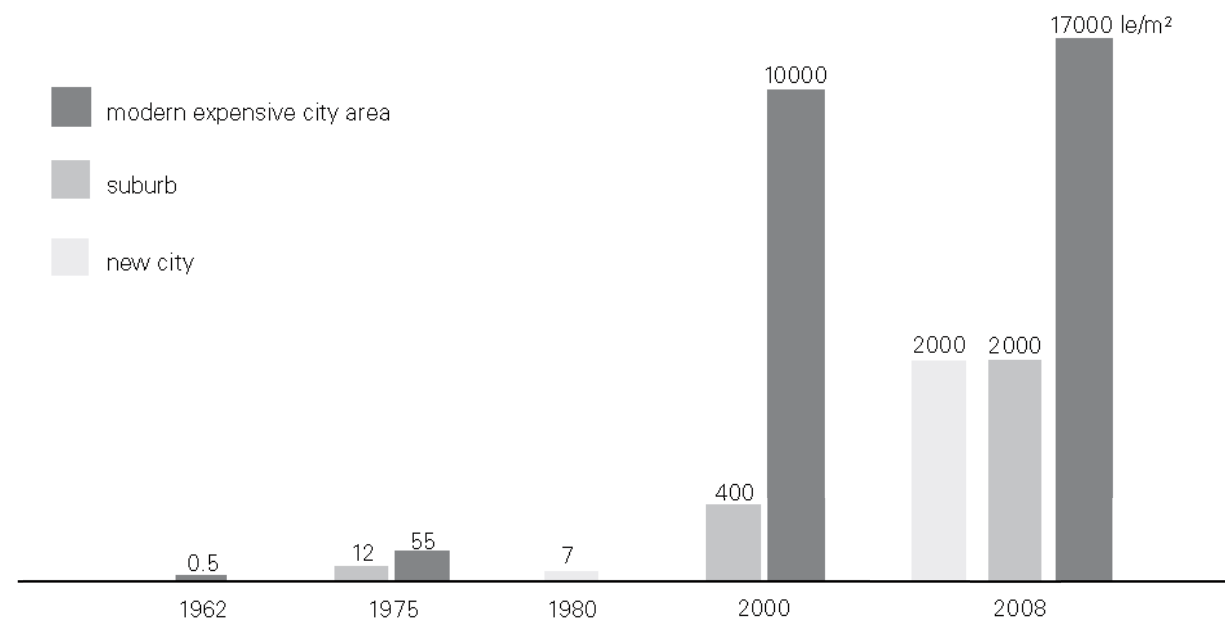


Distribution of Informal Housing, Public Housing, and Old Villages



Mutual Reflection of Inflation on Housing in Egypt

Costs Activate Informal Development



Land Price in Egypt on Formal Market

Tremendously Real Estate Prices

Why are the prices of building lands getting so tremendously high and why doesn't the appearance of new cities halt the increase? Engineer Mohammed al-Dimirdash, senior secretary in the Ministry of Housing answered: "The pricing of the new lands is decided through specialized committees in the Ministry of Housing. The rules of pricing are fixed according to the location and the use... In general the suitable average prices to the square meter in new cities should not exceed 600 pounds. But the problem is that a number of some people who get land in the new cities try to sell it afterwards, and they ask brokers to assist in sales; this affected real estate prices in Egypt and made them twice the average international price rate. The real estate prices in Egypt increase 14% annually while the international rate is 5-7%. The Housing Ministry is not a supervising authority. All we can do is add more land, so that the offer will increase and the prices decrease. That's why we've recently added 35,000 new lots in new cities with suitable prices. But land brokers are earning money by increasing building land prices in the new cities. This will continue for 2-3 years. During these years, the rate of urbanization in the new cities will increase; then the land seller will be able to sell directly to buyers without a broker. In this case, land prices will decrease dramatically." The Ministry started a new ambitious plan to achieve this goal, which is based on connecting the new cities with the old cities and supporting the transportation between them, what will ease the process of urbanization."

1. Informal Area
buy land: 270 LE/m²



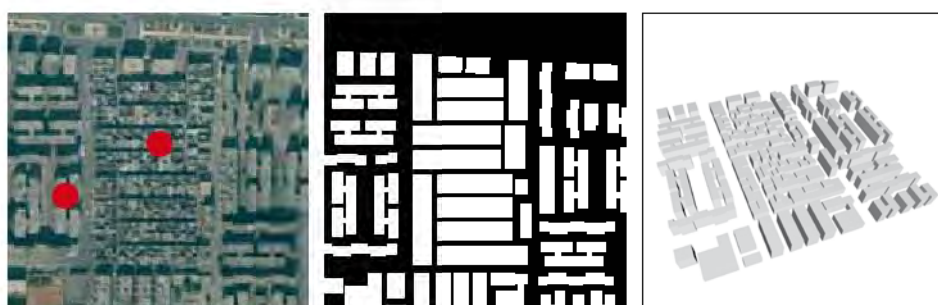
2. Nasr Highrise Project
buy apartment: 3400 LE/m²



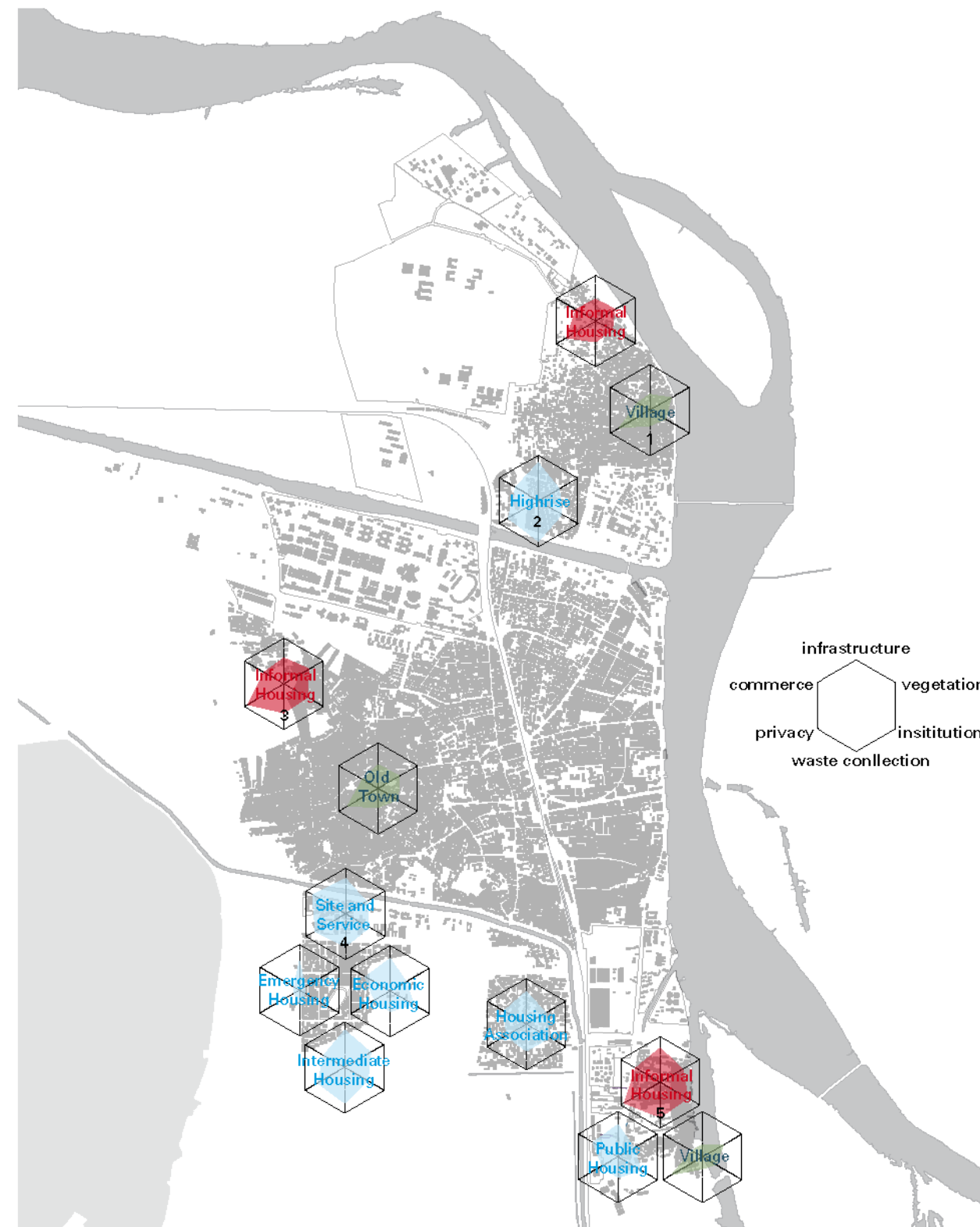
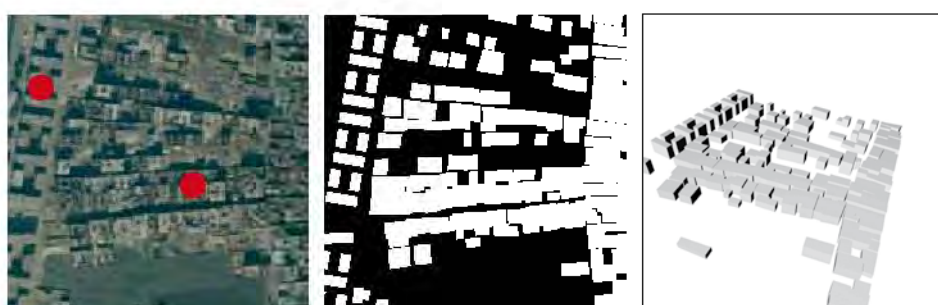
3. Informal Area
buy land: 500 LE/m²



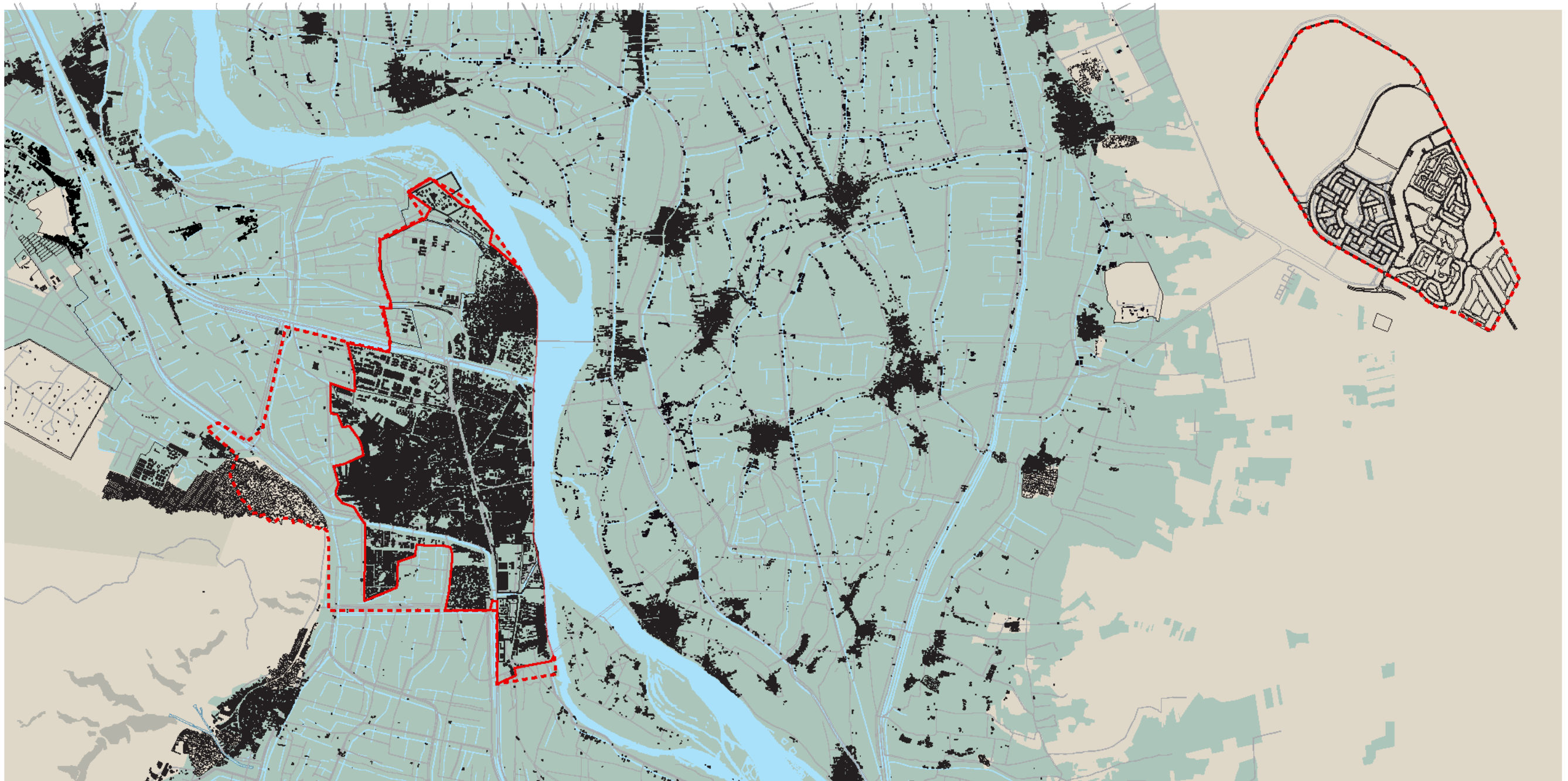
4. Low-income Housing
buy apartment 65 m²:
0 down payment, 30 LE/
month x 25 years in 1980s
Site-and-Service
buy land: 10-20 LE/m² up
to 200 LE/m² in 20 years



5. Social Housing
rent apartment: 0.21 LE/m²
per month
Informal Area
buy land: 350 LE/m²

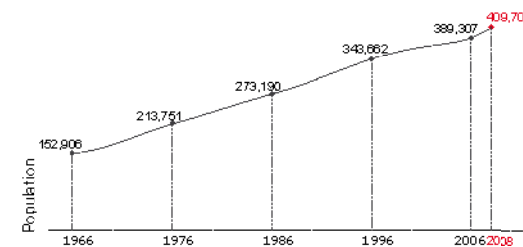


Comparison Different Types of Housing



Towards a New Life or a Potential Pressure?

Because of limited agricultural land, the Assiut government has given up expansion of the city edges and instead, launched the New Assiut project. Regardless of the huge investments required and the pathetic record of success in term of population attraction, the policy of creating modern planned desert settlements was and still is offered by government as the ultimate solution to the phenomenon of urban informality, one in which alternatives that are offered will absorb the millions who inhabit or would otherwise go to informal areas of Assiut. But as we know, there is not an “appropriate home” in New Assiut. Will this problem enact another source of pressure on Assiut city in the future?





The ideal city image of government shows persons lost in the city.



The ideal city image of the people is composed of architecture without architects.

Controlled Laissez-Faire: Calibrating Informal and Formal on the City Edges



They are happy, they are living in a village.



They are happy, they are living in affordable housing.



They are happy, they are living in informal housing.



They are happy, they were experiencing life in Assiut.

CITY EDGES: COMMENTARY

A closer observation of the city edges of Assiut has been employed in the work in order to reflect on the forms of and the energies behind the informal urban growth in the Upper Nile Valley. Various attempts by the state to counter the phenomenon of informal expansion have been present throughout the last decades: until the 1980s through the investment in public housing projects, since the '80s by the implementation of planning boundaries to limit urban expansion into arable land. Despite the rigorous prohibition for illegal construction, the most recent forms of city-expansion in Assiut have been informal and created through intricate mechanisms to circumvent the restrictive laws. The changing institutional attitude, from control to laissez-faire, speaks about the powerlessness of the state planning vis-à-vis the tremendous space consumption and the massive population growth, as well as about the fiasco of the public housing programs both in terms of design and development. The long-term adherence to the Nile Valley resettlement strategy aiming to shift the population at large into the desert additionally reflects a conflict between the state planning policies and the needs of the population deeply rooted in tradition and with a strongly interlaced relationship with the rural landscape.

At the same time the migration dynamics in the Upper Nile Valley and their impact on the rural and traditional ways of life remain relatively marginal. Still, it is interesting to observe that the different forms of habitation at the city edges – the various public housing types, the traditional rural housing and the informal housing – have provoked a different cycle of urban migration located precisely at the city edges: It seems for instance that moving to a formal public housing in the city from a more traditional rural setting is conceived by the inhabitants as a sort of a temporary, transitional situation, a step in the long-term procedure of building one's own 'dream house' informally, and thus meeting the growing needs and standards of the extended family. Finally, the relatively low pressure for expansion at the city edges of Assiut – in comparison to the Egypt's capital – documents the role of provincial towns in the valley, their importance as urban centers, and their attractiveness as a living environment compared to the villages. The comparatively massive informal growth of villages in the valley, contrary to Assiut and other provincial towns, leads to an observation for a large part of the Upper Egypt's population: the traditional social organization and the rural, self-sustaining economy present the only viable alternative to a precarious urban living.

المدينة الصحراوية



DESERT CITY

NEW ASSIUT

The Urban Plan
Chronology
Infrastructure
Mobility
Housing Zones
Supplementary Zones
Obtaining a Home
City Economy

DEPENDANCE OR AUTONOMY?

Pressure on the Edges
Urban Tissue: Density
Incompatibility / Compatibility

CONQUEST OF THE DESERT

Reclamation
Chronology
The Four Generations
Problems of the New Towns
Actors

PROGNOSIS

ETH Studio Basel
Contemporary City Institute
Tânia Oliveira de Jesus

Prof. Roger Diener, Prof. Marcel Meili
Mathias Gunz, Rolf Jenni, Milica Topalovic
Christian Mueller Inderbitzin

Spring Semester 2009

DESERT CITY

Sector 9: New Assiut is located 15 km northeast of Assiut, on the opposite side of the Nile; in 2000, the Government of Egypt implemented the city to be Assiut's sister town. New Assiut belongs to the third generation of the New Towns Program established by the government to fight growing demographic pressure in the Nile Valley. Settling across the desert's edge has become a necessity but demands tremendous effort and considerably serious consequences; New Assiut is therefore a case study—the unit of measure within a broader issue—that will unfold the significance of this conquest of the desert.



NEW ASSIUT

In the middle of the desert under the hot sun, dusty foundations of a new city emerge from the ground. Streets barren of urban dynamism lead into the desert, accompanied only by lamps. Between the roads, huge stretches of sand await construction. In the oldest area, a group of buildings already stands. Here and there, one can find traces of life from the clothes hanging outside and the trucks passing by, loaded with cement bags and construction workers. Yet, overwhelming emptiness belies the city's ambitions. Continuously in construction this city composes itself, longing for its future dwellers.



Population: 1,761 inhabitants [census 2006] | 5,000 [estimation 2009]

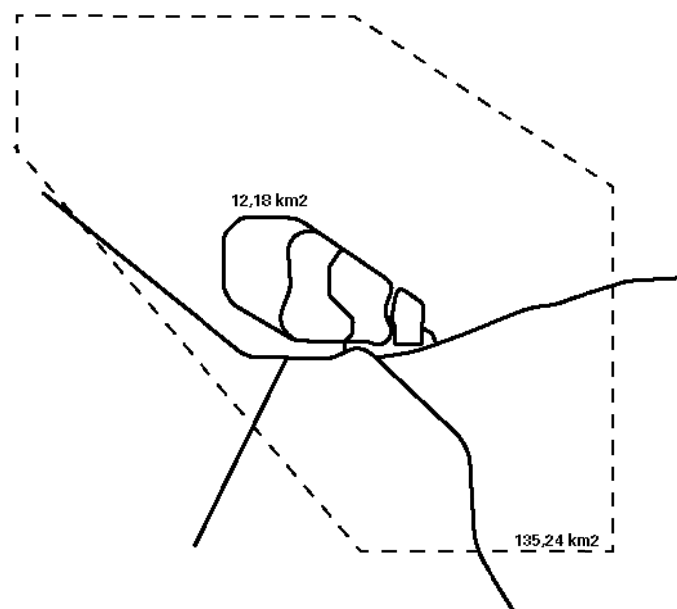
Plan Start: 1998

Planner: NUCA, Cairo

Construction start: 2000

Construction end: 2017

Investment so far: 500,000,000 LE



The Urban Plan

New Assiut was planned by the New Urban Communities Authority (NUCA) office, in Cairo. The plan shows evident influence of the so-called "New Urbanism," a movement that emerged in the United States in the early 1980s. The separation of functions (housing, services, industry, university, etc.), the guaranty of a "discernible center" for each neighborhood, the particular design of the roads to disperse traffic and provide a variety of pedestrian routes, the use of prominent sites to place civic buildings, the variety of dwelling types (houses, rowhouses and apartments) so that younger and older people, singles and families, the poor and the wealthy may find places to live are some principles one can find materialized in cities of the third generation such as New Assiut. The city has a domain of 135,24 km² of which 12,18 km² correspond to the area to be built by 2017. The city is divided in three major districts, each with its own centre of services that include governmental buildings, shops, company headquarters, churches, mosques, football stadiums, hospitals, parks, fireman and police facilities, health centers, etc. A major rule of composition is to surround a service centre with housing.

New Assiut Goals

1. Attract people to live outside the narrow valley.
2. Redistribute population within the province of Assiut.
3. Preserve arable farmland.
4. Raise living standards of province population.
5. Provide new employment opportunities which stimulate migration to the city.*

* From a governmental advertisement booklet about New Assiut



■ services



New Assiut Urban Life

During the day, New Assiut is a city without urban life. Everyone is in Assiut working or in the schools. Only the construction trucks cross the roads, and the construction sites are active. However, in the evening, children leave school, workers arrive in crowded buses, and the city returns to life.



New Assiut: A Construction Site

New Assiut is an immense construction site: a landscape of incomplete structures, piles of sand, gravel and cement.

1st
infrastructure

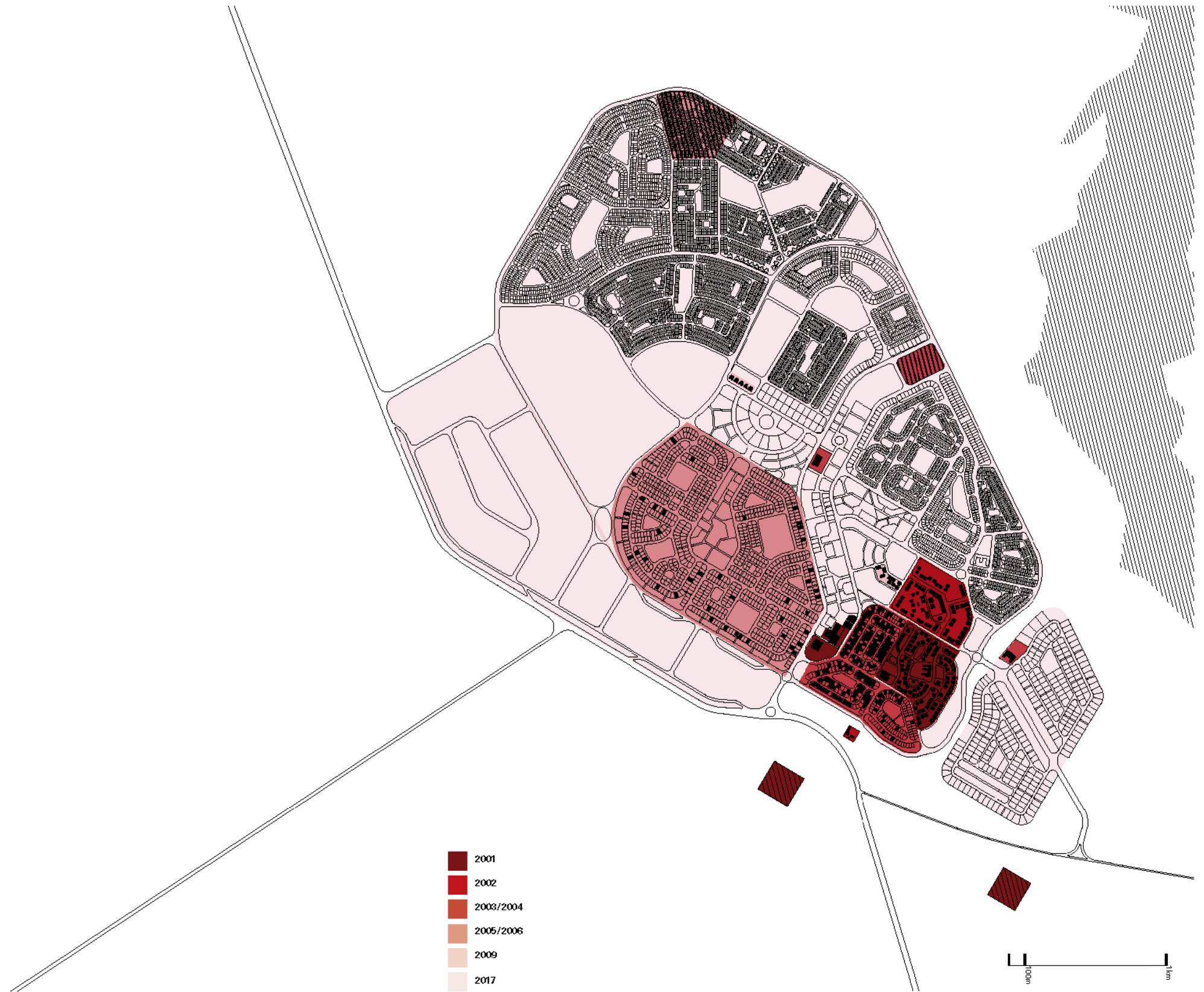
2nd
roads

3rd
buildings



Chronology

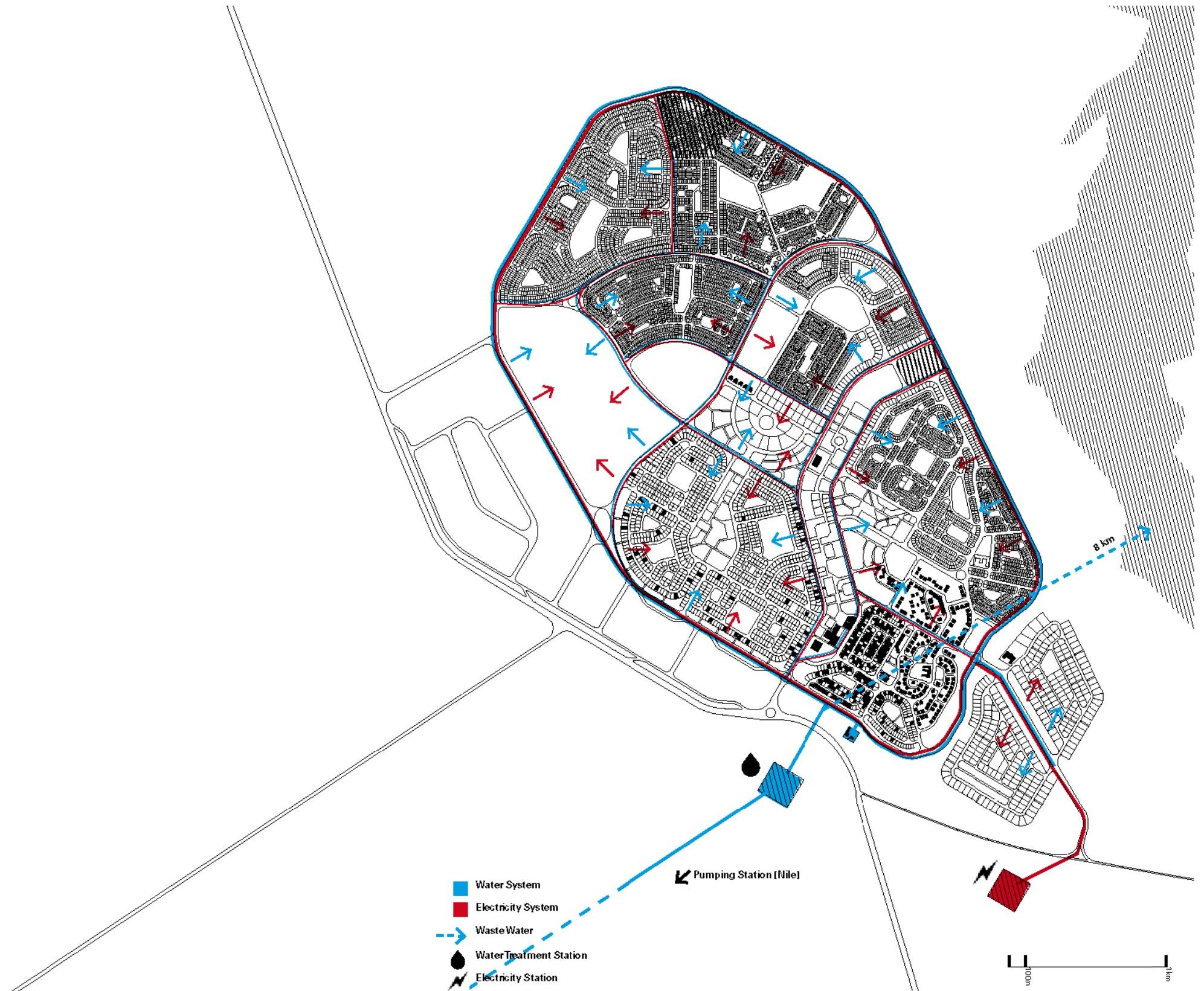
The first step in New Assiut's construction was the infrastructure: water and electricity, followed by roads and sidewalks, and finally the buildings. Although the main streets are already constructed, presently only 7% of the city is complete and inhabited.





Infrastructure

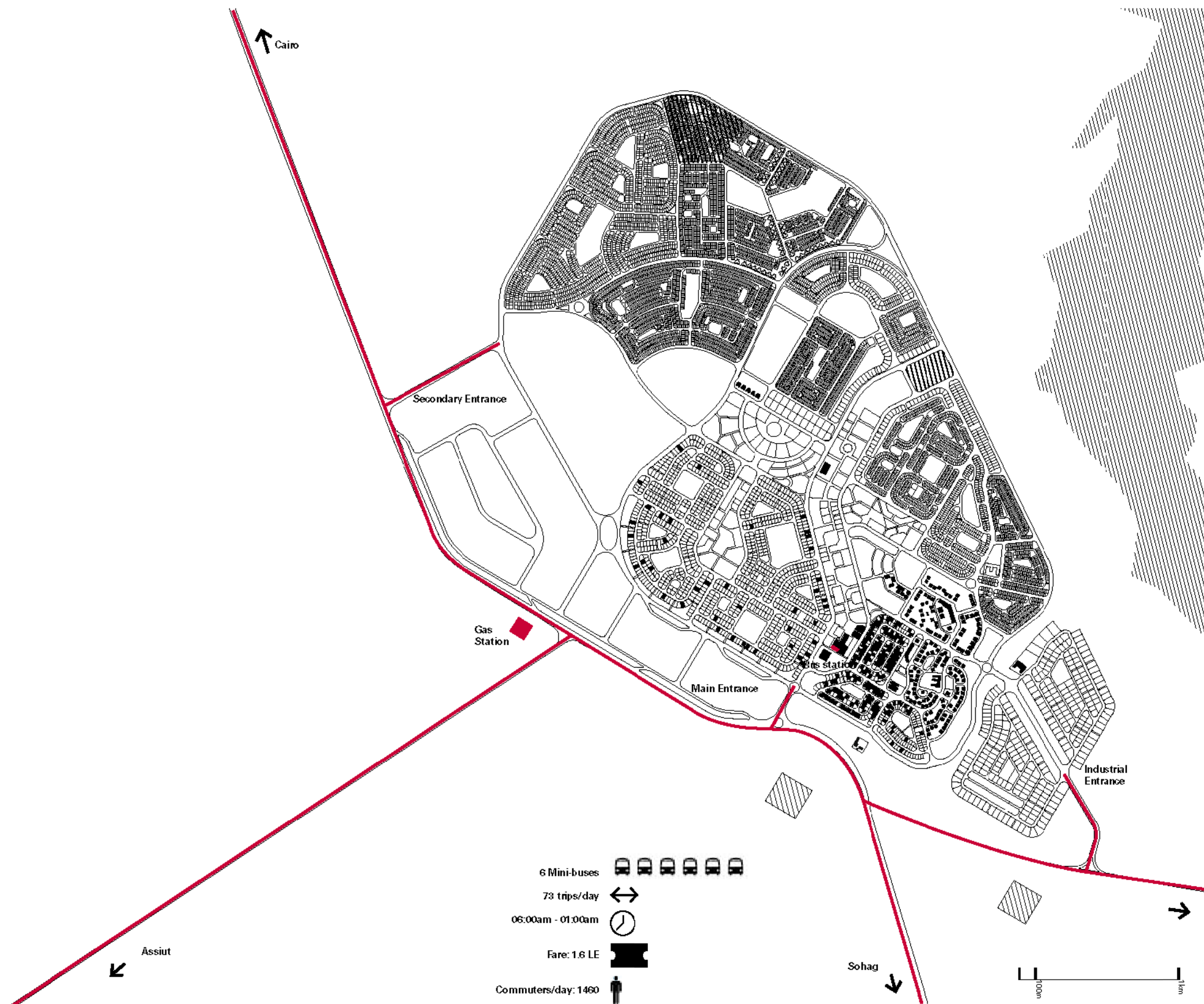
A pumping station from the Nile provides the water to New Assiut. This station pumps 52,000 m³/day and exclusively serves New Assiut. The pipes follow the road to New Assiut where the treatment station sits. Once treated, the water is directed to the city ring road and from here ramifies itself, forming a grid. The same happens with the electricity; a station is reserved for the new town with power of 50 megawatts. Under each road there are three pipes: electricity, water and waste water. Although a sewage treatment station, with capacity of 40,000 m³/day, has already been built, the wastewater is not yet treated, but is dumped 8 km away, in the middle of the desert.





Mobility

As the major constructed and inhabited part of Assiut corresponds to social housing, few people own and drive private cars. Thus, the minibus functions as the main vehicle of mobility. These buses are provided and belong to Assiut's governorate. When questioned about connectivity for the future, Eng. Khalid el-Tayib (responsible for city transport and water) explained that New Assiut is expected to have an internal bus network when the city is complete.





Mubarak Youth Housing Project

The Youth Housing program was initiated, in 1995, by president Hosny Mubarak for "provision of modern domicile for youth at appropriate prices". Spread through several new towns within three phases of implementation. During the first phase 20,712 units were constructed with an area of 100m² per apartment, including a common room, two rooms, kitchen and bathroom. Although the composition was maintained, in the next phases, the areas were reduced to 37m². Empirically proven that the size of these apartments are not capable of fulfilling its inhabitants needs, nevertheless, the fourth phase is ongoing now with even smaller apartments (50-57m²)!

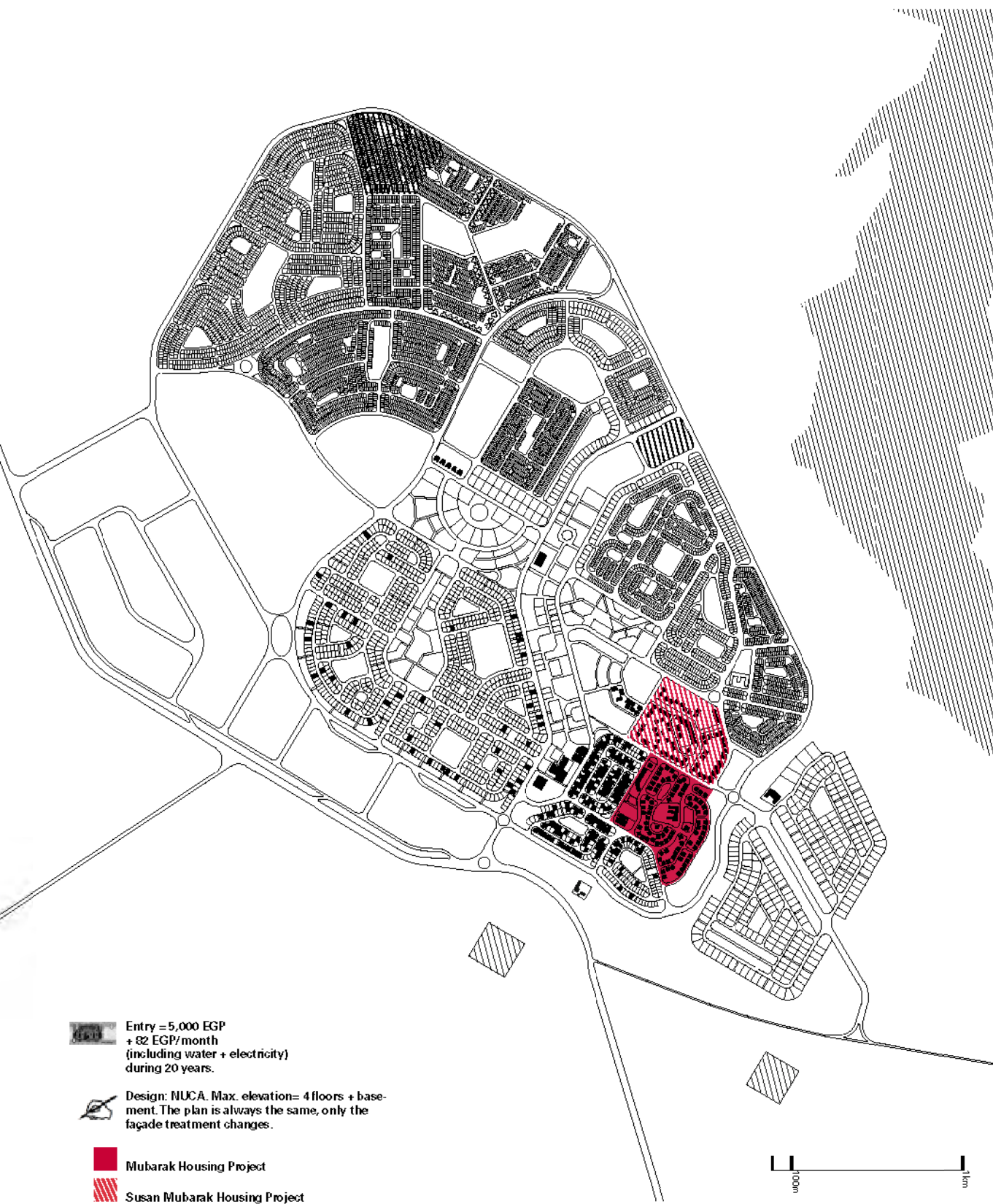
- 1st phase: 100m², 20712 units
- 2nd phase: 70m², 34931 units
- 3rd phase: 63m², 18690 units
- 4th phase: 50-57m², 10200 units



Suzan Mubarak Housing Program

The Future Housing program was enacted when Mrs. Suzan Mubarak called for a "prompt solution to the housing problem of a greater number of law income segments." This project is still in its first phase with 15,636 units to be constructed. The compartments and the size of the apartment are identical; what varies is the mode of acquisition and payment methods.

1st phase: 63m², 15636 units





1



2



3



4



5

- 1. Kitchen: 3.82 x 2,8/1.30 m
- 2. Common room + Balcony: 3.41 x 5.48 m + 1,2 x 2 m
- 3. Bedroom (children): 3.28 x 3.28 m
- 4. Bedroom (parents) + Bacony: 3.28 x 3.28 m + 1.2 x 2 m
- 5. Bathroom: 2.24 x 108/186 m

**Mubarak's Typology: 63 m²
Interview**

Zone: Youth Housing

Name: Jamil `Arabi Fu`ad

Age: 35

Family members: 4

Job: Mechanic Assistant, Assiut

In New Assiut for: 2 years

Payment: 5,000 pounds + 82 pounds/month

Original Residence: Assiut (El-Mujahidin)

Reason for Move: "It's more quiet, clean and comfortable. The kids like to play outside. And it's cheaper then Assiut."

Problems in New Assiut transport, lack of shops, services and jobs, government doesn't support maintenance.

Building Problems: too small, bad construction.

Transport: public bus



Mubarak Youth Housing Program

"This project is known for its architectural models for elevation of public taste." NUCA website





Mubarak Housing Projects

Although the plans are kept the same, outside the buildings express variety of forms and colours. The earth is brought from the valley and spread on the ground to reclaim some green spaces to the desert.



“Build Your House” Program

North of town, foundations rise up from the ground scattering through the landscape in the first phase of the project.

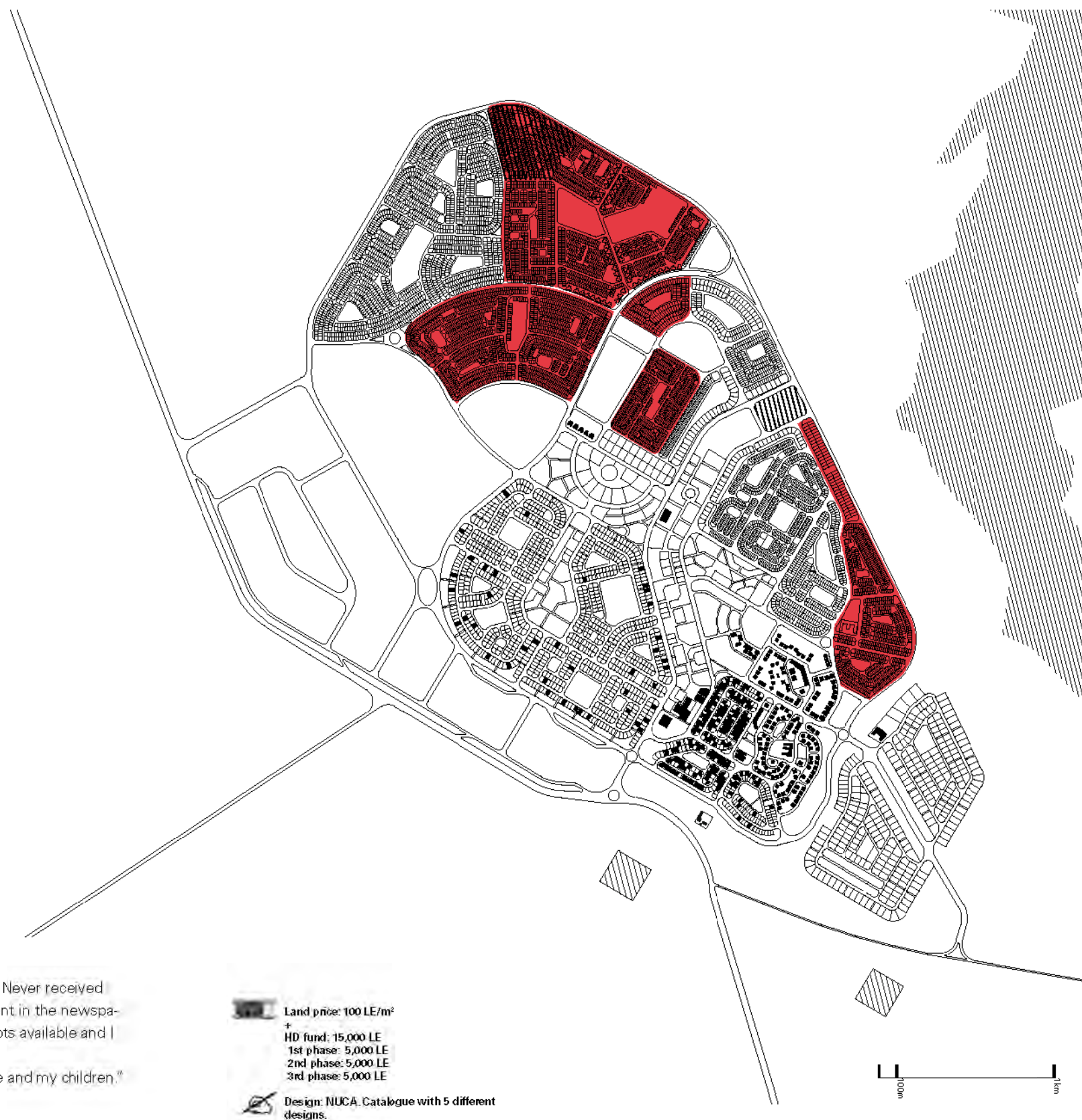


Self-Built Housing

The "BuildYour House" program is directed toward low-income families. The Housing and Development Bank finance the project through three stages. The proprietary receives a low-priced plot, with 5,000 LE each stage to complete a story of the house. The project design is dictated by a catalogue of 5 styles determined by NUCA. The plot owner must find his own construction company and specialists (foundations, water, electricity, concrete, insulation, etc). Some companies offer their services and already have offices in New Assiut (ex. Cemex), however, the majority of the construction is done by the owner and relatives. To access a "BuildYour House" plot is difficult and it is even harder to receive funding from HD Bank; the proprietary is likely to self-invest for years, and without money to proceed, the building can quickly deteriorate.

Interview

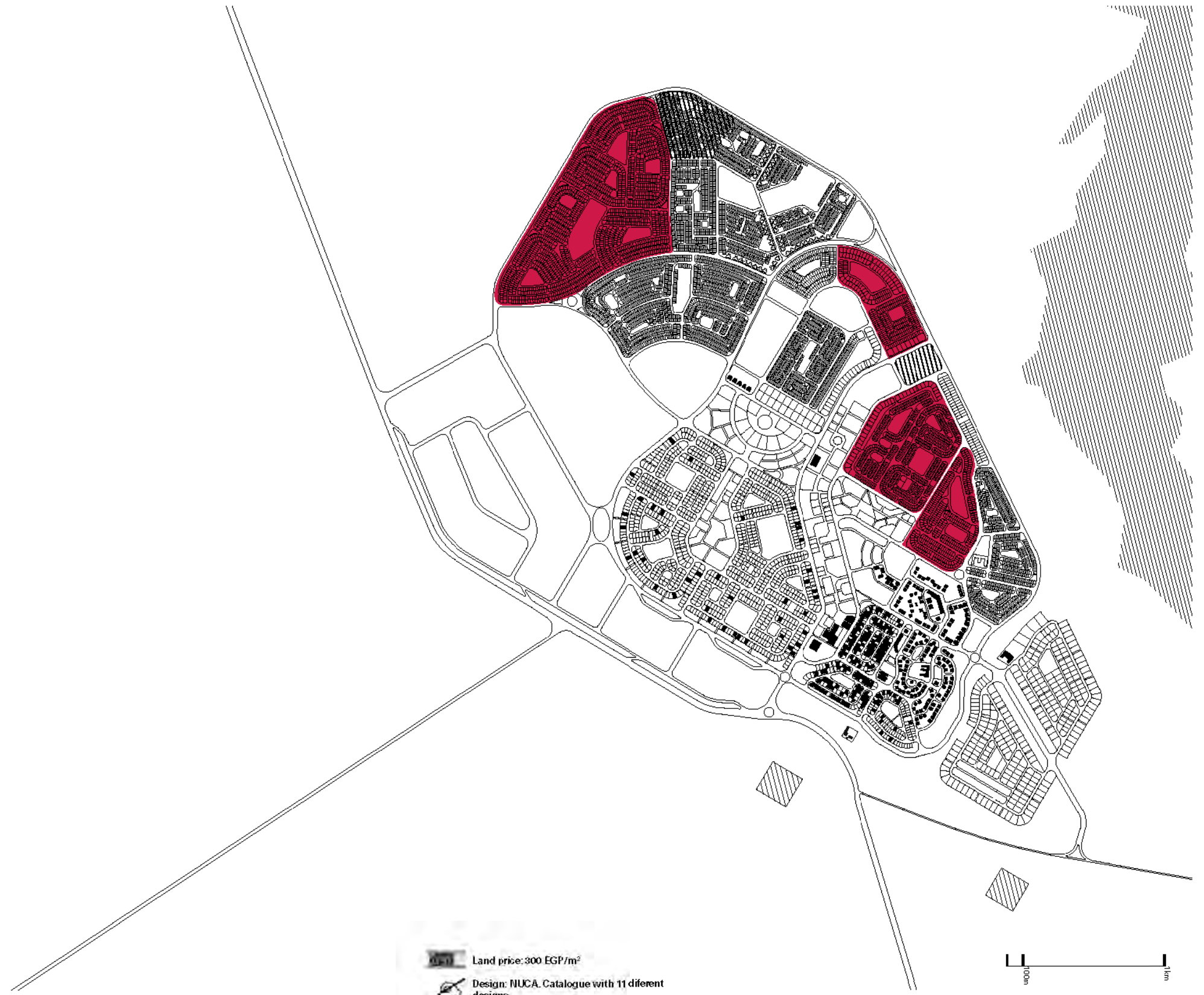
Zone: BuildYour House
Name: Hamdi Mohamed Abdullah
Age: 45
Family members: 4
Residence: Assiut
Job: Employed by Assiut University
Date he purchased the plot: 2007
Price: 1050 LE (plot)
Date he received it: 2008
Date he received the first phase fund: Never received
How he applied: "I saw an advertisement in the newspaper from the HD Bank about the new plots available and I applied at the bank in Assiut."
Why he bought the plot: "For my future and my children."
Transport: public bus





Family Housing Program

This program is destined to "fulfil citizens needs for an appropriate domicile for the whole family". Up until now, there aren't any exemplars of this program in New Assiut. But 342 units are to be constructed in the near future. The plots have areas within 150-350 m² to be built according one of the given models (11).





Fast Construction Zone

The "fast construction" program was initiated with two goals: attract people to the new city by selling the plot by a low price, and quickly increase the density around the first implemented center, that corresponds also to the city front view; this was achieved by stipulating a term for the construction time. The plots are slated to become family housing units with no more than 4 floors. Except for the building height (max. 4 floors), the design is totally free but must be approved by the New Assiut governorate.



Land price: 115-200 EGP/m²

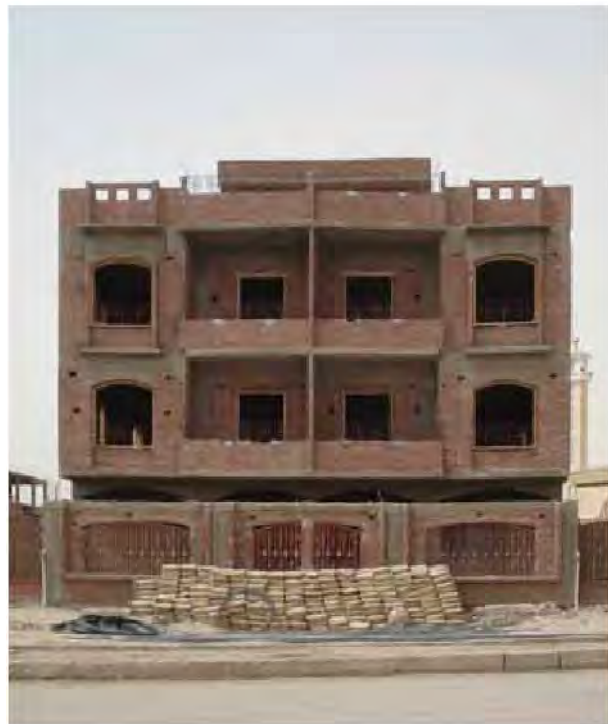
Design: Free! But the building must be complete within 5 years.

1000m



Construction and Addition

In most cases, the proprietary guarantees that the building is completely ready to a certain story to abide with the 5 years law. Later, he constructs more floors.



“Business Man” Zone

This housing program is reserved for a higher-income inhabitants and certainly is expected to contribute to the economical balance of the city. Apart from height restrictions (3-4 floors) the design of the building is free.







Industry Zone

Apart from the housing zones, New Assiut comprises three other zones with specific functions and locations. The industry zone is located in the south, so that pollution is blown away from inhabited areas. The area is divided into plots, to be sold to small/medium industries. Unlike some new cities, New Assiut is intended to be a heterogenous rather than industrial city.



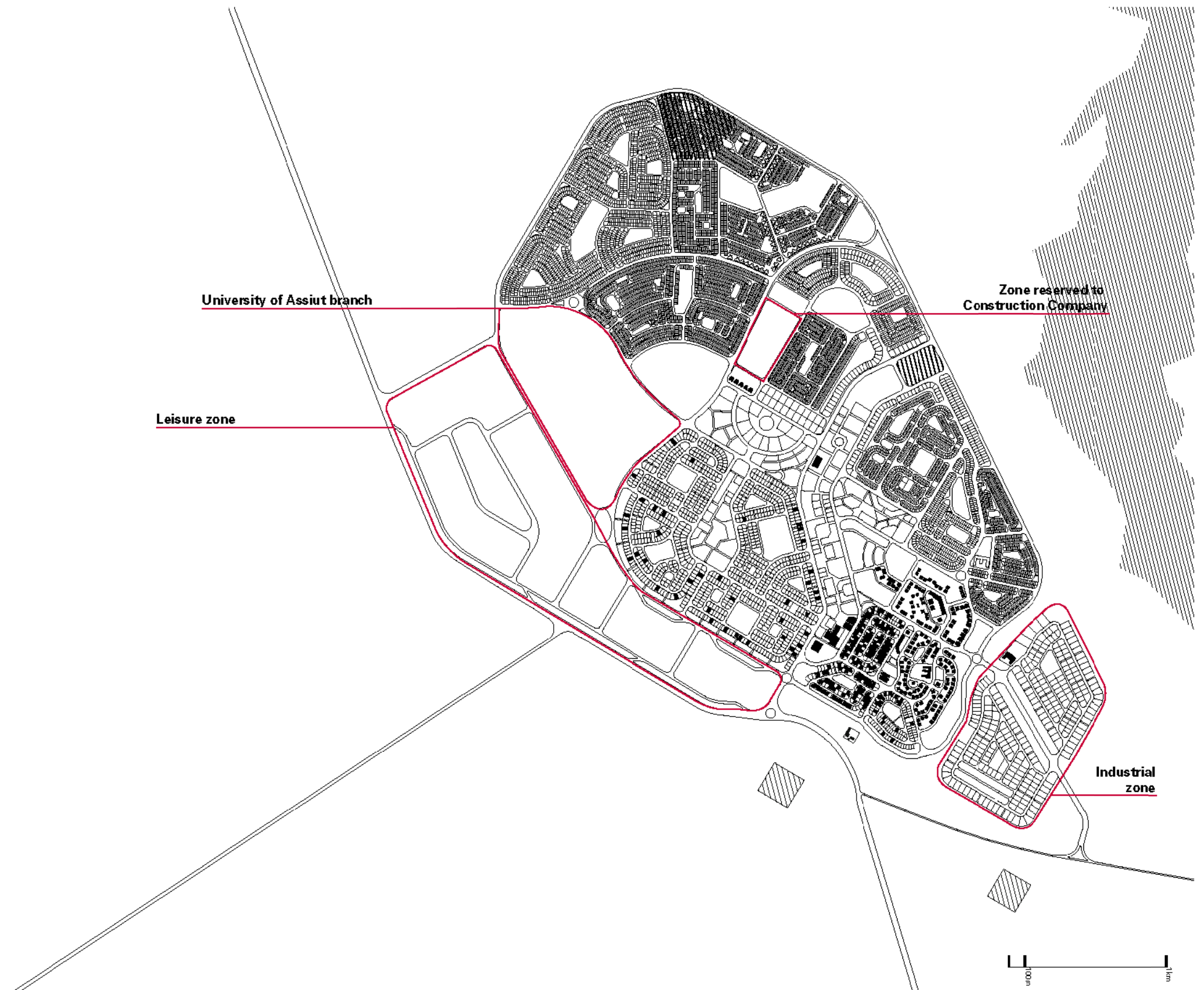
University

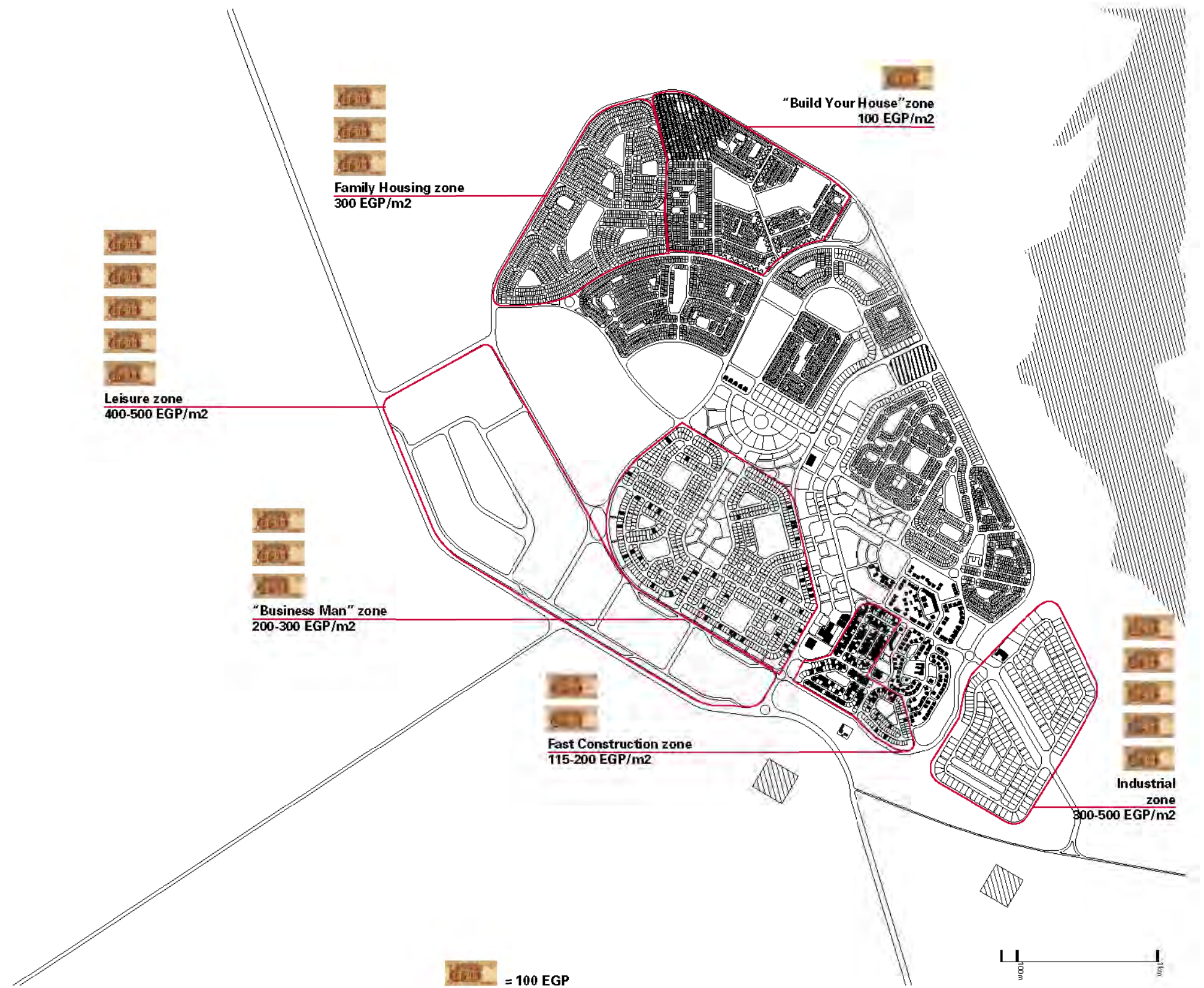
Assiut University will extend a branch into the new city.

Leisure Zone

Another zones planned was the "leisure" zone, reserved for malls, clubs, cultural facilities, museums, and cinemas. Its location at the city entrance intends outsiders to visit these spaces without crossing through residential areas.

Construction has yet to begin in any of these three zones.





Housing Price Zones

Each zone has its own defining characteristics, with corresponding prices, which compose the city economy.



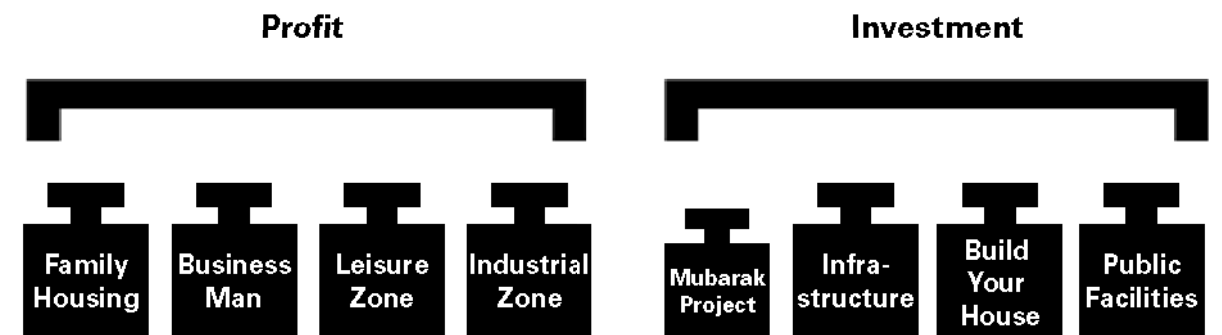
1



2

Obtaining a House

1. An advertisement is made by the Ministry of Housing, Utilities and Urban Development (MHUUD) or NUCA in newspapers and websites.
2. An application downloaded at NUCA's website is sent to New Assiut's governorate. In cases of free design, the project is submitted for evaluation.
3. The applicant signs a contract at governorate facilities.

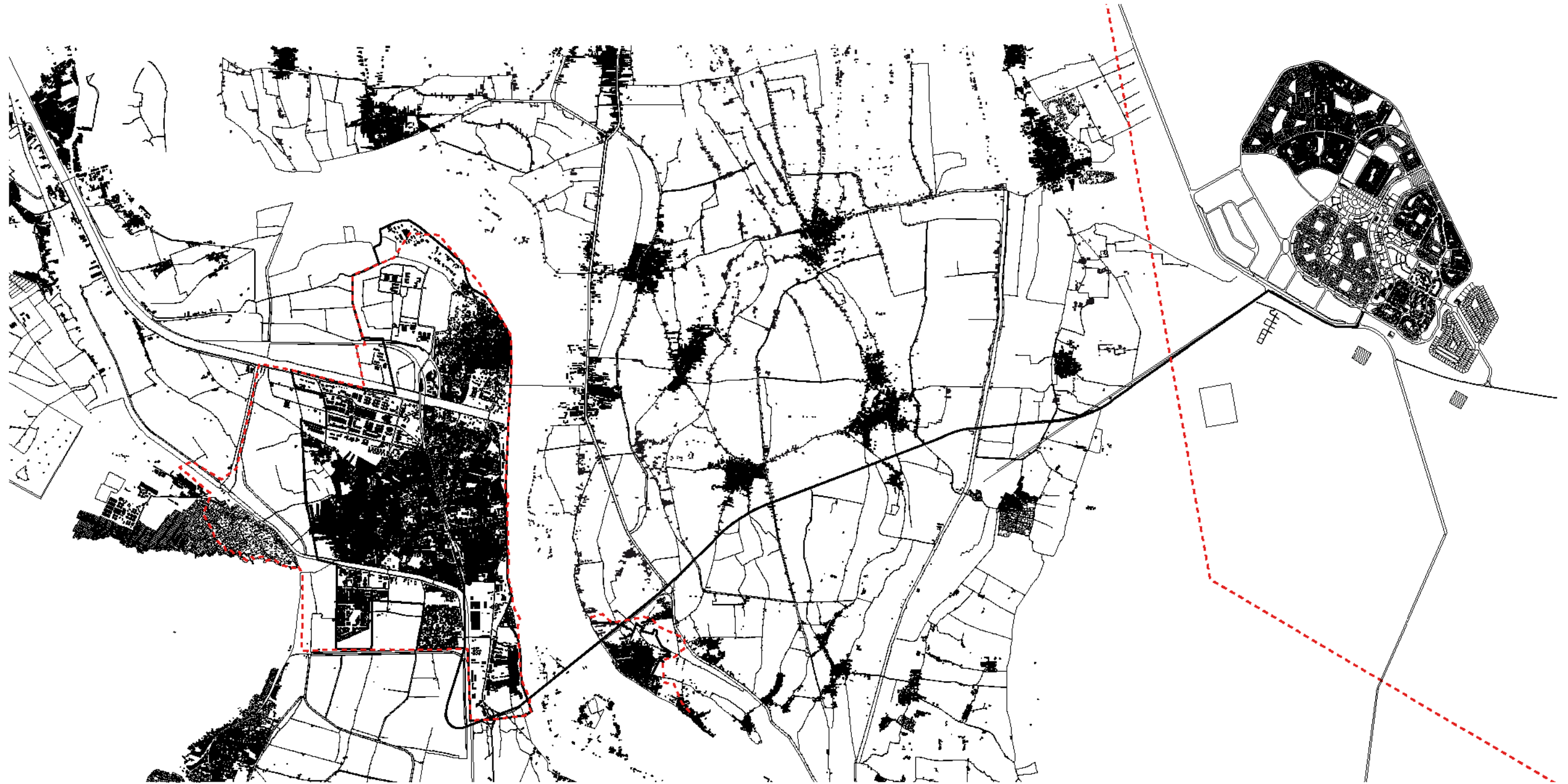


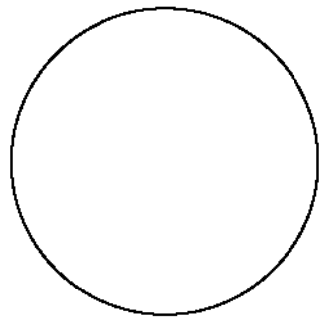
City's Economy

Each zone has its own conditions and prices but the procedure is the same. The economy of the city is obviously based in these differences.

DEPENDENCE OR AUTONOMY ?

New Assiut was planned to be Assiut's sister town, capable of an independent urban structure and dynamic within its limits. However, up to now, the city remains more like an urban offspring, depending on Assiut in numerous ways. Clearly, the city requires time for development and diversification. But will New Assiut ever be capable of being what was meant to be, as an autonomous town?





Assiut population:
395,000 inhabitants



New Assiut Target Population:
100,000 inhabitants



New Assiut Population:
10,000 inhabitants



Assiut



New Assiut



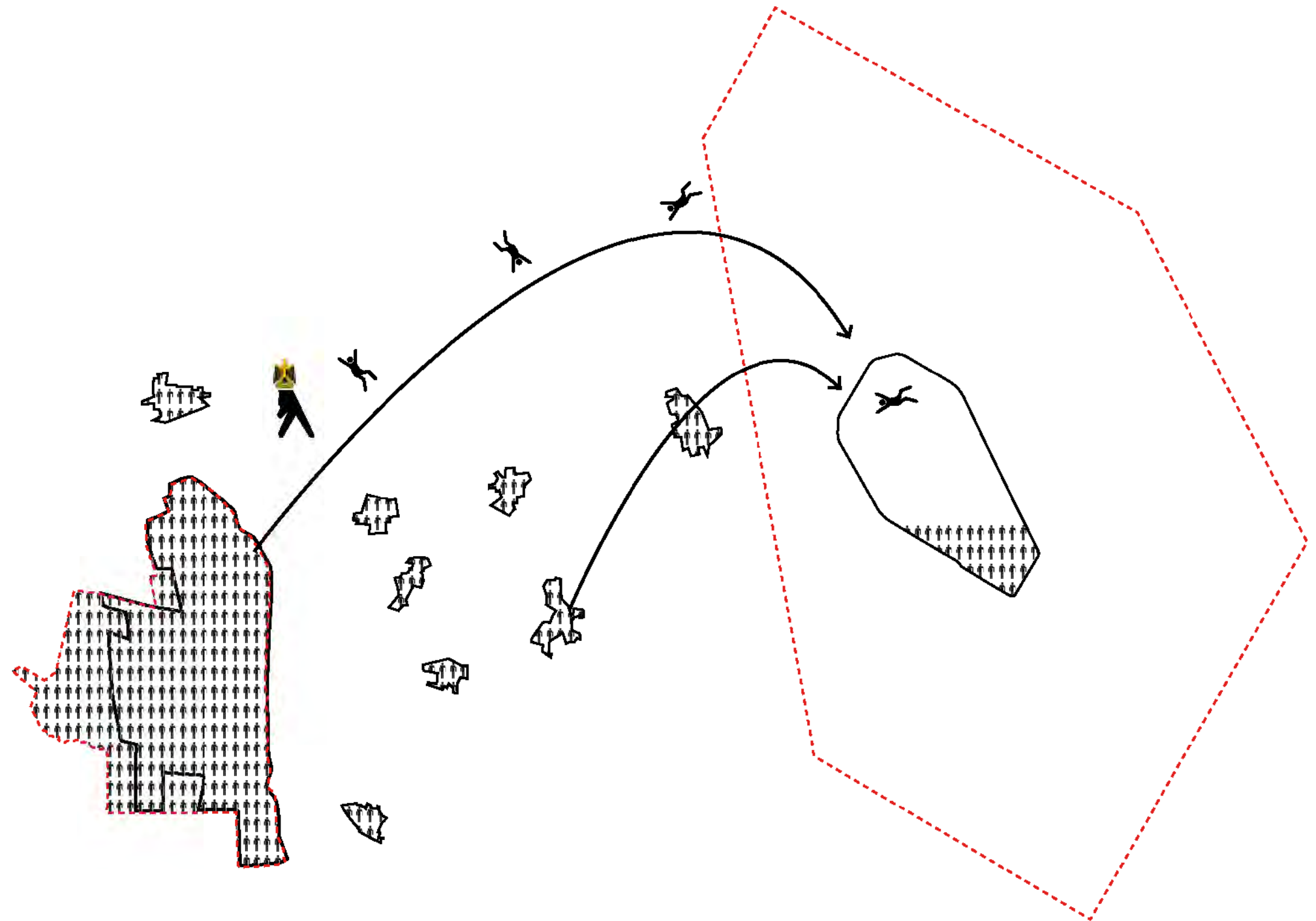
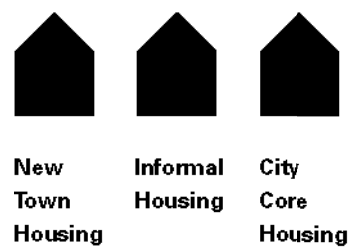
Assiut

This urban structure is dense and complex, resulting from long-term development. The specificity of Assiut urbanism does not easily translate to the New City.



New Assiut

Once each house is inhabited by a single family, the density of New Assiut will still be much lower than that of Assiut. The distance between the buildings in a street fails to emulate the complexity of social and special relations one can identify in Assiut. The street is no longer a second layer of privacy (after the house); it belongs completely to public domain. This certainly has consequences in the maintenance of public space and the limits of ownership.



Pressure on the Edges

The government draws a limit to the growing city and villages, in an attempt to spare arable farmland. However, the new city is not yet suitable for inhabitants, due to prices and remote location. Living in the city core becomes increasingly more expensive as the density grows. So the best alternative is informal building. The conflict between government goals and inhabitants needs is increasing pressure on the city edges.

CONQUEST OF THE DESERT

“Leaving the narrow Nile Valley and fanning out, in a planned and organized manner, throughout the country, has become an unavoidable necessity. In view of these facts, the conquest of the desert is no longer a slogan or dream but a necessity dictated by the spiralling population growth. What is required is not a token exodus into the desert but a complete reconsideration of the distribution of population throughout the country.” President Mubarak reported in Al Ahram Weekly, 14-20 November 1997



The New Towns Program Goals

1. Creation of new civil centers for achieving community stability and economic prosperity.
2. Redistribution of inhabitants from the narrow Nile Valley.
3. Development of attractions beyond existing cities.
4. Extension of urban spines to desert and remote areas.
5. Curbing urban infringement upon agricultural areas.
6. Achieving goals of urban development strategy.

New Cities planning and development was based upon the latest planning techniques. Land sale rates were for the actual cost of basic utilities to serve as a nucleus for investment attraction. Various privileges were granted for the investor (custom & tax exemption). NUCA's primary goal was the provision of housing units for low income segments that were convenient to economic and community conditions. To subsidize low-income households, NUCA launched various housing projects in compliance with different conditions and facilities. For realizing the urban development strategy goals, the Ministry prepared the National Development Map Until 2017, where the optimum locations were highlighted for the development of the new urban communities and their priorities through new development spines, where number of new communities (44 urban agglomerations) are to be established with diverse economic bases according to the physical and economic capabilities of each respective area, where job opportunities are generated.

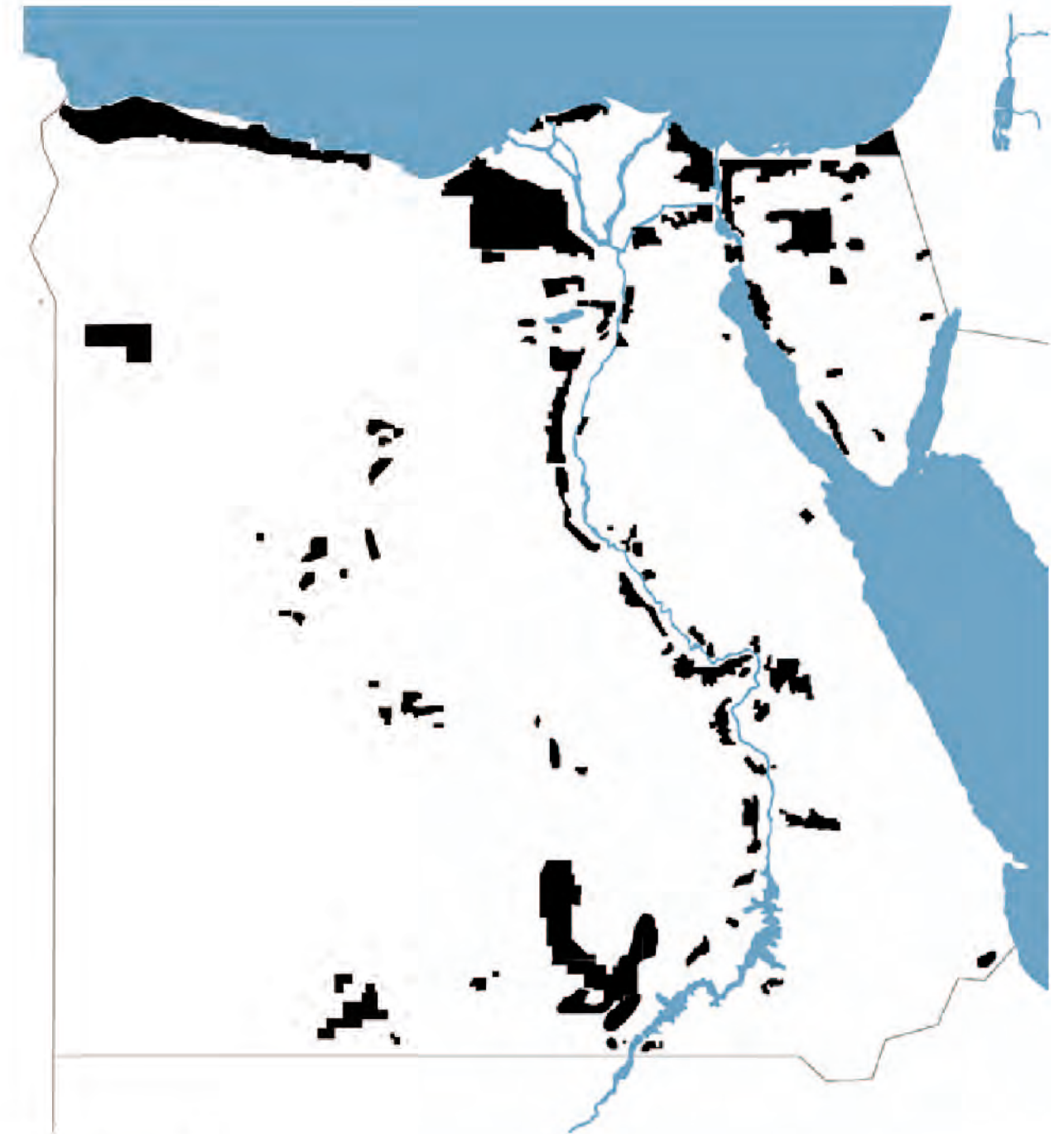


43% of Egypt's population live in urban areas.

55% of Egypt's population live in rural areas.

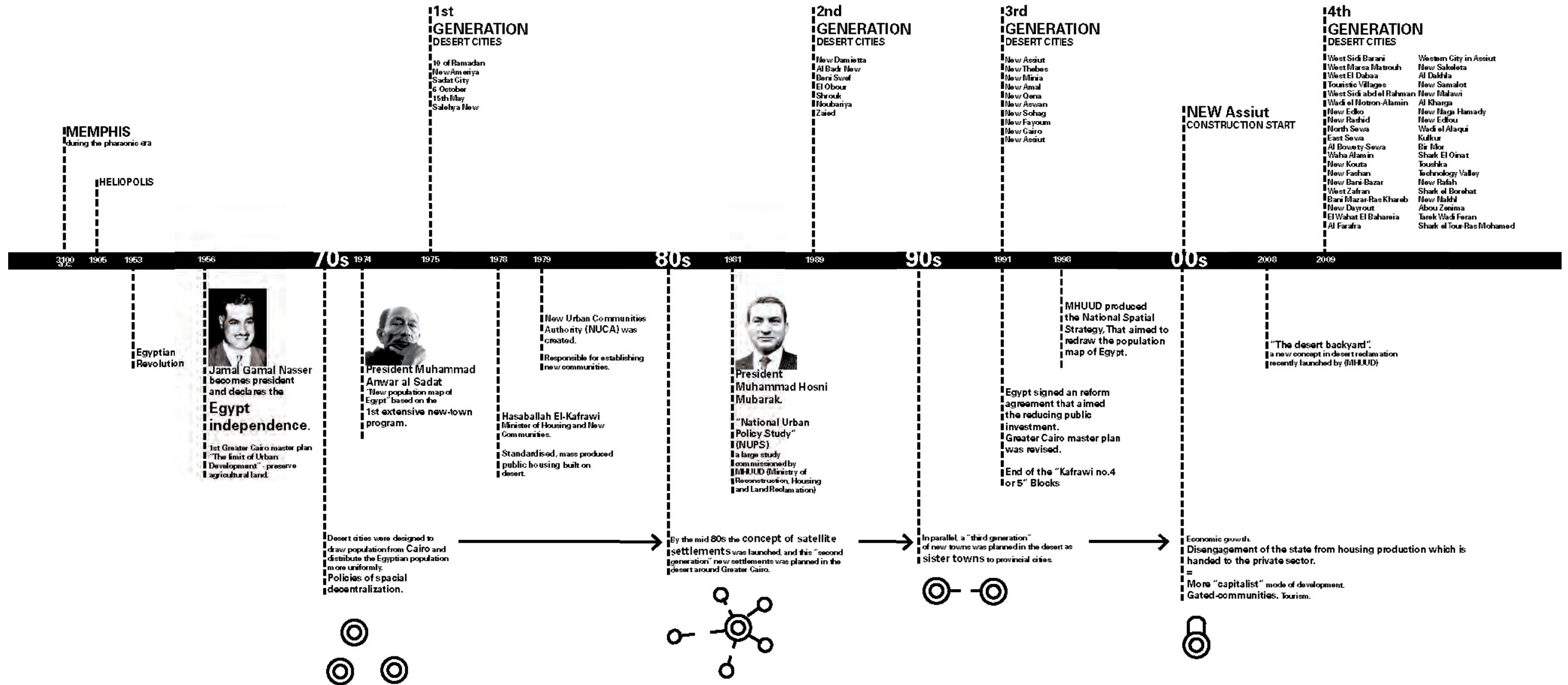
98% of Egypt's population live in the Nile Valley including the Delta.

The Nile Valley represents 4% of Egypt's territory.

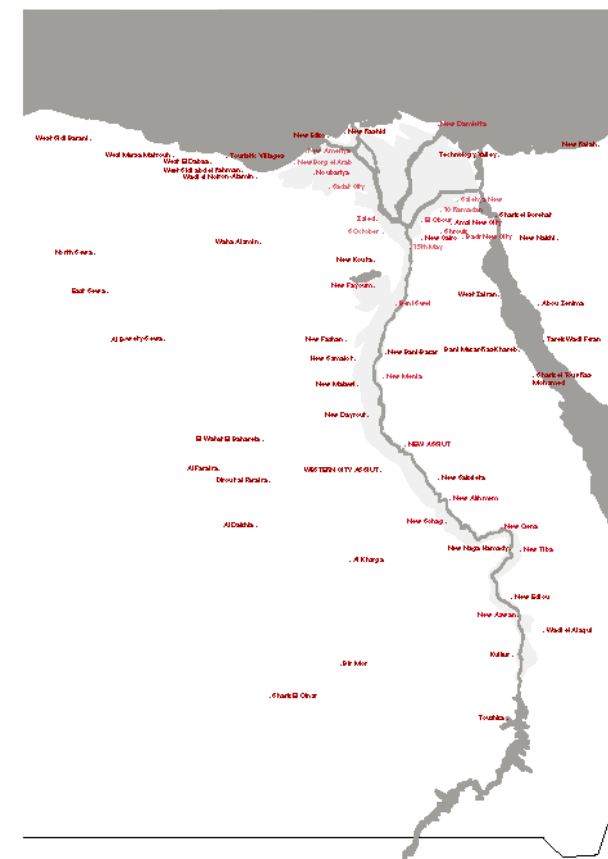
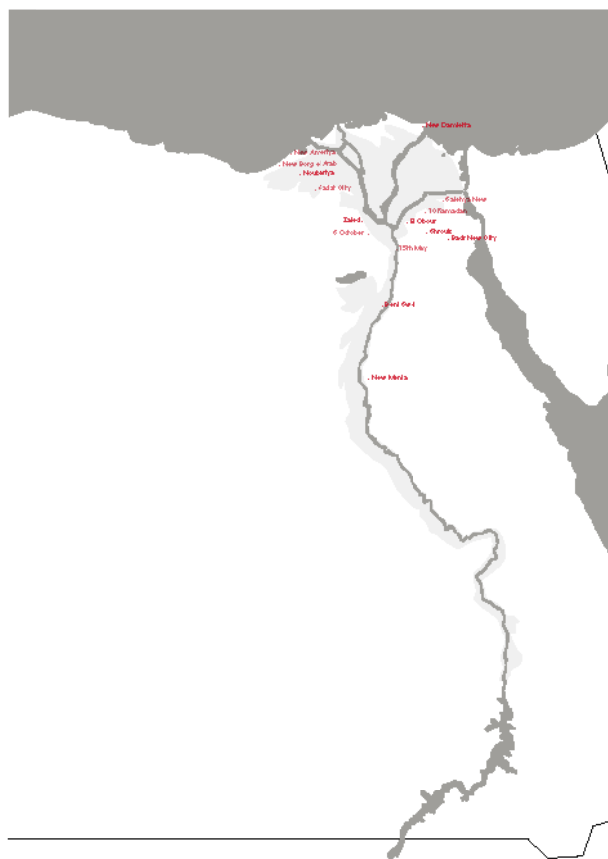


Reclamation Map

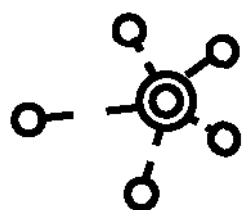
National Development Map project until 2017
Total: 3,387,200 feddans to be reclaimed



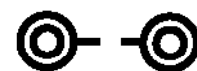
New Cities Chronology



10th Ramadan
 The first generation of new towns was the government's first attempt to resolve population density around Cairo, by establishing strategic cities in the Delta territory.
 Politics of decentralisation!
 Influences: Modernism (Brasília)



2nd Generation: Satellite Cities
 New Damietta
 In the mid-80s, once again in an attempt to draw population from Cairo, various cities were founded in the desert around Greater Cairo. This cities were not meant to be completely independent and some have more specific functions (i.e. industrial). The satellite city plan should improve connections to Cairo, yet, the lack of connectivity has contributed to the failure of some satellites.
 Influences: Mix between Modernism and "New Urbanism" (i.e. Seaside, Florida)



3rd Generation: Sister Cities
 New Menia, New Assuan
 The third generation is the first to attend to city demographic problems. A sister town was established to each of the main provincial cities, expanding the new towns program along the Nile.
 Influences: "New Urbanism"



T = \$

4th Generation: Forbidden Cities
 Serrania
 The 4th generation spreads the New Towns through all Egyptian territory, truly advancing into the desert. The government uses the private sector for desert reclamation. These city plans no longer concern NUCA; investors hire world-famous architects (i.e. Norman Foster). However, the price of housing in this cities make them inaccessible to the majority of the Egyptian population and do not resolve the demographic density in the valley. Only accessible to tourists and a small Egyptian elite, these cities remain utopic/desired/ and forbidden to the common Egyptian.
 Influences: "New Urbanism"; Dubai



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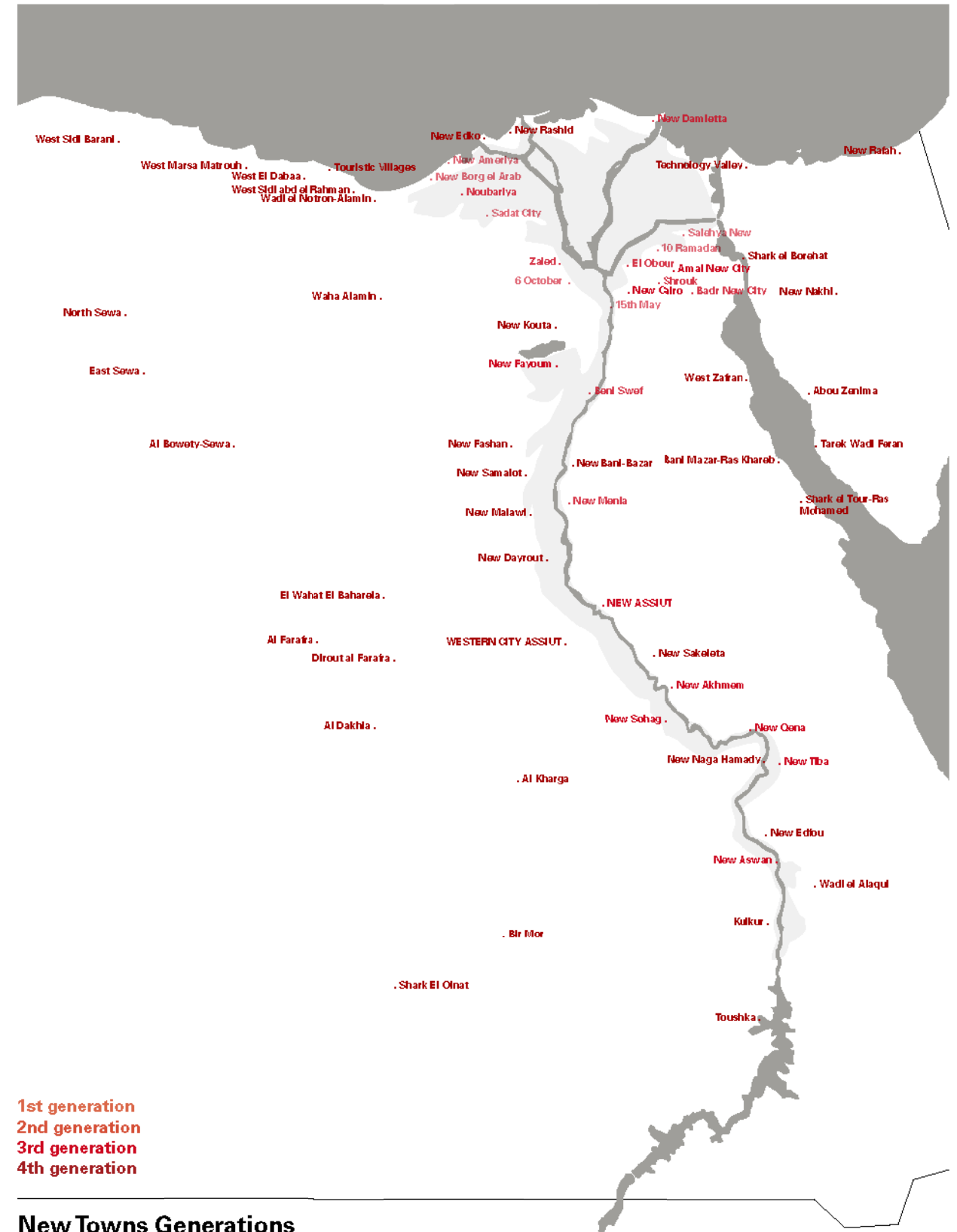


6



7

- 1. 10th Ramadan, Egypt | 1st Generation
- 2. Brasília, Brazil
- 3. New Damietta, Egypt | 2nd Generation
- 4. Seaside, Florida
- 5. New Menia, Egypt | 3rd Generation
- 6. New Assuan, Egypt | 3rd Generation
- 7. Serrenia, Egypt | 4th Generation

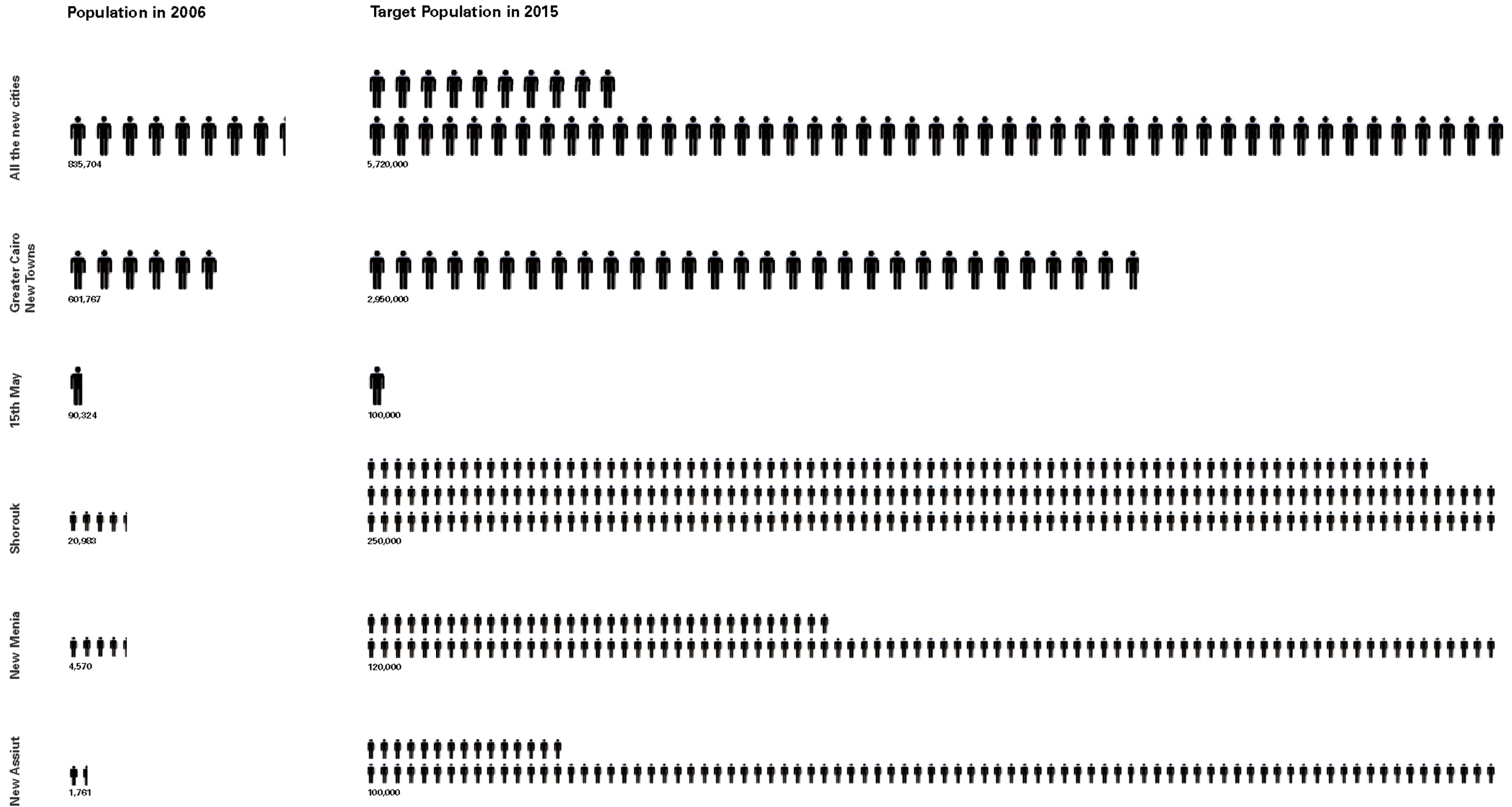


New Towns Problems

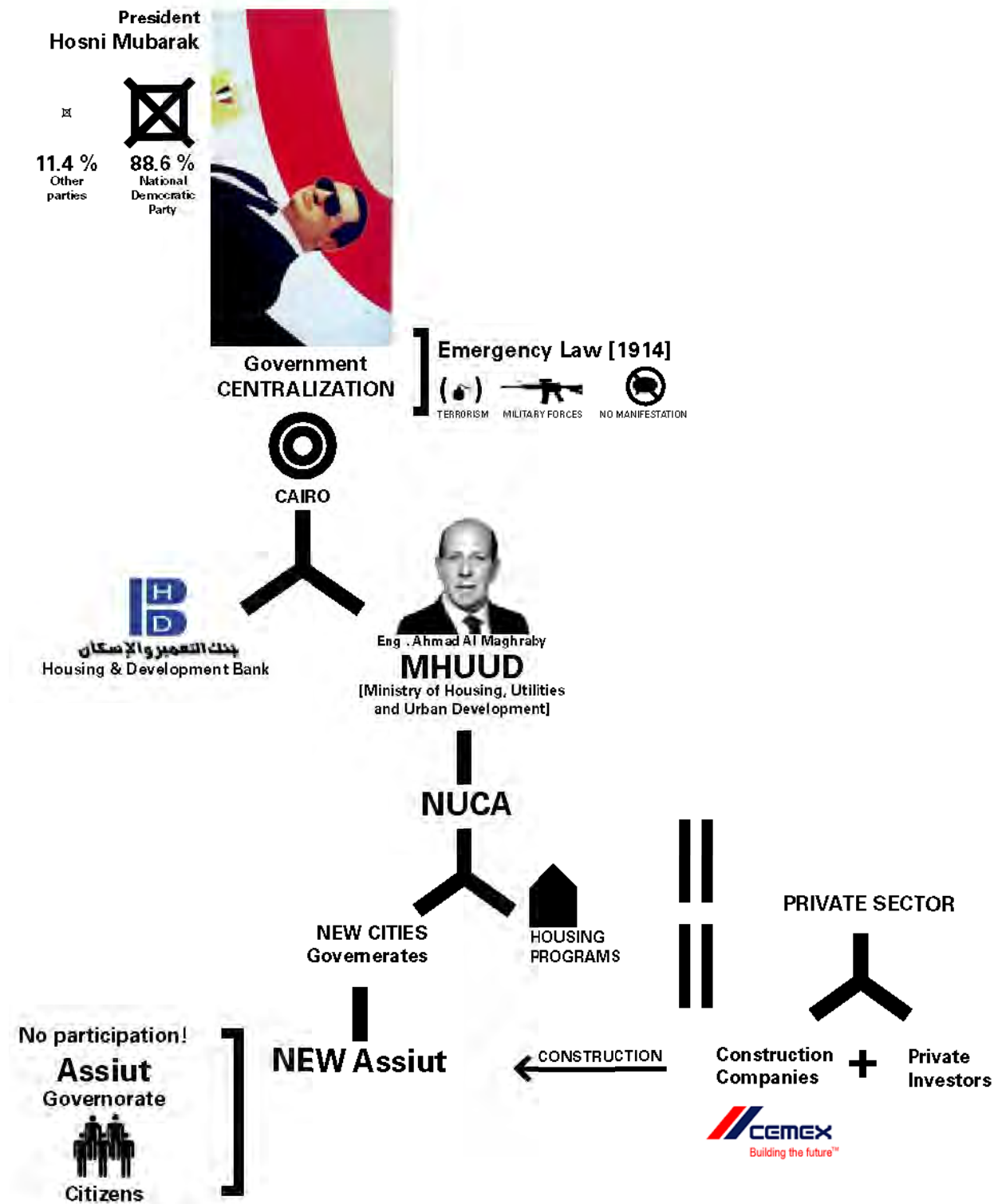
1. New Cities are not attracting anywhere near the planned populations. In 2006 census 2.45% urban population lived in the new cities.
2. Have been developed by side processes with little consideration of location dynamics, target beneficiaries, economic underpinning of the new towns and effective market incentives are not quite achieved.
3. Creating new towns is an expensive endeavor, since all basic infrastructure must be provided from scratch. The New Towns are overly dependent on State investments.
4. Proper studies (soil, population, etc.) were not undertaken, and the result is a land that is not arable.
5. Although the new communities law envisioned the eventual handing over of the new towns to the respective local government authorities, this has not occurred because local authorities are perceived as not having the management capacities to maintain the high standards of the new towns.
6. Many private sector developers hurried to develop up-market sites without regard for market demand, leading to the failure of many schemes.
7. Many new towns, especially those with industrial areas are experiencing severe environmental problems.

World Bank | Arab Republic of Egypt: Egypt Public Land Management Strategy | Volume I & II | 2006

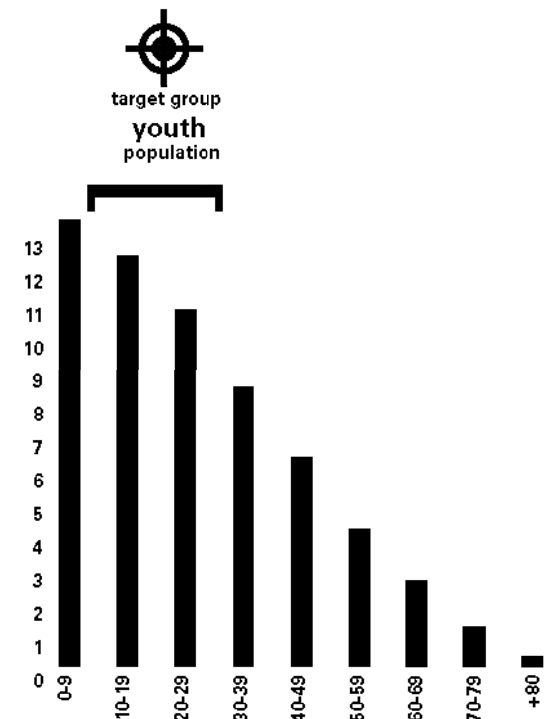




 = 100,000 inhabitants

Actors
 Many facets of public legislation are at work with the private sector to develop desert cities. Whether these collaborations are successful has yet to be determined, but administrative commitment is high.



Population in millions / age
 U.S. Census Bureu, International Data Base, 2005

Housing: A Key Political Issue

"Unemployment, housing, prices, transport and the cost of private tuition and health treatment, the problems of disorganizaed urban planning faced by breadwinners, in addition to other issues that must be dealt with in the next period....I am committed to building a modern and developed society....I vow before you to complete the building of the economic and social system which offers jobs to our sons and raises the standard of living and income of every family, guarantees a respectable life to every pensioner, and provides every citizen with the daily services they require in terms of education, health, housing and transport."

President Mubarak Speech for the Elections Campaign
 Al-Misriyah TV, Cairo, 28 July 2005



President Mubarak and the delivery of titles to twenty young men and women: "Our goal is to built 5,000,000 houses to the youth and limited income people. President Hosni Mubarak said that the State attaches great importance to the provision of housing for low-income youth and said: do the impossible and the maximum effort to do so. The President added that the electoral program aimed at building 500 thousand housing units for low-income youth. The President expressed his delight with the private sector and the business sector to create housing for low-income young people and praised the fast performance and achievement."

Akhbar ElYom Newspaper Cover | 24 September 2007

PROGNOSIS

Considering the conditions of older new cities and analysis of New Assiut, what can we preview for this city's future? Will New Assiut ever be the sister-town it was meant to be? The city currently depends on Assiut on every level, fed by the umbilical cord that is the main road of connection between the two cities. This road corresponds to a continual flood of products, food, water, electricity, and people. Lack of identity is also a recognized factor in new urban settlements. People who live in New Assiut keep Assiut as a point of reference and identification. New Assiut can be compared to a transplanted organ which tissues have very low compatibility with Assiut's, and will consequently take time to be absorbed if, in the worse hypothesis, not rejected. This incompatibility subsists on the differences between the densities, on the (non)potential of the urban complexity, and on the capacity to suit the population needs in terms of housing and living. Although New Assiut is just nine years old, it lacks the internal features that would allow the city to gain complexity and develop the urban processes. Assiut's new sister-town will probably remain as a daughter-town.



DESERT CITY: COMMENTARY

The desert city New Assiut reveals a disturbing discrepancy between, on the one hand the bureaucratic and technocratic character of the central governmental planning, and the housing and living needs characteristic of a large majority of Egyptian society on the other.

New Assiut belongs to the 3rd generation of new towns – the so-called ‘sister cities’ planned and built since the 1960s as urban extensions to towns throughout Egypt. It’s unfinished and largely motionless urban panorama set against the desert background can be seen as a reflection of the current stagnancy affecting Egypt’s New Town planning program. This countrywide state-initiated urbanization project had a goal to decentralise and redistribute massive population growth – out of the Nile Valley and into the desert – in order to release pressure from the country’s scarce arable land. In the long run however, this public housing strategy based on the noteworthy ambition of creating living environment suitable for different social segments seems to have radically missed its target. New Assiut’s housing neighborhoods suffer a prolonged lack of public and social amenities and working places; the standardised apartments with their size limited to a minimum don’t comply with the needs of large Egyptian

families. At the same time, the new town remains an isolated urban entity due to insufficient transport links. Consequently, these and other similar factors, have assigned New Assiut a role of a highly dependent extension to its ‘older sister’ town, Assiut.

In contrast to the public housing projects, the more recent development mechanics visible in New Assiut in the past decade epitomize the manner in which the New Town program in Egypt increasingly becomes the realm of private investment and real estate speculation, based on a long-term credit system. For the time being, New Assiut leaves one with an uncanny perception of a ghost town in the desert; a town that seems suspended between a slow, never-ending construction and a simultaneous process of decay.

الإنتاج و التصنيع. متطلبات الوادي



INDUSTRY AND PRODUCTION NEEDS OF A VALLEY

PRODUCTION ZONES OF ASSIUT **Production Zone Overview**

AGRICULTURAL PRODUCTION **Assiut Agriculture Analysis**

INDUSTRIAL PRODUCTION **Cemex: Internalization** **Assiut Fertilizer Factory: Strategic Siting?** **Coca-Cola: Relocating and Expanding** **Bani Ghalib: Behavior Within the Grid** **Wood Workshops: Mimicking the City** **Mechanization, Connections, and Moving In** **High-End Production**

STATE-CONTROLLED PRODUCTION **University Workshop: Becoming Flexible** **Bread Factories: Balancing the Necessary**

PRODUCTION BY DEMAND **Producing in the City Core** **Blacksmith: Production Network** **Rationalization of the Artisan** **Roadside Mechanics: Pushed to the Edge** **Mud Bricks: Production Without Economy** **Metabolizing Demand**

ETH Studio Basel
Contemporary City Institute
Oliver Muff, James Junkyung Yeo

Prof. Roger Diener, Prof. Marcel Meili
Mathias Gunz, Rolf Jenni, Milica Topalovic
Christian Mueller Inderbitzin

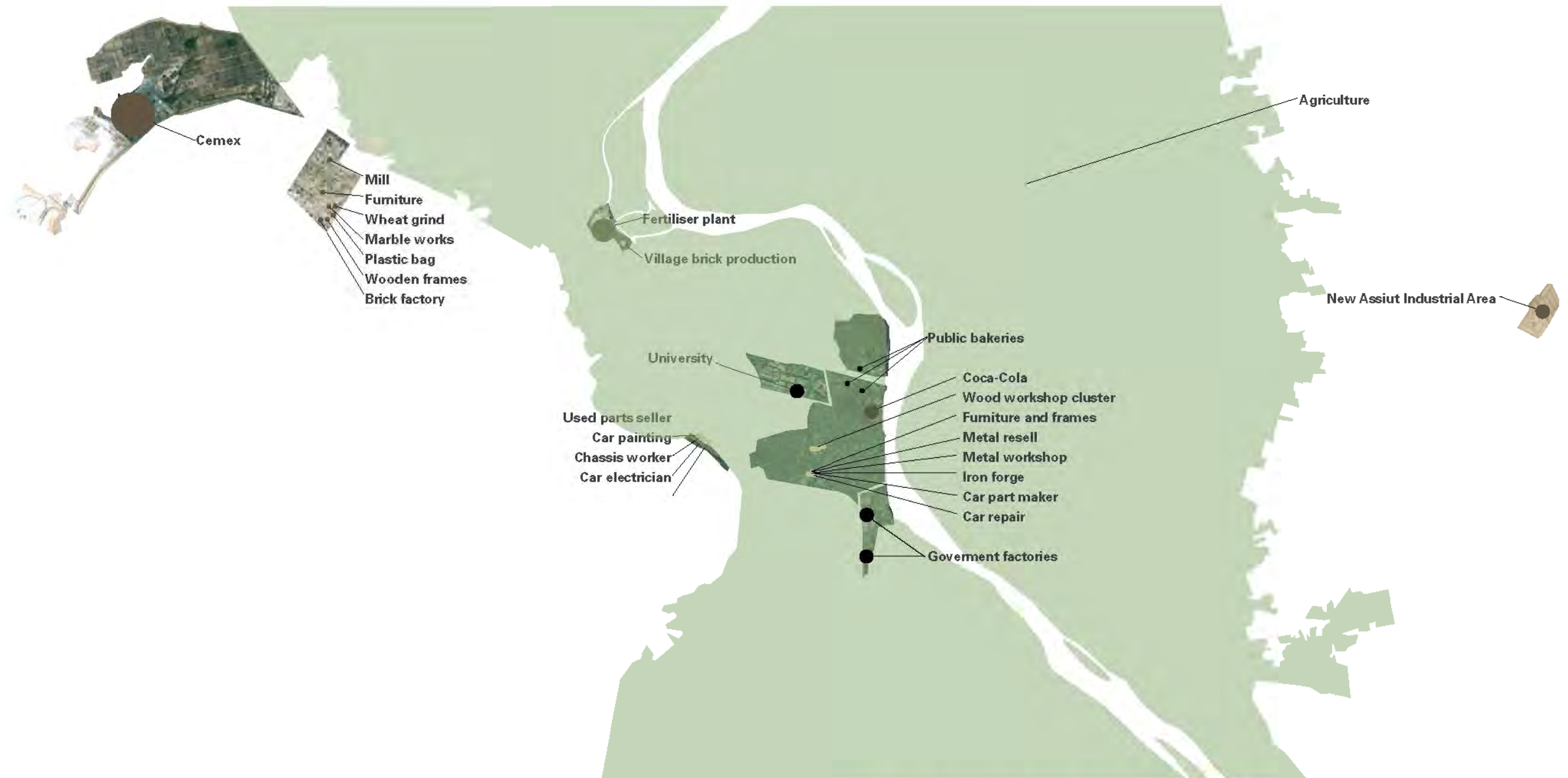
Spring Semester 2009

INDUSTRY AND PRODUCTION NEEDS OF A VALLEY

The Nile Valley region of Assiut embodies many different types of production and industries. These range from smaller scale establishments producing out of immediate need, to bigger scale factories connected and operating at a national or global level. The different typologies serve different purpose in respect to the city, and as a whole fulfill the needs of the city. We started by isolating the individual areas of production and classifying them into categories. This was to make further inquiry into the different roles and behaviors of production enterprises and clarify the similarities and differences between them.



PRODUCTION ZONES OF ASSIUT



Agricultural Production
 The area around Assiut is dominated by agricultural production. This sector accounts for 38.9% of the total workforce, second largest after services. It exists as a method of supplying the city with a vital supply of food and employment.

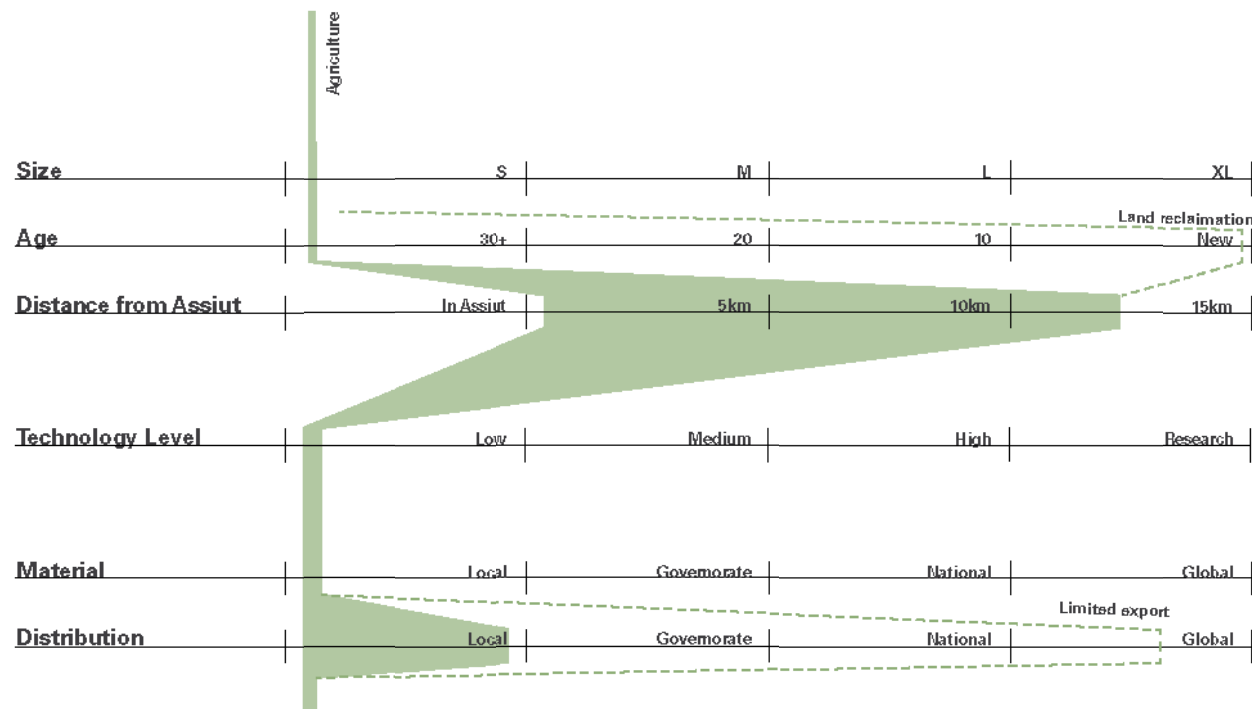
Industrial Production
 This type of production primarily lends itself to national or supranational strategy. Production facilities are sited exclusively on the outskirts of the green valley, due to the high value of arable land.

Production by Demand
 Small-scale workshops are embedded into the city fabric, characterized by unpretentious flexibility. Rather than producing a selection of cataloged products, they commonly produce whatever is needed if within their capabilities.

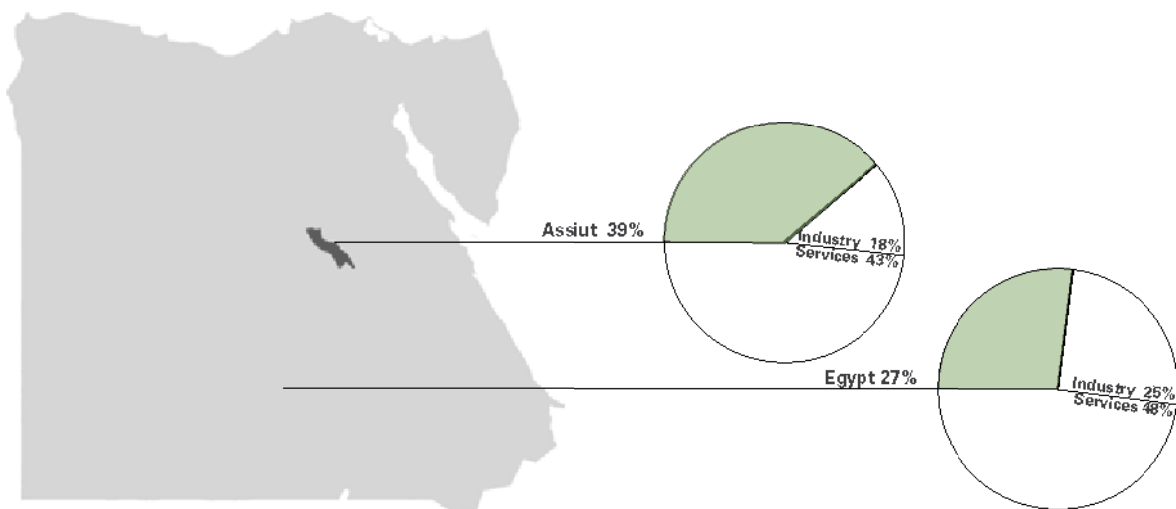
State-driven Production
 State-owned production sites exhibit a political dimension in organizational structure; examples explored range from more industrial means of production to small bakeries within the city fabric.

AGRICULTURAL PRODUCTION

Assiut Governorate's large agricultural sector accounts for 38.9% of the total workforce, similar to the rest of the Upper and Lower Egypt governorates. In contrast, the Urban and Frontier governorates show a lower percentage of total workforce working in the area of agriculture, which signifies that Assiut, along with other primarily agricultural governorates, support the Urban and Frontier governorates food supply.

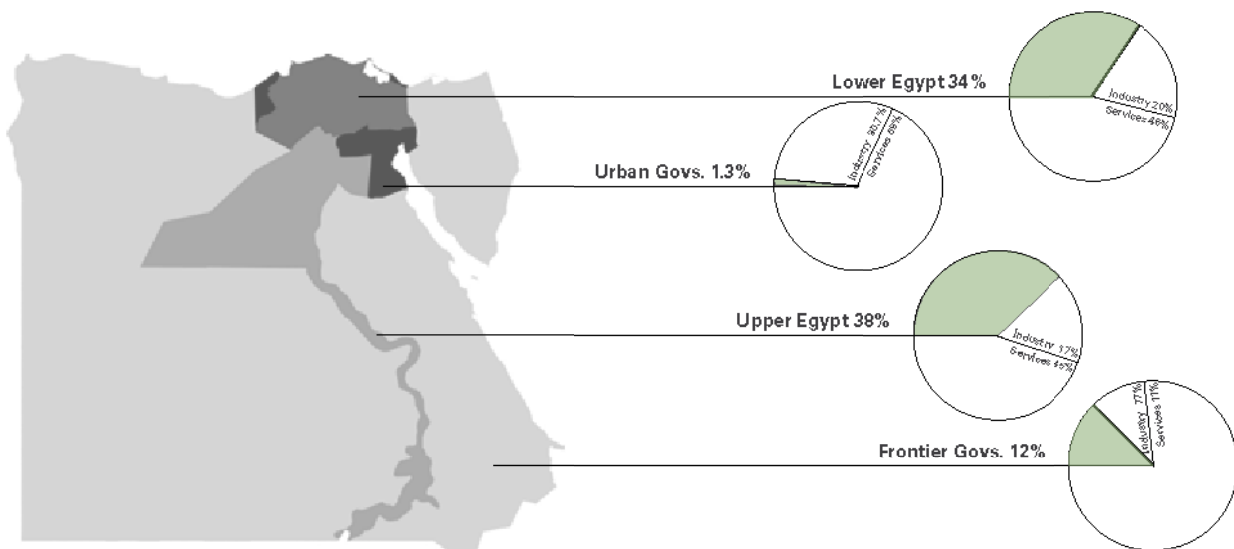


The arable agricultural area around Assiut is prominent and extensive, existing as a vital source of nourishment and employment. Although crop export exists, there are more imports to compensate for lack of food. For this reason, most of the valley region is reserved for agriculture while recent residential or industrial developments are forced to locate themselves in the desert.



Labor Force: Egypt and Assiut

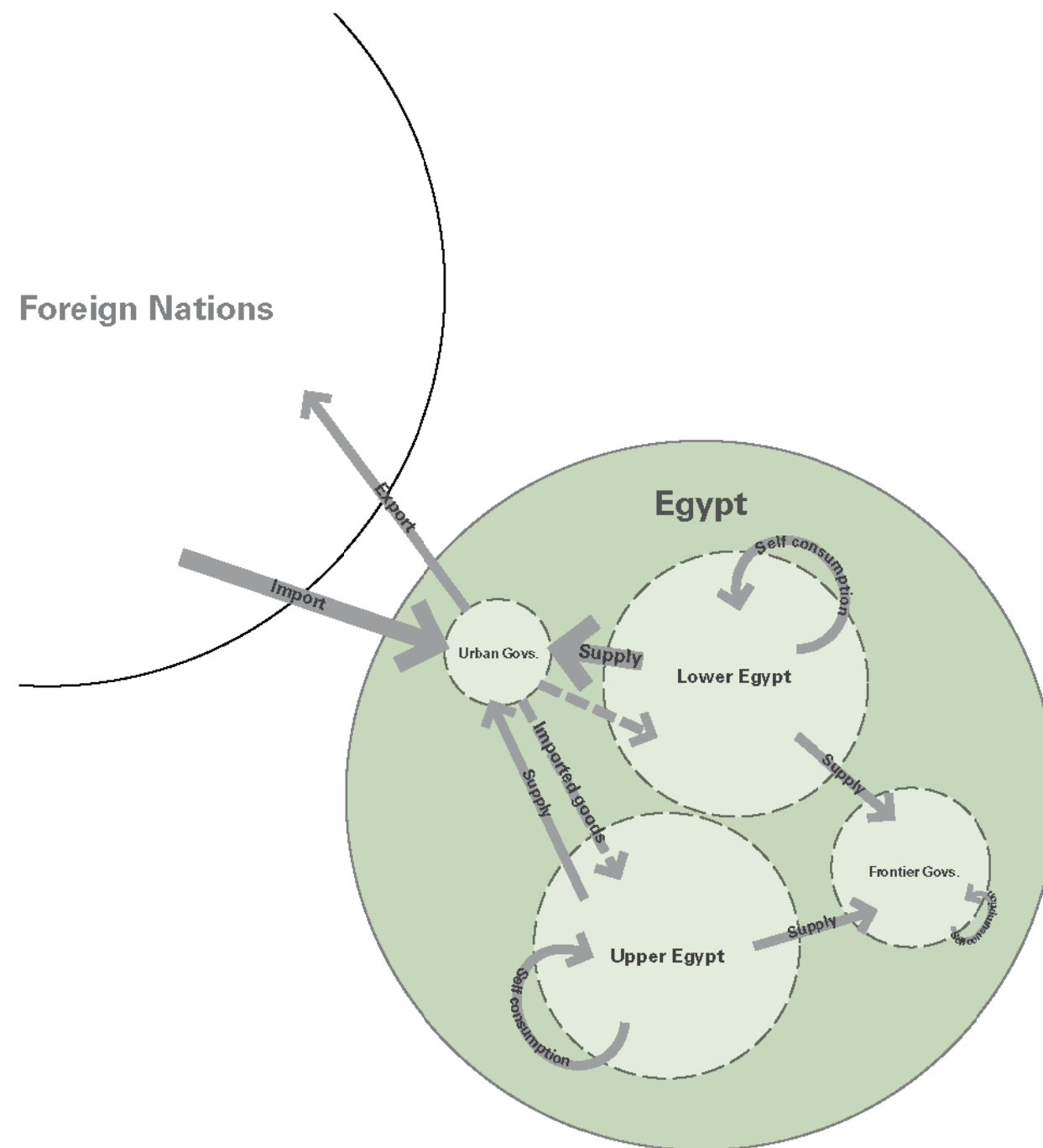
Compared to Egyptian averages, Assiut governorate commits a higher percentage of the workforce to agricultural production, indicating its role as agricultural provider.



Four Groups of Governorates

The Urban governorates show a very low percentage of agricultural labor force as compared with a very high percentage of industry and services. This is due to its role in trade and commerce within the governorates. The Frontier governorates show low agricultural activity compared to services, due to lack of arable land, and high concentration of tourist attractions along its beach fronts. With its comparatively large agricultural labor force, Upper Egypt can be said to "feed" its Frontier governorates.

Foreign Nations

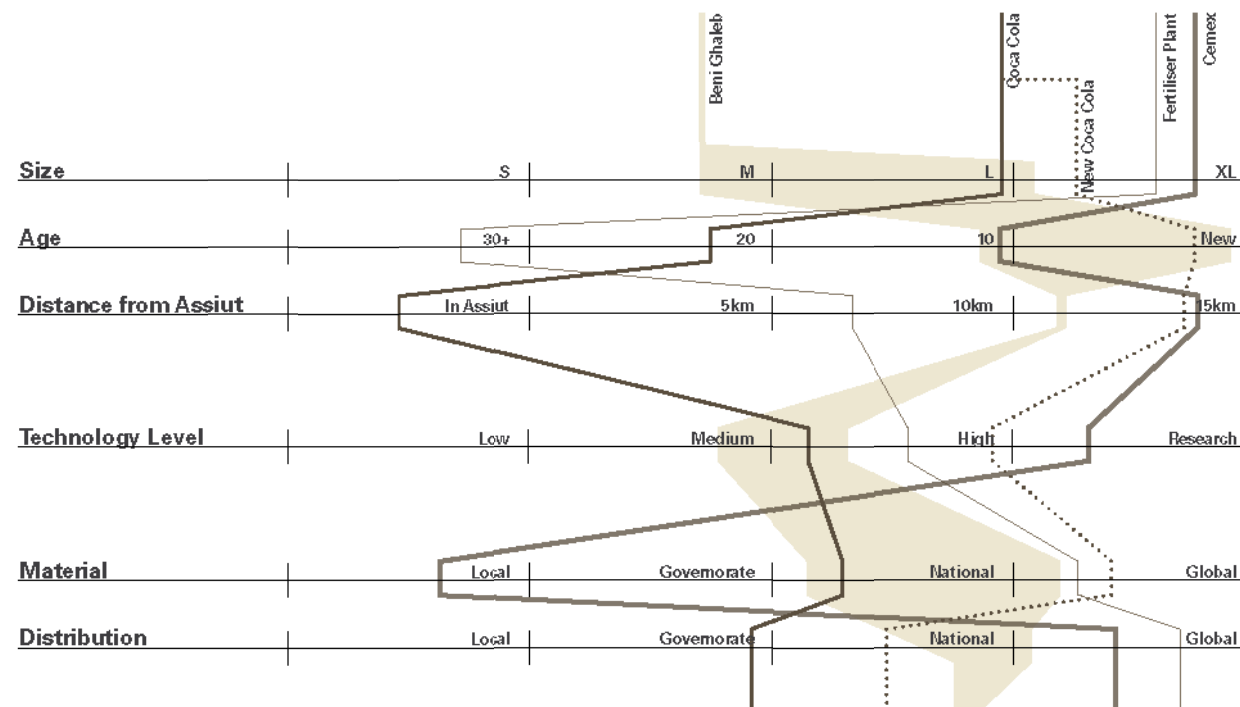


Governorate Agricultural Supply

Upper and Lower Egypt governorates act as primary suppliers of agricultural production. These governorates supplement others which focus on sectors like tourism and industry. Self-consumption among governorates also applies, and the gaps in need are filled by overseas imports. A limited flow of exports is far surpassed by the amount of imports.

INDUSTRIAL PRODUCTION

Industry is treated as a mode of rationalized mass production where worker skills are reduced to their very specialized function and tradition plays only a very abstract role on an executive level. These factories are mostly part of a national idea or supranational strategy, located on the city outskirts, as the high value of arable land leads to a placement exclusively out of the green valley—displacing even older, and more central facilities.



1



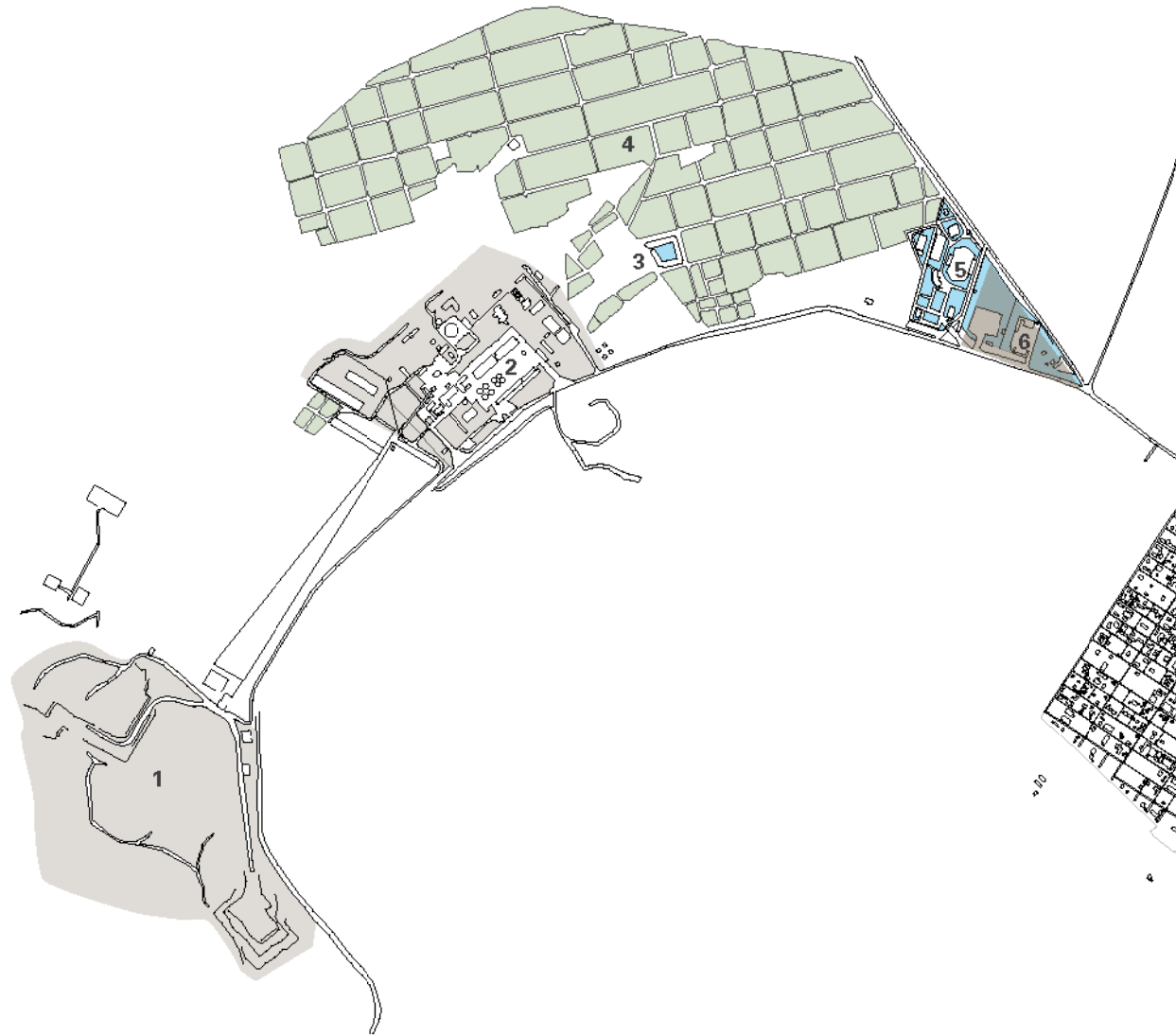
2



3



1. Cemex: Mexican producer of cement
2. Bani Ghalib/El Safa: Government-established industrial area with small to medium scale enterprises
3. Assiut Fertilizer Factory: Egyptian fertilizer producer, and a source of export
4. Coca-Cola Egypt: American beverage producer for Assiut governorate, with omnipresent products



- 1. Raw materials are mined from this nearby area
- 2. Cement is produced and stored within the facility
- 3. Privileged employees are housed in residential complex
- 4. Trees are planted for environmental and public relation purposes, fertilized by treated wastewater
- 5. Employees socialize in this recreation area
- 6. Trucks and cargo are stored in this garage

Cemex: Internalization

Cemex exists in Assiut within an access area restricted to workers, materials, and distribution in typical fashion of factory facilities. However, the particular complex displays a high degree of internalization within closed boundaries. Centralised by the factory, the complex has established a sporting facility for its workers, and an area where necessary raw materials can be directly obtained on-site.



1



2

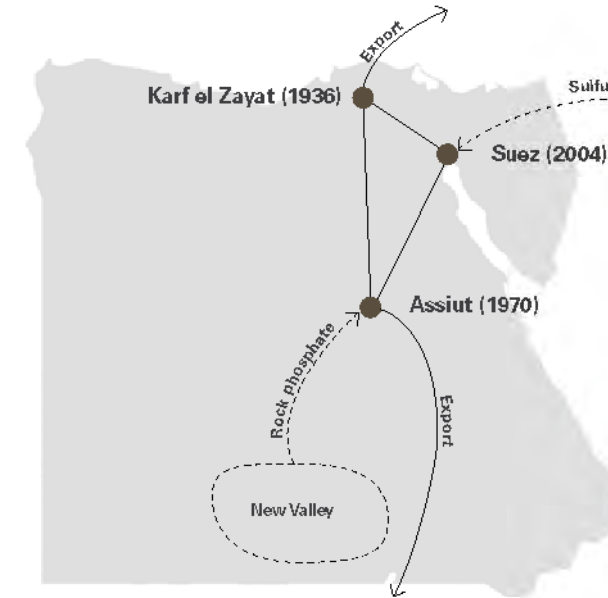


3



4

- 1-2. Private sporting facility and clubhouse for employees
- 3. The products are the only element released from the complex for Egypt-wide distribution
- 4. Cemex outlets are omnipresent in Egypt



1



2



2



3

1. The first branch to be established was in Kafra El Zayat in 1936. The factory's proximity to the ports provided easy access to imports such as sulfur, and also facilitated the export process. Problematic to that siting, however, was the location of primary ingredients, such as rock phosphate, which are mined in relatively distant New Valley and Aswan regions. Assiut's factory is sited to optimize proximity to both raw materials, and export opportunities to Saudi Arabia

2. On a local scale, the siting enables strong connections for distribution via roads and the railway. Large quantities of water are obtained directly from the river and used via turbines to produce 75% of the factory's power

1. The company still uses the railway system as a means of transporting goods

2-3. The complex has a typical factory typology, with controlled entry and barriers surrounding the area



Assiut Fertilizer Plant: Strategic Siting?

The plant was established in 1970 and is the second factory out of three company fertilizer plants established in Egypt. Acting as a source of revenue for Assiut, it is a prominent factory in the Nile Valley region. Factors of both national and local scales considerably influenced the factory's siting.



Fertilizer Flood

The strategic siting of the factory does have negative consequences. The farms in the northeast area of the fertilizer plant are severely affected by the pollution which sometimes renders the produce inedible.



1



2



3



4

1. Neighboring villagers are affected by fertilizer pollution
2. The pollution from the fertiliser company is carried by the wind toward villages southeast of the factory
3. Crops are damaged and some products are not edible
4. Pollution harms neighboring farm productivity.



Coca-Cola: Moving and Expanding

Embedded in the city fabric, the Coca-Cola company originally occupied one block of the grid in the new city area of Assiut. Bordered by four roads, the company was not able to expand into other parts of the city. With restricted physical growth and difficulty regarding access of recycled bottles and goods necessary for production, a proposed solution was to move company activities to a new industrial area of New Assiut. By relocating, the company is able to expand, modernise machinery to accommodate PET rather than glass, and consequently function more efficiently and extend its distribution reach.



1



2

1. Current location of Coca-Cola factory in its city context
 2. New location in Industrial area of New Assiut out in the desert. Coca-Cola will be one of the pioneers of the this new industrial zone



1



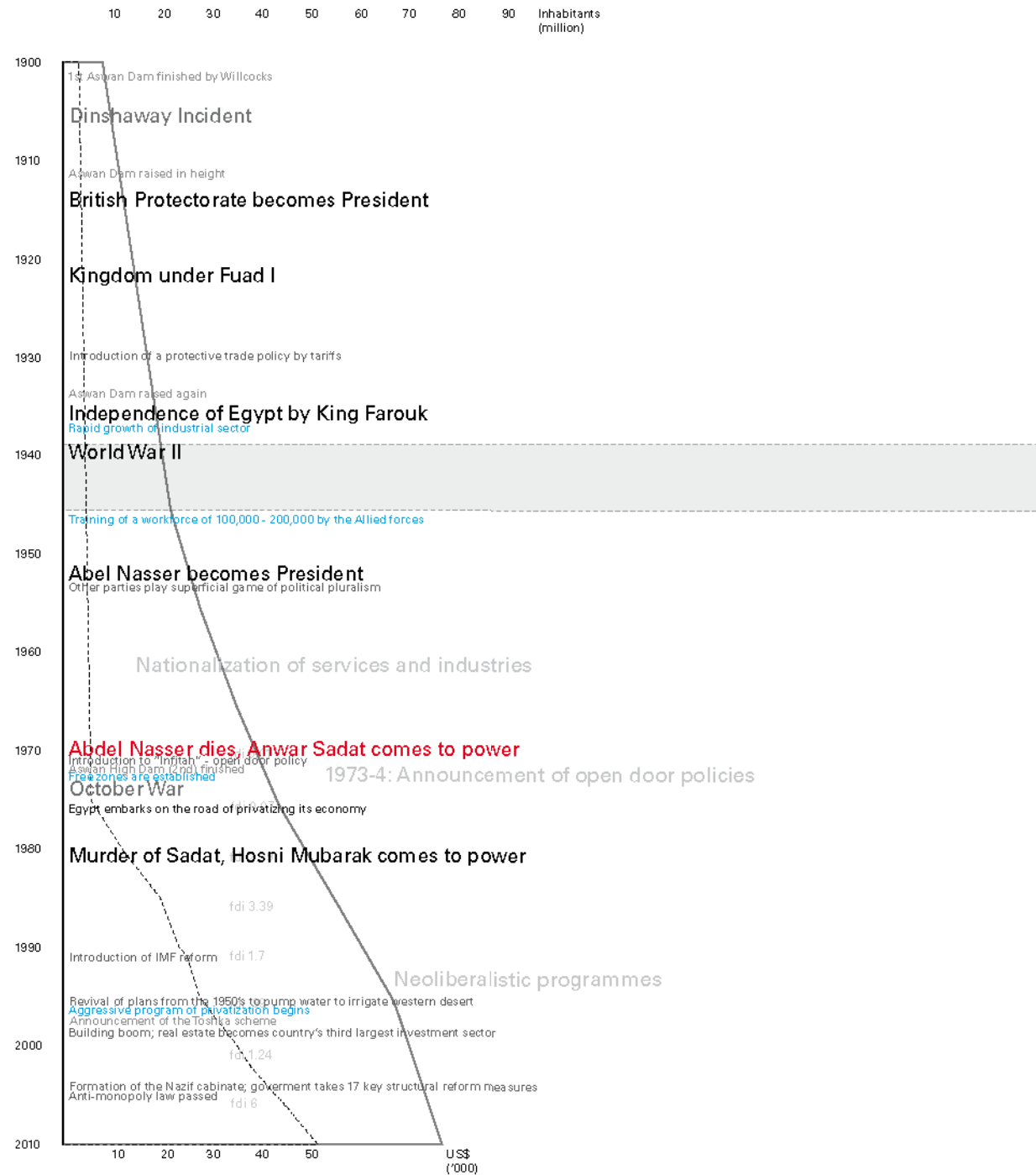
2

1. Upper East Assiut with the current position of Coca Cola
 2. New position of the factory, with the new industrial area highlighted in red. Although it is far from the city, this area will enable the factory to expand and take advantage of cheap land prices. The company will organize a bus system for the 500 commuters from Assiut to New Assiut and back. By this expansion the company hopes to be able to distribute to other governorates as well as Assiut.



Bani Ghalib

This area is an industrial zone northwest of the city of Assiut, part of the markaz of Manqabad. There are two such areas in the studied zone, and seven in the Assiut Governorate. Bani Ghalib covers an area equivalent of approximately a quarter of Assiut City, and is connected to resources and distribution on a national level via the national highways. The areas are established by the government and made attractive for enterprises via low land costs, relatively good infrastructure, and tax holidays.



Industrial Strategies

Traditionally dependent on imports, Egypt has been following an import substitution strategy since the end of World War II. The goal was to push the country into independence from substantial world trade products, and finally to encourage export-oriented production. Therefore, several steps were undertaken to make industrial production flourish, including the introduction of a highly tariff-protected national market, as well as the launching of industrial areas by the governorates.



Governorate Industrial Zones

90 such zones are established in Egypt, all placed in the desert. Many are empty; Bani Ghalib is an exception.



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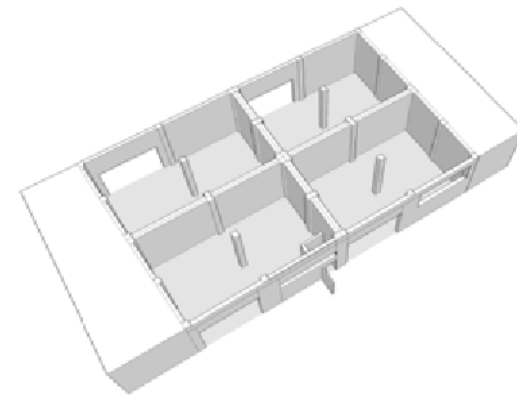


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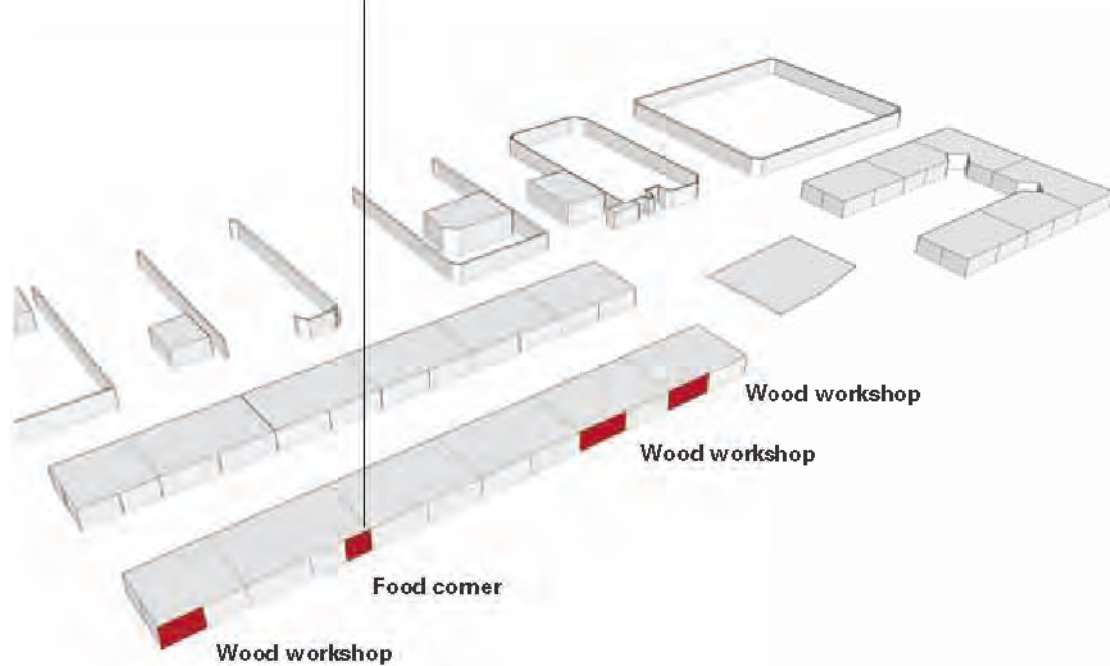
- 1. Furniture shop
- 2. Wheat grind
- 3. Marble grind
- 4. Plastic bags
- 5. Wooden door frames
- 6. Bricks

Behavior Within the Grid

Bani Ghalib area shows a hybridization of both rationalized production and urban characteristics. For instance, the distribution area and its role in economical flow into Assiut is similar to that of larger-scale industrial productions while its internal organization exhibits similar social environments that exists in the city. The government also plays a large role in the area in its planning and infrastructure.



Four units of shops. A food corner is integrated into one of the shops, and is available for common use.



1



2



3



4

- 1-2. Workshop typologies without external walls, and space in front which can be used as workshop space allows higher possibilities for social interaction
- 3. Workers from different establishments
- 4. Common kitchen for all the workshops

Wooden Frame Workshops: Mimicking the City

The group of wooden workshops located near the south end of the area displays an urban typology; the method of production and area usage resemble that of wood workshops found in the city. A shared kitchen used by all the workshops fosters a strong social connection between the works. The structure itself was established by the government, illustrating state intent to provide the same facilities outside the city as can be found within.



Mechanized Production

The majority of industries established in the area are engaged in mechanized production. The factories produce vast amounts of single products in a cheap and efficient way, distributing them nationwide.



Connections Within

Established in 2008, the wheat grinding plant produces flour for national distribution. The factory uses plastic bags produced by the plastic bag manufacturer in the industrial area. This kind of production chain is similar to what is found in the city, where one establishment obtains parts or materials from another.



Marble Grinder: Moving In

This enterprise crushes marble for use in tiles, which is then made available for national distribution. Previously established in the New Valley governorate for eight years, the enterprise moved to Bani Ghalib to take advantage of cheap land prices, electricity, and water. The government also provided support to modernize the machines, and gave three years of tax holiday. The enterprise has shown no major changes and the establishment level remains the same as before.



High-end Production

The furniture shop investigated in Bani Ghalib illustrated that is more than just need-based production going on in Assiut. Although remaining to its traditional methods of hand craftsmanship, the establishment has expanded to the production of fine-crafted furniture. The extensive range available for selection in the showroom exemplifies that production is not only need-based, but also is evolving based on the willingness of the enterprise to adapt to changing environments.



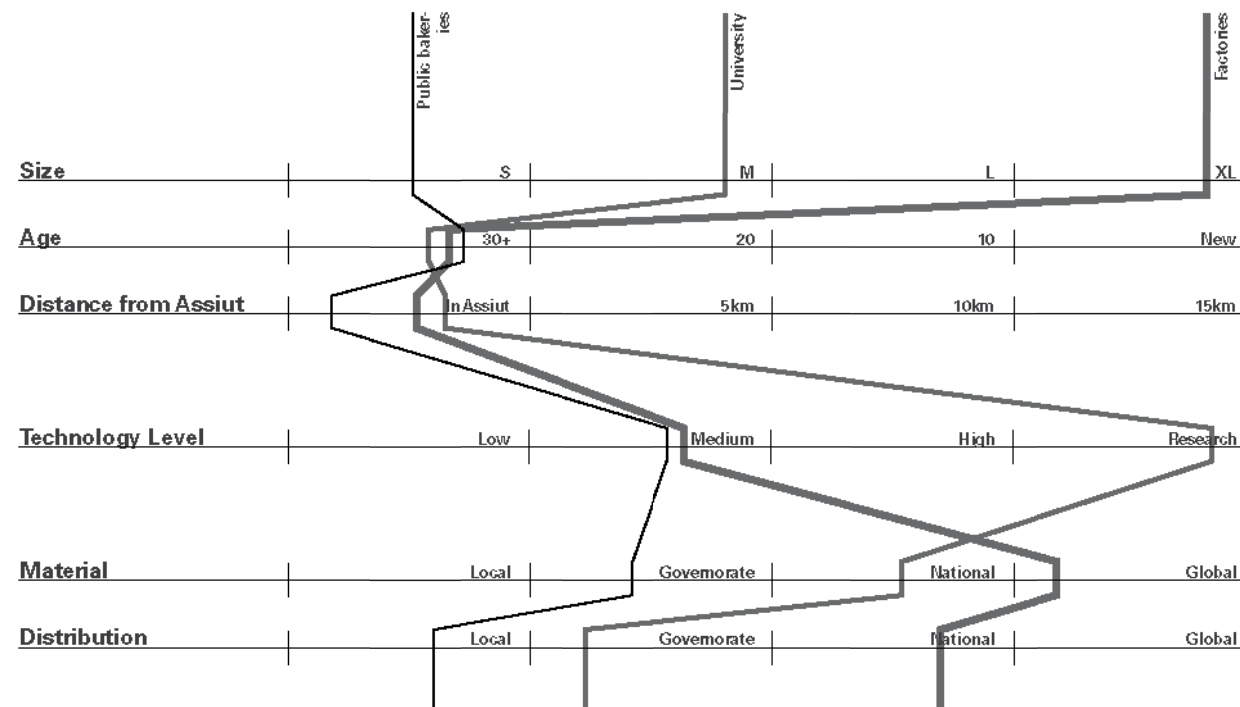
The production line is done in separate steps on different levels in the building. From the first floor to the fifth, imported wood is converted to furniture. Each floor houses different stages of the process, and is worked on by different workers in specialised work rooms.

Different stages in the production line involve the production of the frame which is then carried to another floor. The furniture is plated with imported gold from France. The complex also includes a showroom with a sample of finished products.



STATE-CONTROLLED PRODUCTION

State-controlled production exists in various scales, mainly large industrial plants. Most of them have been privatized in the past decades leaving only a few exceptional cases: workshops serving the University, and inner-city bakeries serving subsidized bread. Although the establishments seem to run inefficiently, they hold an important role in what they provide for society.

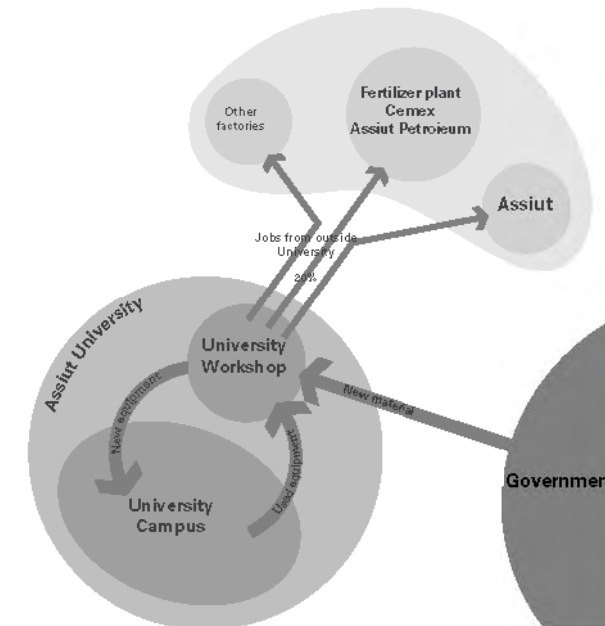


Most state-run production is now privatized; what remains is Assiut University and public bakeries. The University workshop produce exclusively for the campus, while the bakeries provide subsidized bread for the general public.



Assiut University: Growing Flexibility

The university's production center employs 220 well-educated workers. From its establishment in 1957, the university has been producing and fixing furniture, electronics, canalizations and other items of everyday campus life. In 1980, it started engaging with students and graduates for private purposes. Today, the university receives orders from Cemex, Assiut petroleum and the Assiut fertilizer factory. Such outputs account for 20%, and recently the university even started supporting the Assiut administration in fixing public facilities. The university therefore exemplifies a self-sustainable zone that expanded as a reaction to its over-employment.



All of the companies served are formerly or still state-owned. The national educational employment policy guarantees employment for people with a high degree. Every graduate gets one feddan of land or has the right a public service job. The university is obviously participating in the policy to keep educated unemployment low.



1



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3

1-2. All materials and used equipment are salvaged and stored for recycling. This method of vigorous recycling is similar to that of the workshops outside of the city
3. Used equipment are restored or improved using the extensive range of machinery available in the workshop



Public Bread Bakeries: Balancing on the Necessary

Subsidized bread production in small bakeries has been a governmental means to provide for basic needs of survival and at the same time keep calm amidst the many poor. However this national model in the present condition is limited; "bread riots" broke out in 2008, similar to the riots of 1977.



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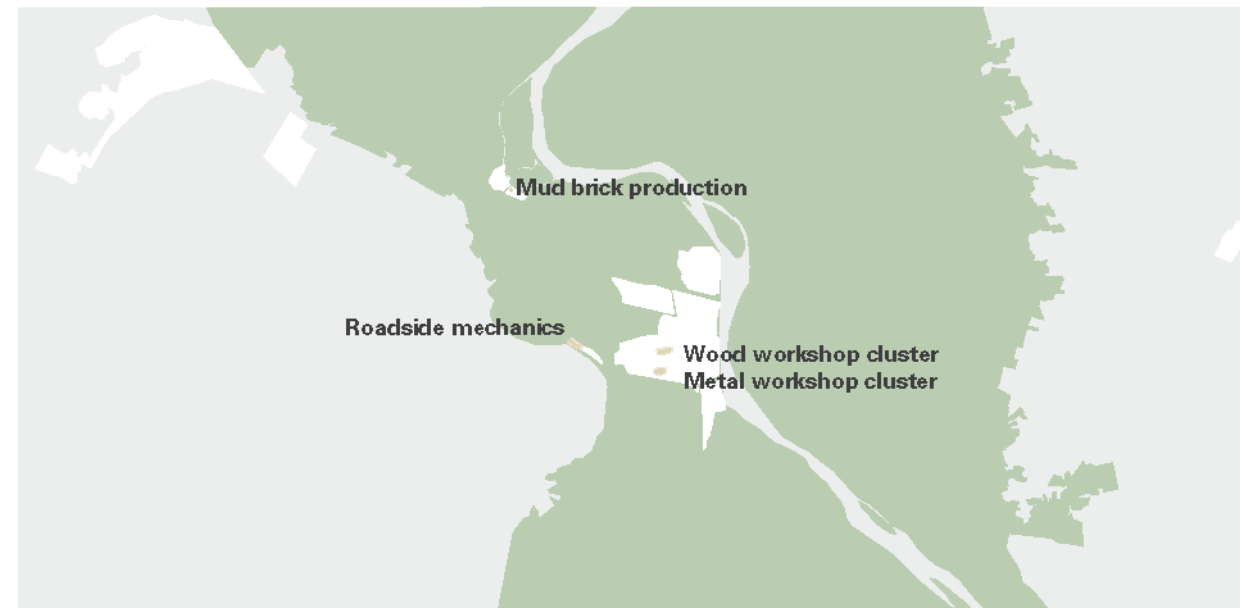
- 1-2. People waiting for bread distribution from the counter in the wooden box. The bakeries have been criticized for long waiting times, the common reason for violent outbreaks was rising of bread price
- 3. No unnecessary windows
- 4. Oven inside the factory; produces only one type of bread

PRODUCTION BY DEMAND

In Assiut's city core, clusters of small workshops demonstrate significant production flexibility within their field. Highly integrated into the dense city fabric where the state's influence and control is low, most produce on demand-only basis, without driving any tendency: the products are not based on a catalog but rather produced on request. Deliveries and orders are often made by nearby merchants and customers; the resulting products are not actively distributed elsewhere.



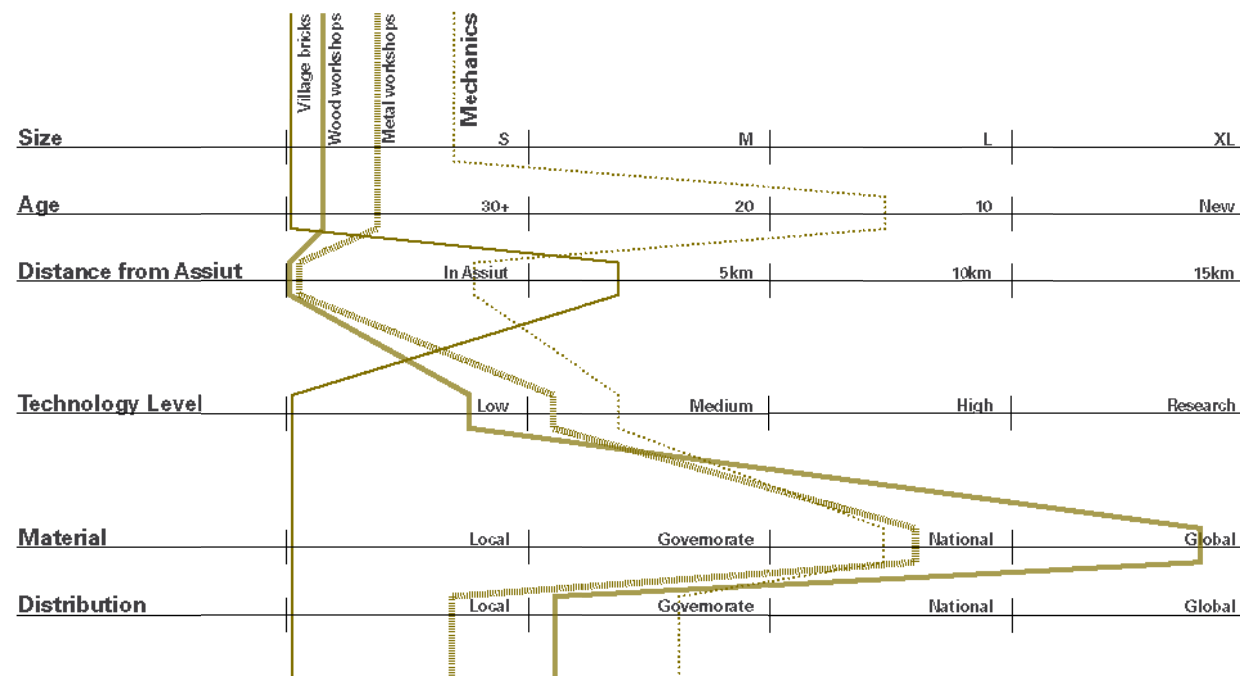
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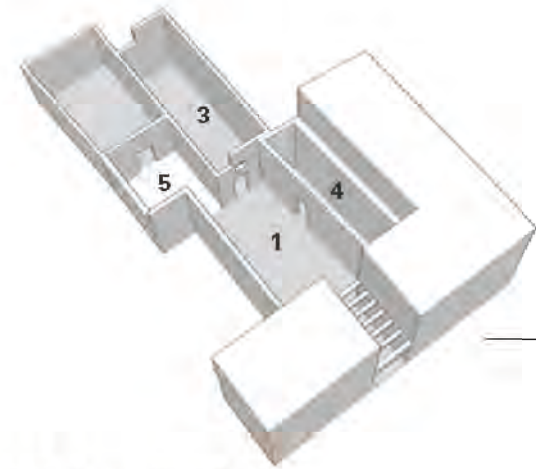


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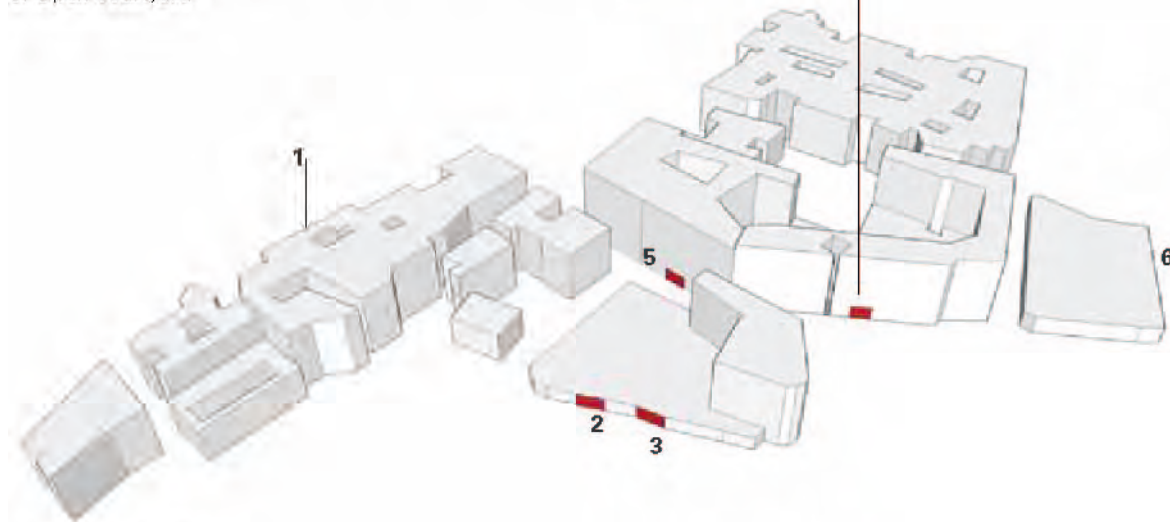
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1. Workshops within and near the city
2. Mud brick production
3. Furniture workshops
4. Car re-production
5. Blacksmith



Ala` Mahmud's Shop

- 1. Work room
- 2. Storage room
- 3. Room for machines; 1-3 are in the court; one story only
- 4. Room for finished doors
- 5. Open courtyard



- 1. Metal retailer (Eslam)
- 2. Blacksmith 1
- 3. Blacksmith 2
- 4. Wood workshop (Ala Mahmud)
- 5. Recycling of mechanical pieces through "redesign"
- 6. Car and Motorcycle mechanic

Producing in the City Core

Past Assiut's traditional Bazaar Esserya, one finds a small workshop area in the south part of the city. The old grown structure of the quarter is half preserved with old buildings, but its newer half, composed of an upraised morphology of concrete skeleton, contains many small-scale productive enterprises—mainly furniture and metal works. Alleys are narrow and unpaved, making motorized traffic difficult, and facilities for water are often missing. But social connection is nowhere as specific as here.



2



3

1-2. The density of the city core offers qualities found nowhere else. Ala` Mahmud had his wood workshop in the industrial area of Bani Ghalib for ten years, but finally moved back to the city and bought this yard. His main incentives were the proximity of his family home to the workshop, social integration, and the variety found in the city, whereas life in Bani Ghalib was solely focused on work.

3. The bazaars are for retailing only, but few workshops have kept their traditional location. This man hammers aluminium vessels, a dying product, as prices for aluminium rose to record highs in 1989. Generally industrial mass-produced products dominate, rather than handcrafted goods.



Blacksmith: City Network

Workshops in the city core are often organized into small networks which, in this case, mean a certain organized public within family enterprises. This network fosters a family-owned system of nodes in which every node is not only one step in the production process but is also a distribution point for others to purchase from.



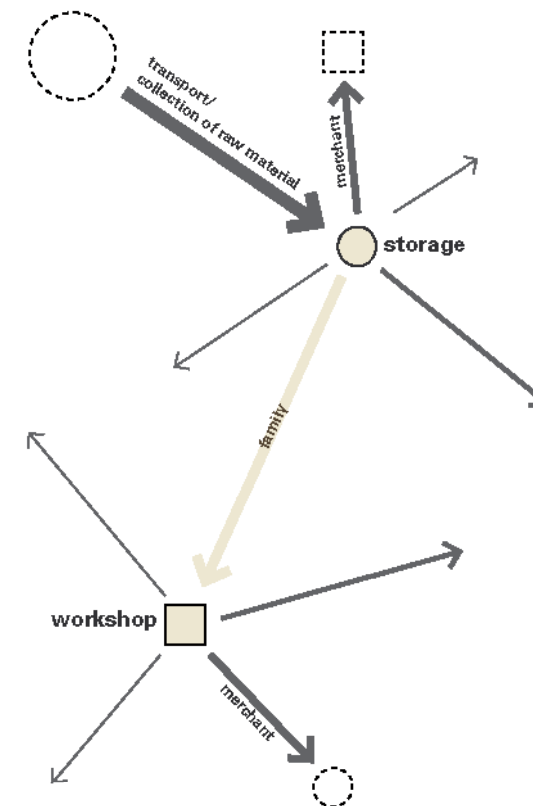
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Every storage point also acts as a distribution point.

1-2. Islam's father owns a storage shop which at the same time acts as a retailer. He orders new and secondhand metals, from El Umrianiya, a place in Cairo. In the 1960s, his grandfather, a blacksmith around the corner was the only "client". Now several merchants purchase from him.

3. Blacksmith. Electricity is only used for light in the evening; there is no water supply. The iron is treated by hammer and pliers on anvil. Steel is bought secondhand. The blacksmith produces based on client orders, mainly making tools for agriculture, iron doors and frames, and clamps.



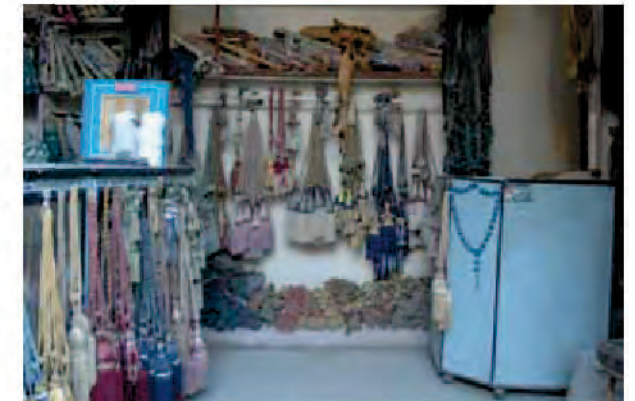
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Furniture: Rationalization of the Artisan

The many small-scale furniture shops in Assiut, consisting of two to five employees, are part of a national system headquartered in Damietta. As done in Damietta, the process of furniture production is organized by a step by step process in which every family enterprise fulfills one step: from wood-cutting and carpentry to carving and upholstering; the furniture shops in Assiut are just the final step in a rationalized, artisan production over a great distance.

1. For an upper-middle-class clientèle, Caponate finishes two to three chairs per week in average
2. Clients choose from large catalogues with extensive choices; Caponate orders wood construction from Damietta, where one-fourth of Egyptian furniture production occurs
3. Damietta handmade frames in a shop near the bazaar
4. The textiles come from a small retailer



Mud Bricks: Production Without Economy

In the village that suffers most from fertilizer pollution, we found the most traditional production method. Egyptians have been making bricks out of mud for millennia. This activity was illegalized by the government since it consumes arable soil vital for agriculture. But the production of bricks in the village show minimal regard for the law, and more consideration for their immediate needs.



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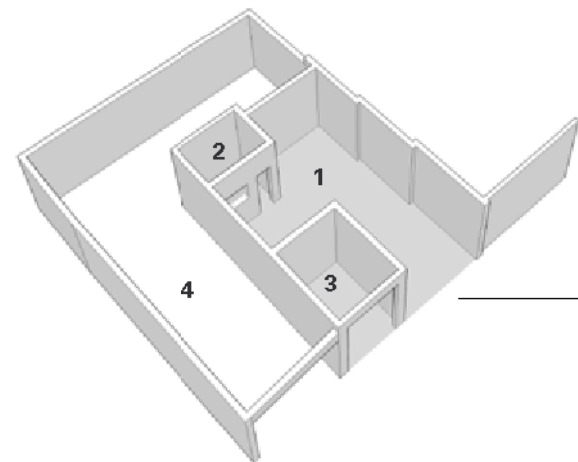
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Behind the Plant

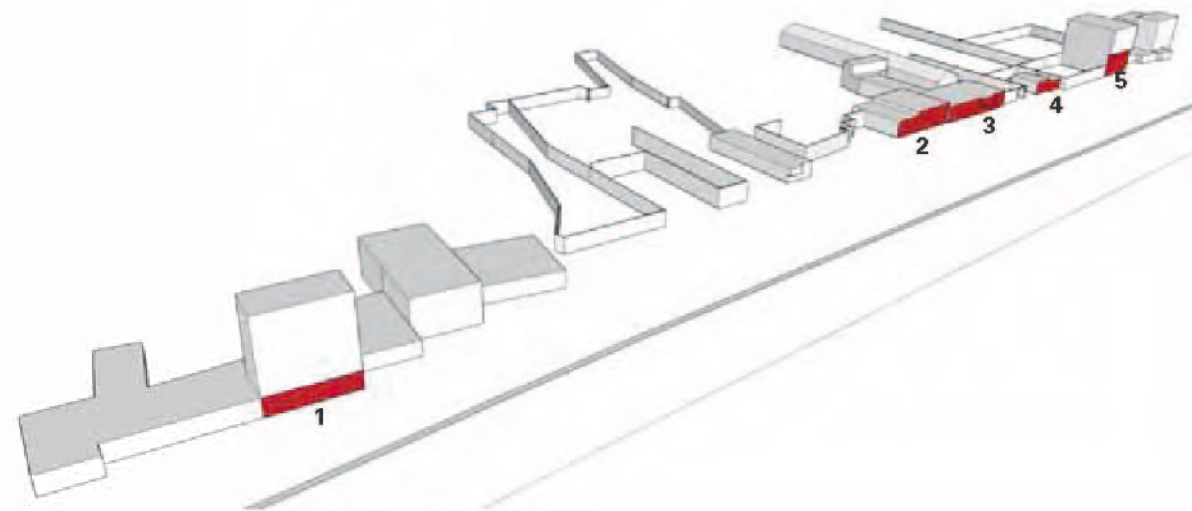
Illegal mud brick production in this size is an exception to the law, and this is known and accepted by the village's official administration, such as the Omda of Manqabad, the mayor, as an illegal activity. The difficult-to-reach, backyard-like locations catalyzes the continuing success of illegal activity and failure of government officials to halt it.

1. Production site
2. The fertilizer factory viewed from the mud heap
3. The village is only serving its own needs. The production is not income oriented, and no enterprise-like organizational structure exists. Collective work is organized by need itself.



Mechanics

- 1. Work room
- 2. Room for tools
- 3. Bureau
- 4. Garage



- 1. Electricians
- 2. Chasis recycling
- 3. Chasy painting
- 4. Mechanics
- 5. Second hand importer

Car Re-Production

Right outside the southern town lays a long line of informally-built one-story houses surrounding higher ones. Behind, the cupolas of the graveyard rise as if the houses were only the entrance to them. The houses compose a step-by-step production of cars, in a version of the city network adapted to the demands of mobility and a reach that extends into other parts of the governorate of Assiut.



The mechanics are located between a prominent road and graveyards along the edge of the valley.



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Chassis Painting: A Problem of Space and Reach

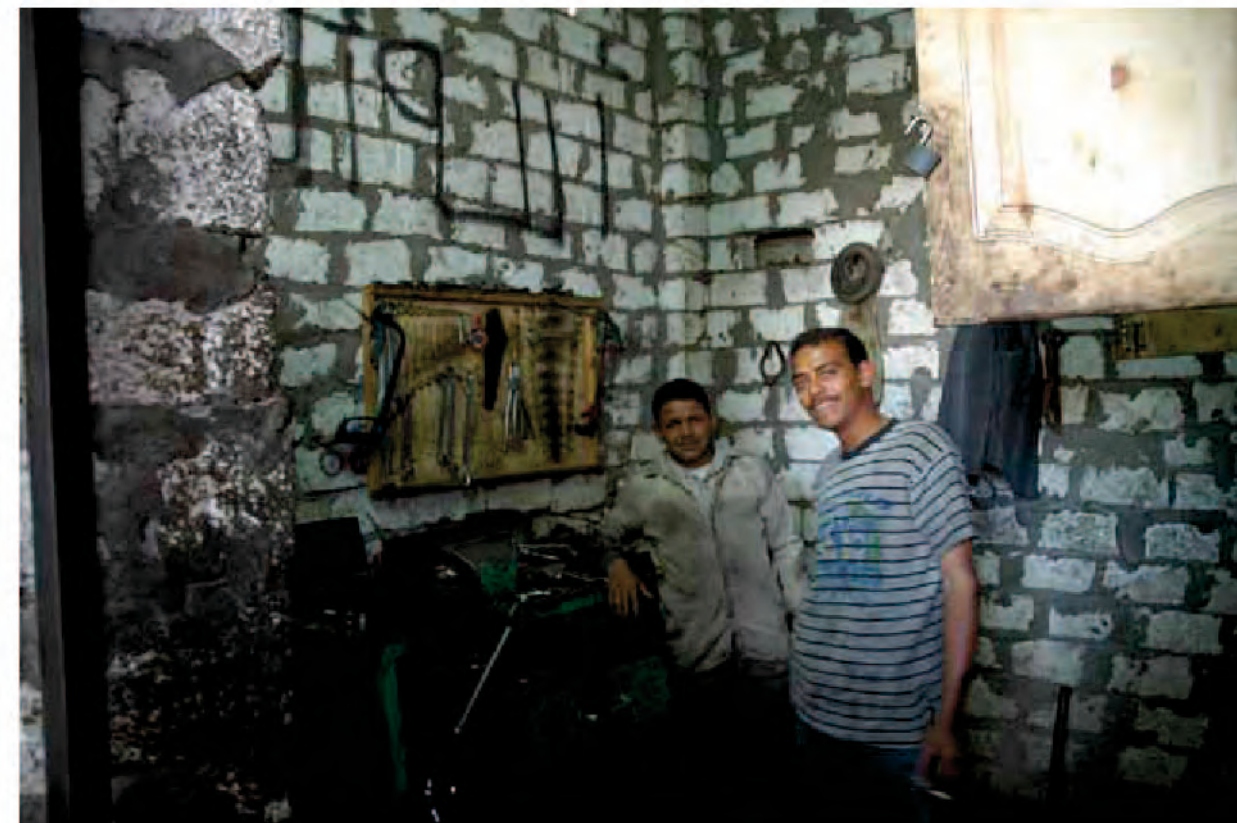
In 1988, this car-painting shop, obviously well-run, was one of the first of its kind to be established in this location, on agricultural land. In the city such shops are limited in their capacity to expand, due to limits on space and clientele. In this location along the road, the shop can have both.

1. Space and reach: Since its founding, the shop was enlarged several times. The width of the street provides a large public space for ease of deliveries.
2. Most clients want to renew the appearance of their car. But often, the shops also paint newly-fixed empty chassis which are later completed by fitting in engines, thus enabling a step-by-step production process.
3. Clients come from outside Assiut governorate. The sign visibly shows the shop's location and guarantee of quality.



Chassis Recycling: Specialization

Merchants recycle worn-out chassis, often cars involved in accidents. They hammer and weld these into a nearly new chassis by combining usable parts of two damaged cars. The shop is only the beginning of a longer production row, which begins with an almost unrecognizable chassis and ends with a new car. All shops here specialize in one step of the production stages.



Mechanics: Brand Specialties

The mechanic repairs mainly Mercedes lorries, but can fix anything if needed. Missing parts are bought from a Mercedes lorry part retailer right next door who mainly offers secondhand lorry cabins.



Metabolizing Demand

Four different types of production serve different purpose in supporting the needs of the city. Agricultural, industrial, and state-driven productions contribute to economic flow into Assiut. Although present, this economy flow is not enough for the city which is counterbalanced by the efficiency of material use and re-use by the workshops within the city.

INDUSTRY AND PRODUCTION: COMMENTARY

The investigation into the different forms of production in the Nile Valley focuses on the relations of economic self-sustainability and interdependence of the Assiut governorate within the regional and national scales. The agricultural sector dominates production activities in Assiut, employing nearly 40% of the total workforce. For this reason Assiut governorate's holds one of the leading food-supplying roles for urban and frontier governorates in Upper Egypt.

Despite the developed agricultural sector, the other forms of production are crucial for the Upper Egypt's economic system. Within this group, the state-driven industrial and productions' contribution to the economic revenues remains marginal, despite the large-scale national and supra-national strategies offering attractive conditions to enterprises with low-tax policies and low land costs.

By contrast, a remarkably vital contribution to Assiut Governorate's and the Upper Egypt's economy is the so-called 'production on demand.' This production system contradicts the regular 'supply an demand' market logics, instead functioning as a model with a highly efficient and self-sufficient character: Existing products are continuously re-

paired and reproduced, in a seemingly ceaseless metabolic cycle. This production system is formed through small scale and mostly family-run workshops, strongly embedded in the traditional social networks and situated within the dense urban fabric typical of Assiut and other towns in Upper Egypt. The system can be characterized as a 'shadow' economy: a highly flexible, bottom-up economic organism, functioning as a compensation for the inert state industrial sector.

Seen at the scale of Egypt, this alternative model of production highlights a matter-of-fact high degree of autonomy of the Nile Valley from the state, and speaks in support of the thesis of the relative stability of the rural/urban society in the valley.

المواصلات في الوادي.
وسائل النقل الجماعي في المناطق
الريفية بأسبوط



NEXUS OF THE NILE

RURAL MASS TRANSIT IN ASSIUT

LEAPS AND LAPSES
Infrastructure and Network Development

INTERLINKED NETWORKS
Exchange Centers
National Framework
Shortcut Hierarchy
Vehicular Operating Territories
Vehicle Typologies
Interstitial Infrastructure

COMPREHENSIVE MOBILITY
Access on Demand
Affordable Fares
Diverse Passenger Profiles
Scalar Alternatives
Supply City
Urban Attractors
Supply Symbiosis
Assiut's Reach
Commuter Central
Mobile Society
Anatomy of a Bus Station
How to Ride a Microbus

LAISSEZ-FAIRE REGULATION
Opening the Market
Landlord Policies
P2P Network
How to Register a Microbus
Tuk-tuk Transition
Accidents Take Toll

MASS TRANSITION
Catalyzing Connectivity
P2P Monopoly
Rural Hub

ETH Studio Basel
Contemporary City Institute
Andrea Grolimund, Franziska Singer, Tiffany Wey

Prof. Roger Diener, Prof. Marcel Meili
Mathias Gunz, Rolf Jenni, Milica Topalovic
Christian Mueller Inderbitzin

Spring Semester 2009

NEXUS OF THE NILE

RURAL MASS TRANSIT IN ASSIUT

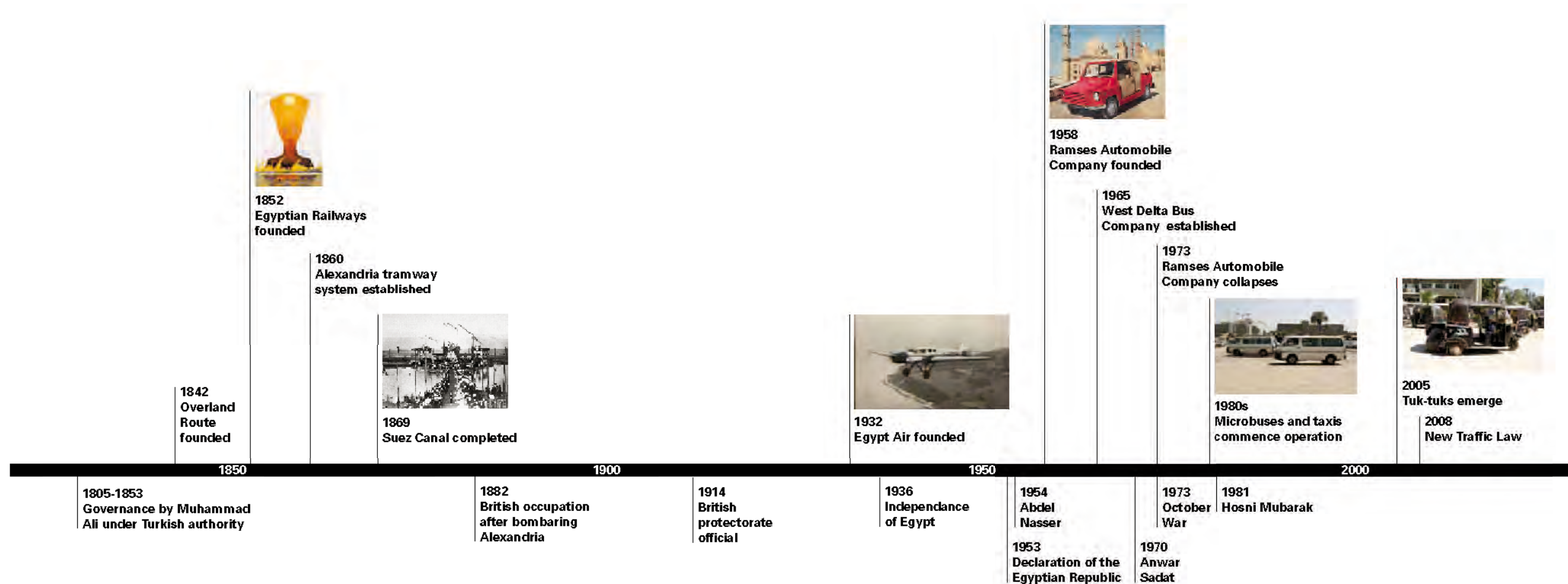
Urbanization is by definition the expansion of urban lifestyles into rural areas, as well as the movement of people from rural to urban areas. Considering this definition, our topics of inquiry regarding Assiut are to what extent mass transit—passenger transportation services available for public use—enables and indicates urbanization, how degrees of mobility define territory in the Nile Valley, and how this system of movement is enacted by its political actors. We investigate Assiut as a case study of a simultaneous center and connection within a national network along the Nile, distributing its resources via the exchange of services between the city and the rural population.



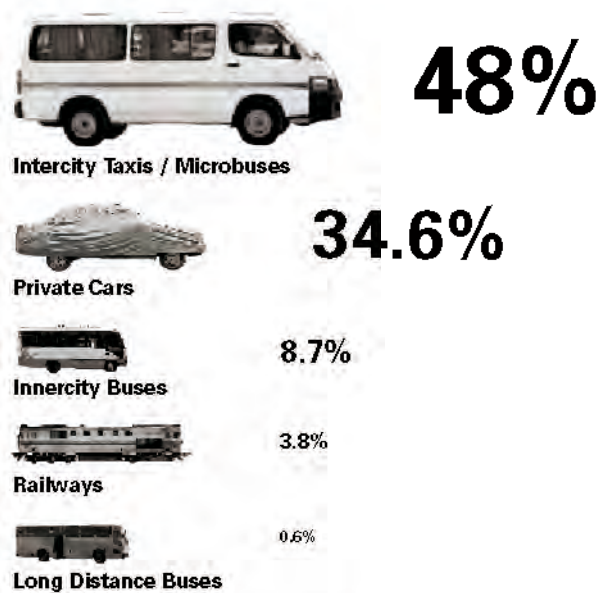
LEAPS AND LAPSES

Historically eager to develop infrastructure, Egypt was second in the world to lay a national rail network, and Cairo is the first and only African city so far to have implemented an underground metro system. Yet, despite pioneering developments in the Nile Delta, Egypt's transportation network has barely progressed from its initial inception in the Nile Valley, where aging railcars creep along antique tracks. Egypt's transportation system is an urbanization paradox of quantum leaps and lapses; the government seizes opportunities to initiate construction of national transportation infrastructure but fails to maintain the system, ultimately leading to its disrepair.

The government and its citizens have become increasingly reliant on informal transit to fill economic and infrastructure gaps. Mobilized by the post-October War Gulf Oil boom of the 1970s, Egyptian workers invested Gulf earnings in private vehicles for mass transit use. This informal entrepreneurship escalated in the 1980s, leading to expansive private sector growth in regional mass transit. With the current network at capacity, the Egyptian government has instituted efforts through private-public-partnerships to improve infrastructure and regulate public safety.



Infrastructure and Network Development



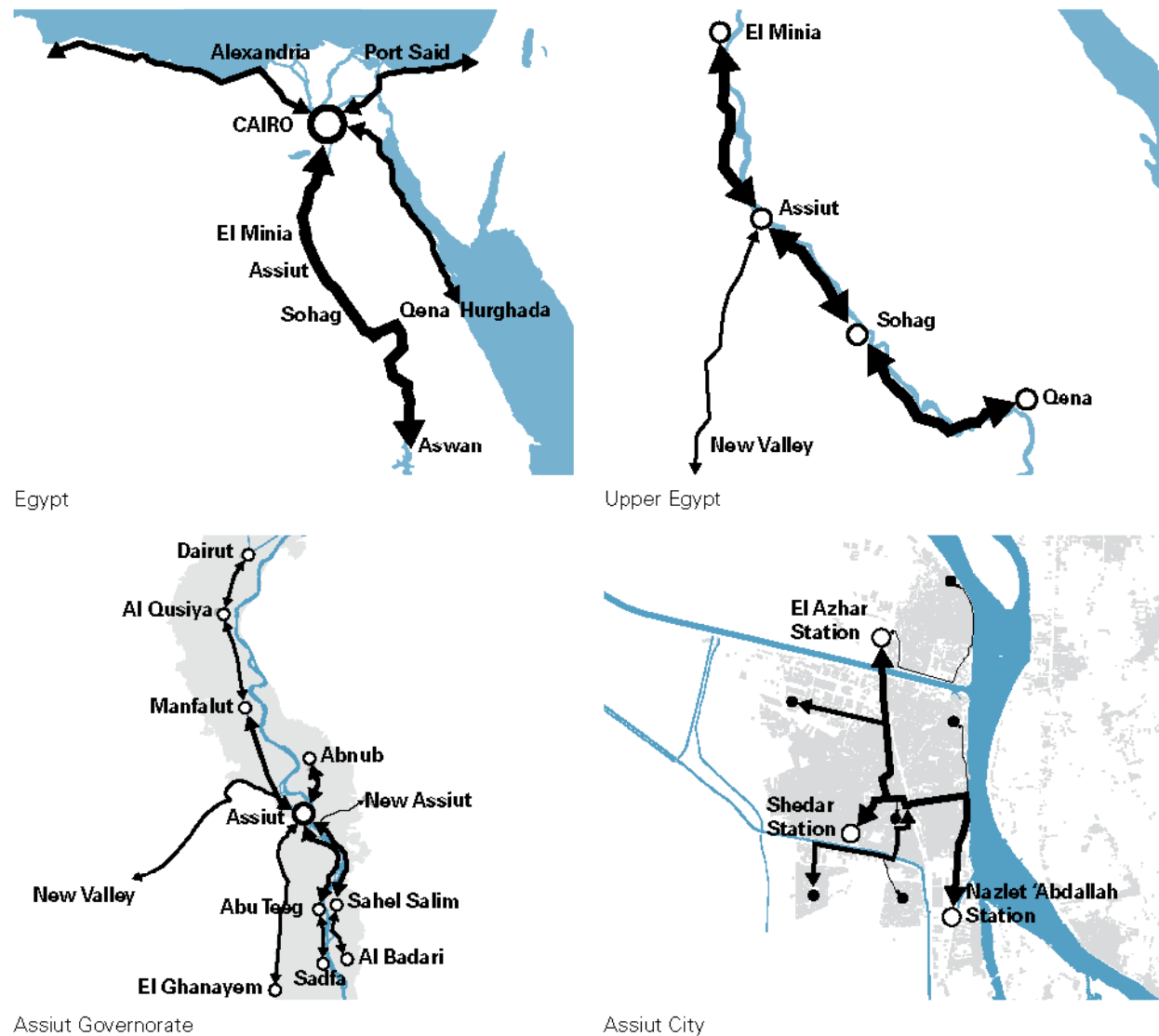
Private Sector Dominance

According to the International Association of Public Transport, in 2003, 83% of 60 million daily passenger trips in Egypt were hosted by individuals (taxis, microbuses, and private cars) working for intercity and urban services.

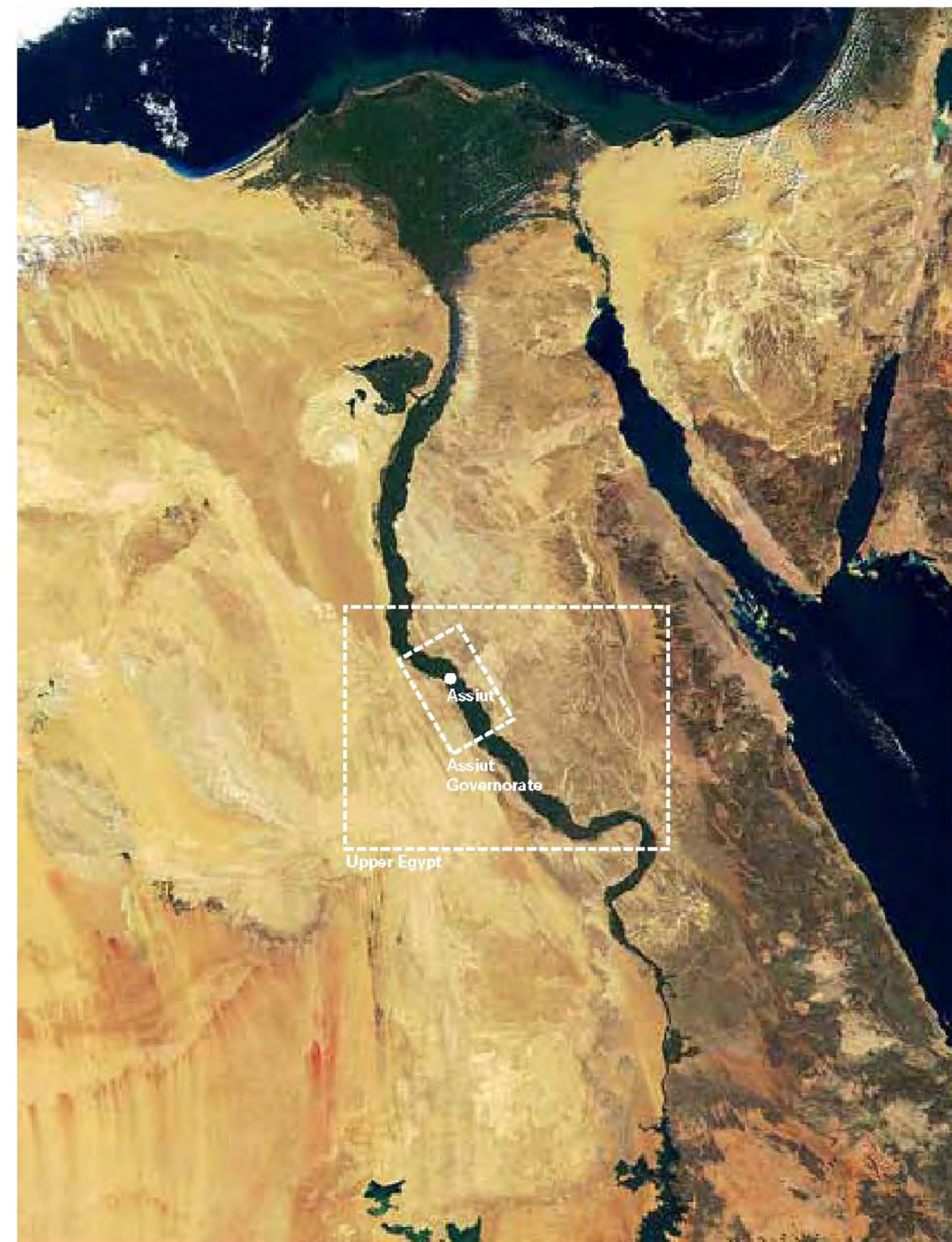


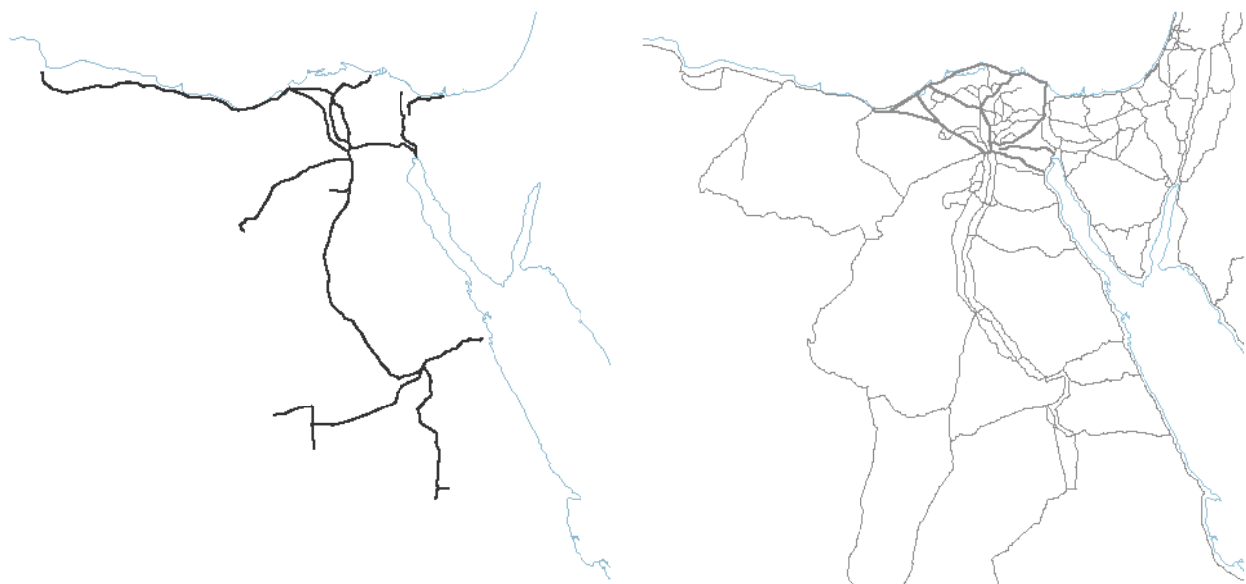
INTERLINKED NETWORKS

Assiut extends across several scales of transport networks: the city scale within the borders of Assiut City, the regional scale of adjacent villages within Assiut Governorate and governorate capitals of Upper Egypt, and a national scale of Egypt as a whole. The network functions to direct movement in a series of successive scales, consolidating flows on one scale and distributing them to a larger scale. Privately-run mass transit operates within the interstitial infrastructure of a regional network that plugs into state-implemented national networks. In this way, the system allows for the dynamic and informal re-configuration of the regional network within a formalized national framework.



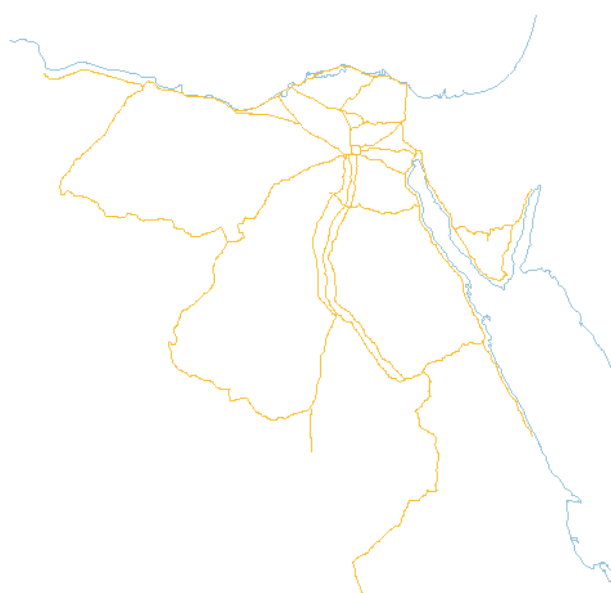
Exchange Centers
Cairo acts as a national center connected to a series of regional centers. These centers act as exchange points along the Nile; Assiut collects village and inner-city passengers and re-distributes them via bus station end points.



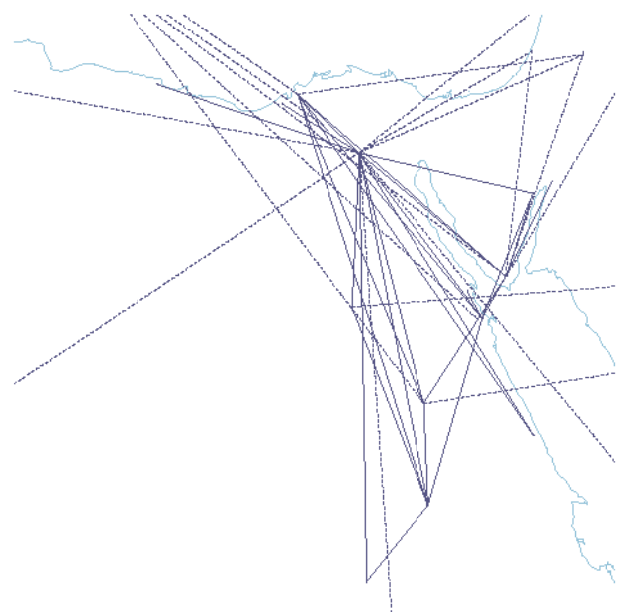


Railways

Roadways



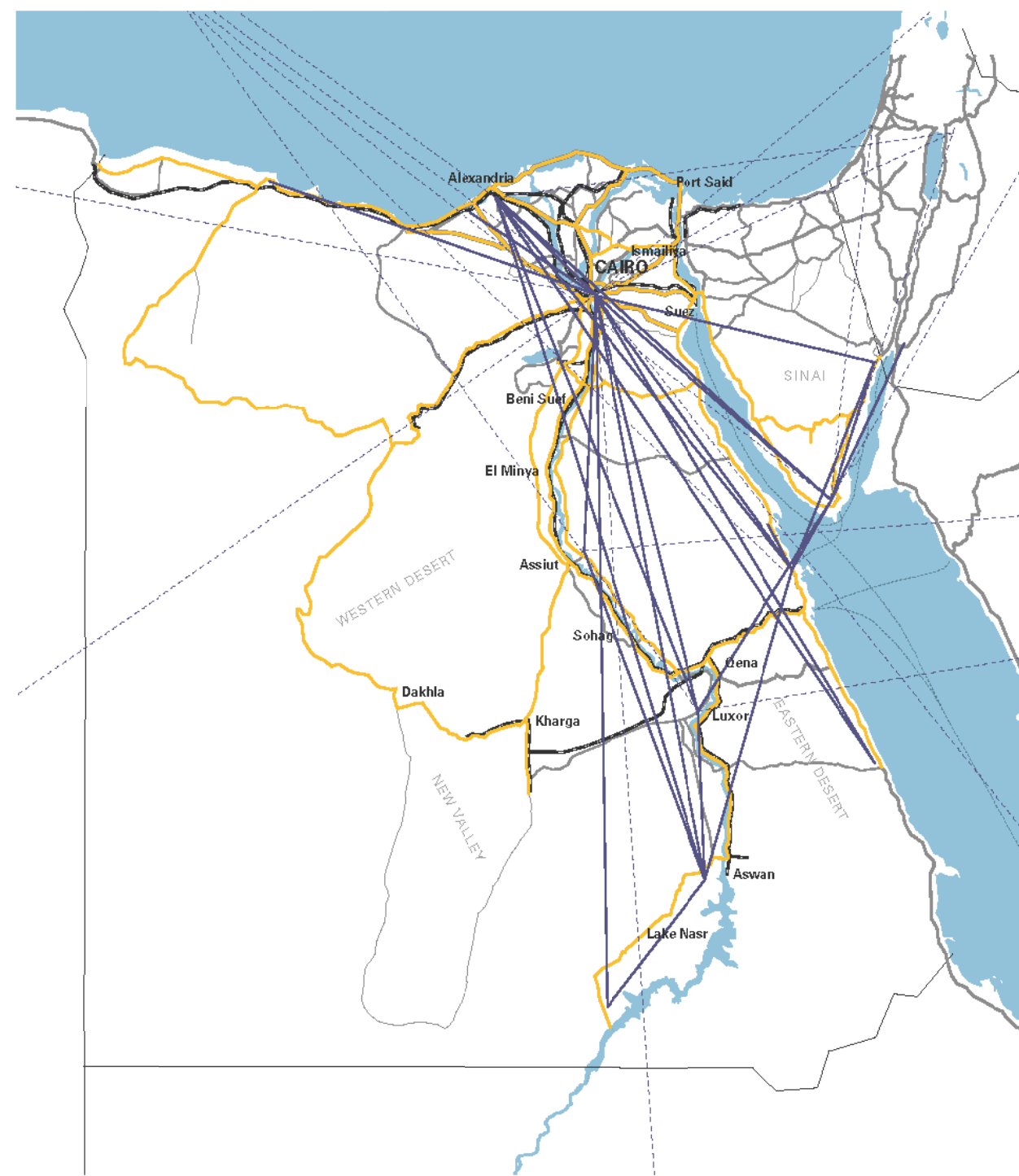
Bus Routes

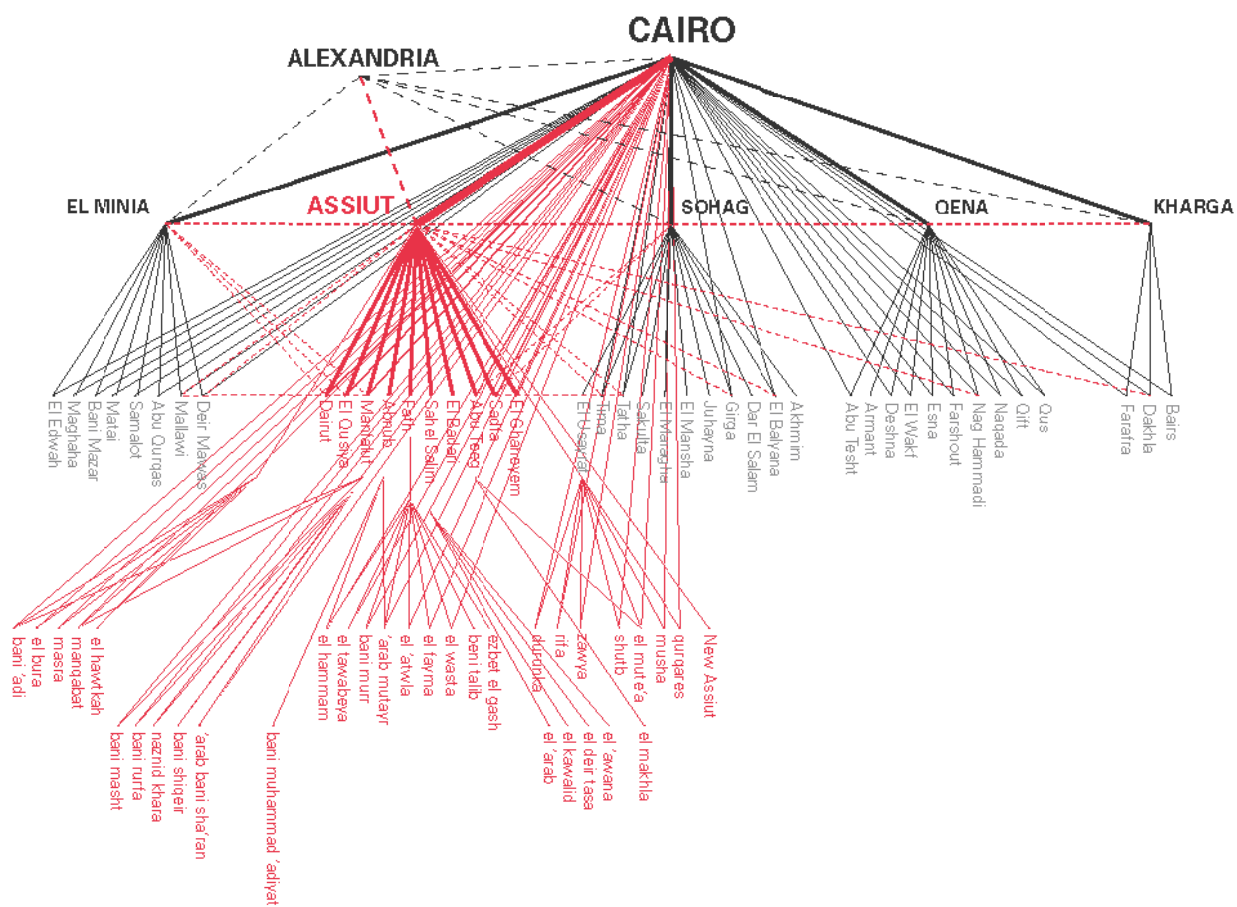


Flight Paths

National Framework

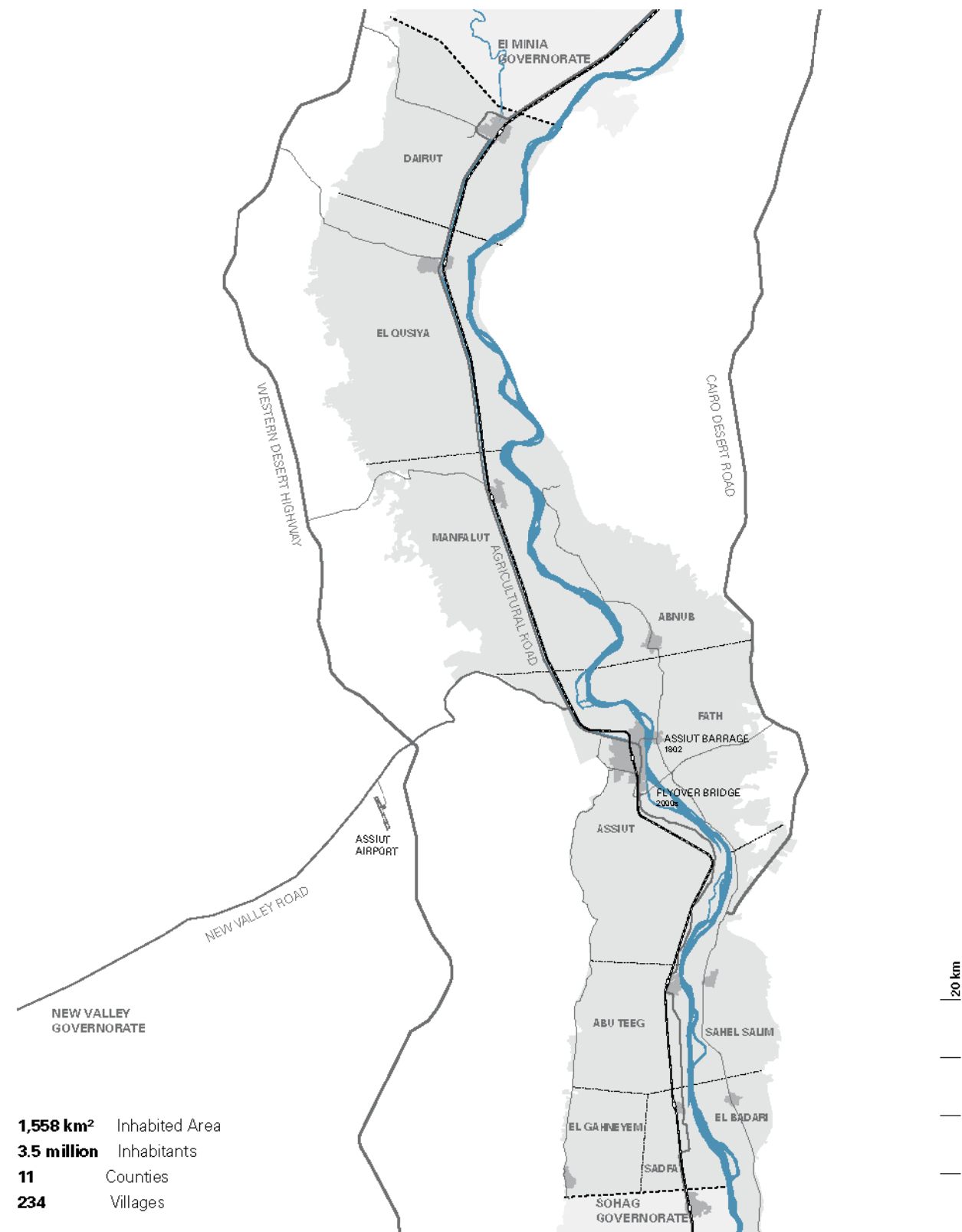
State-planned and initiated infrastructure networks form a framework of diverse modes to reach primary destinations.





Shortcut Hierarchy

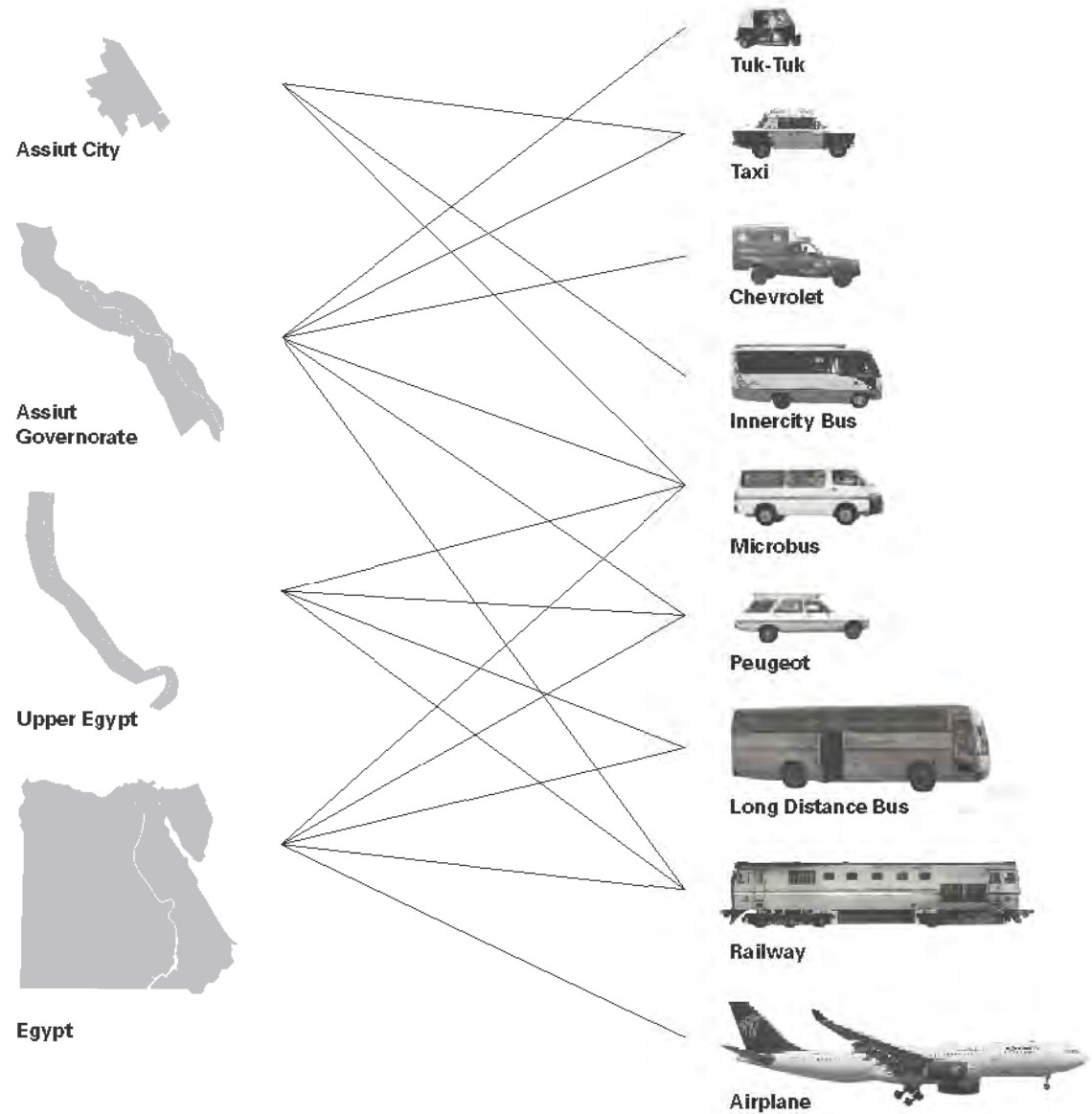
Within the national framework, the network follows a hierarchical flow of distribution from villages to county capitals to governorate capitals to Egypt. All nodes within the system have a direct connection to Cairo, highlighting its urban sphere of influence by the proliferation of shortcuts that consolidate its reach. Similar shortcuts occur on a smaller scale; sub-hubs of Assiut, such as Abu Teeg and Manfalut directly connect to adjacent governorate capitals.



- 1,558 km²** Inhabited Area
- 3.5 million** Inhabitants
- 11** Counties
- 234** Villages

20 km



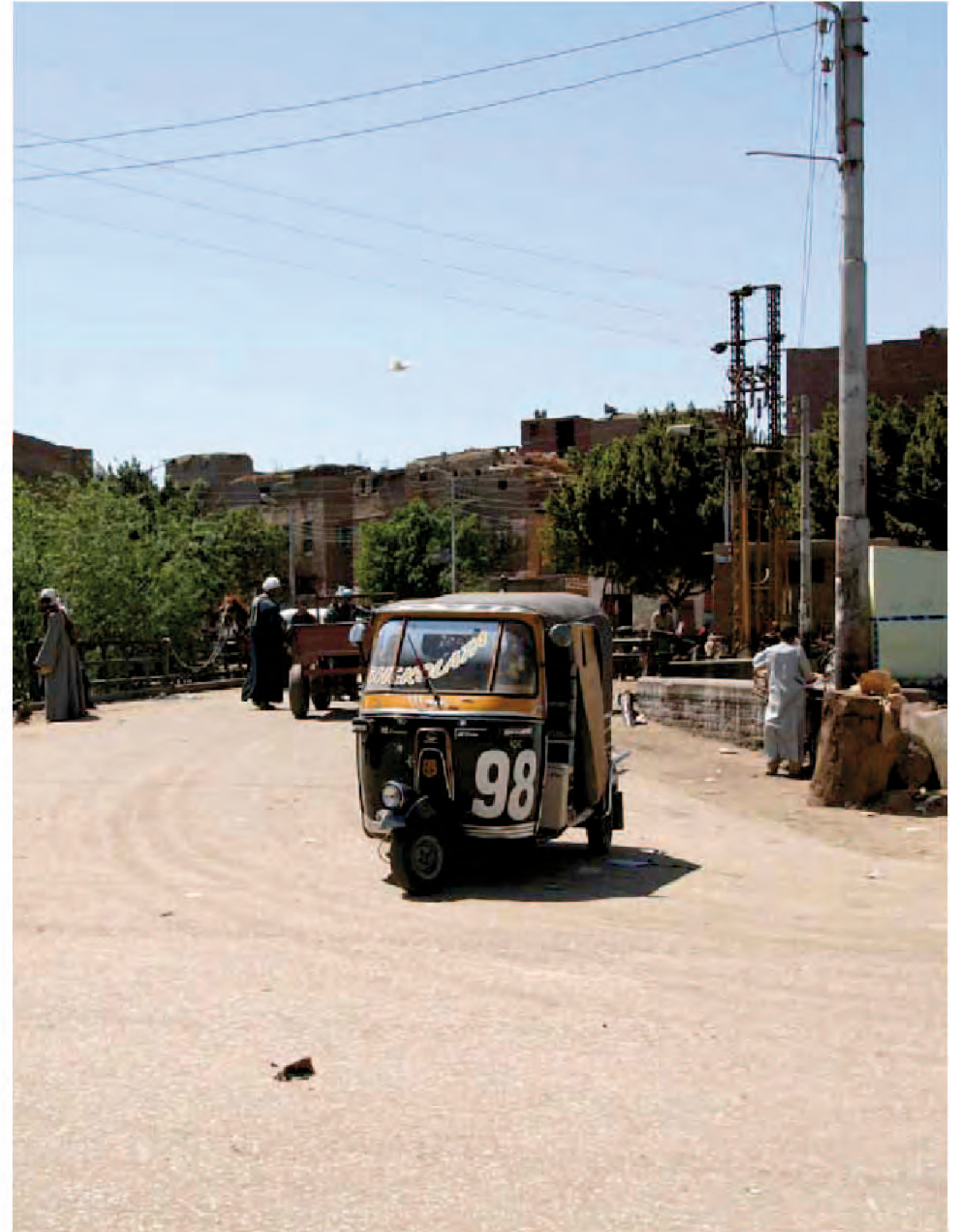


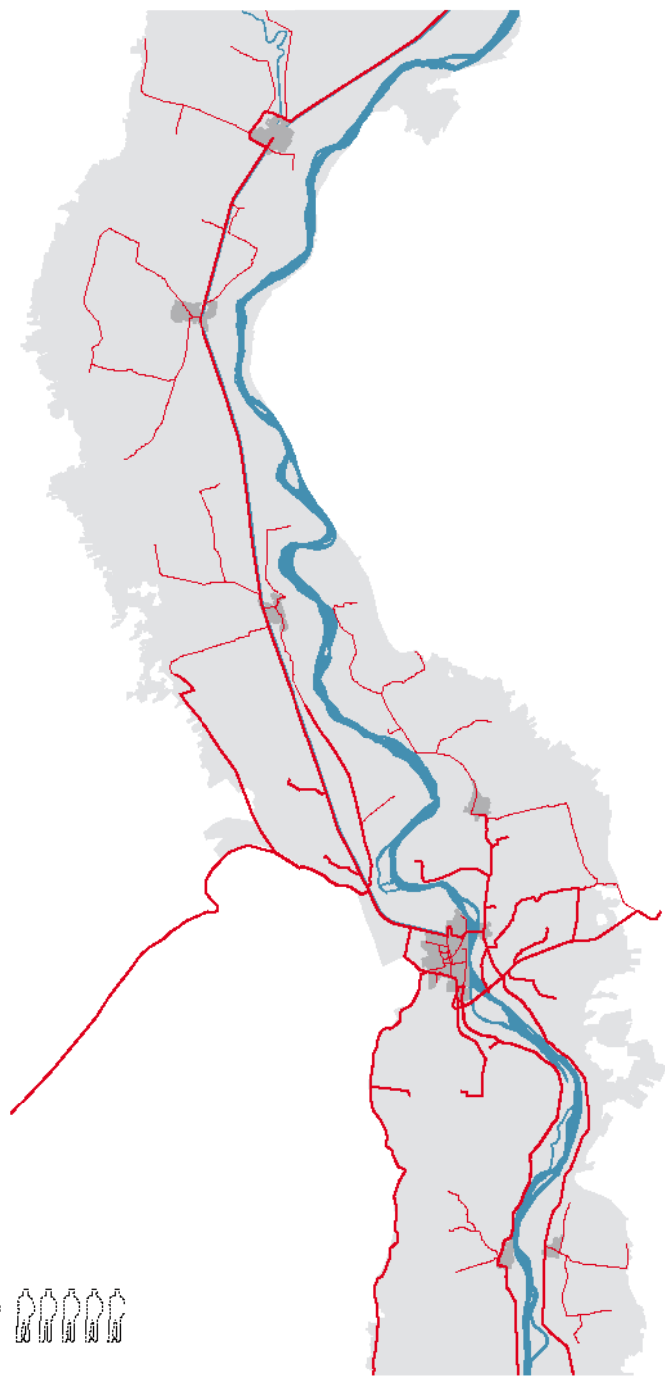
Vehicular Operating Territories

From the city to national level, the vehicles within the territory are optimized to their specific use in terms of passenger capacity and travel extents. The microbus is the most versatile, operating on all scales of use.









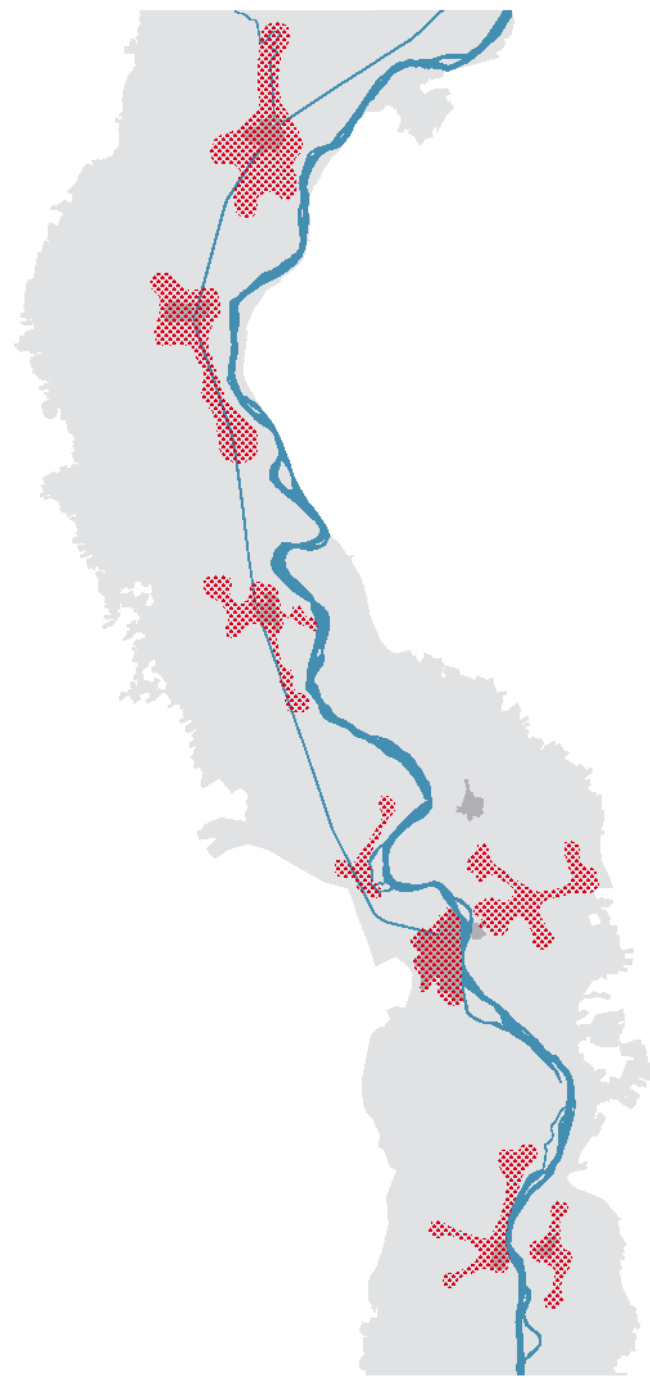
Chevrolet

Peugeot

Microbus

Shuttle Vehicles

These vehicles follow formalized routes, shuttling between exchange points on regional and national levels. These vehicles have highly variable, and often illegal, capacities to accommodate additional passenger loads during peak hours. Privately owned, these vehicles have formalized routes and fares, but either can be negotiated.

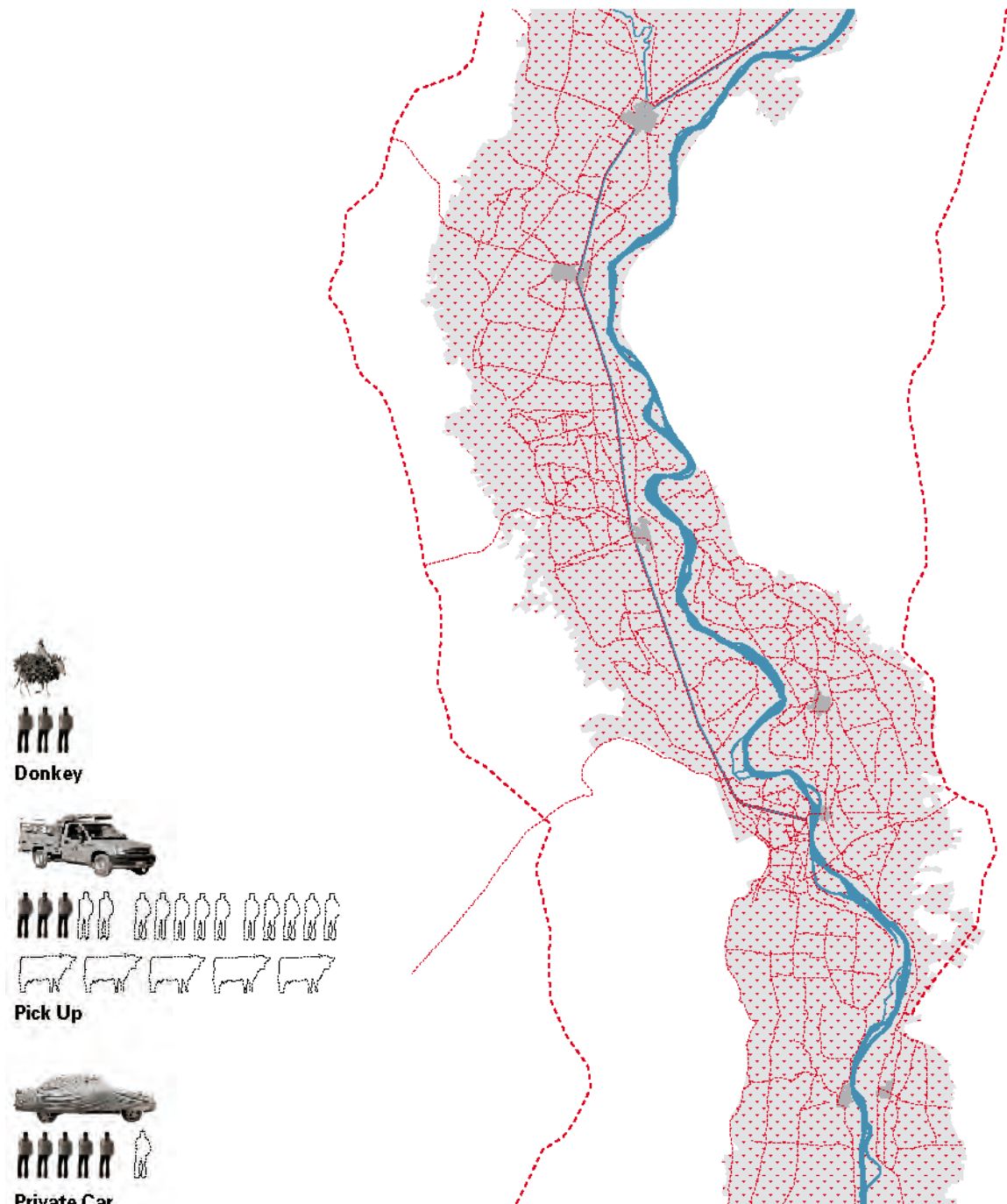


Tuk-tuk

Taxi

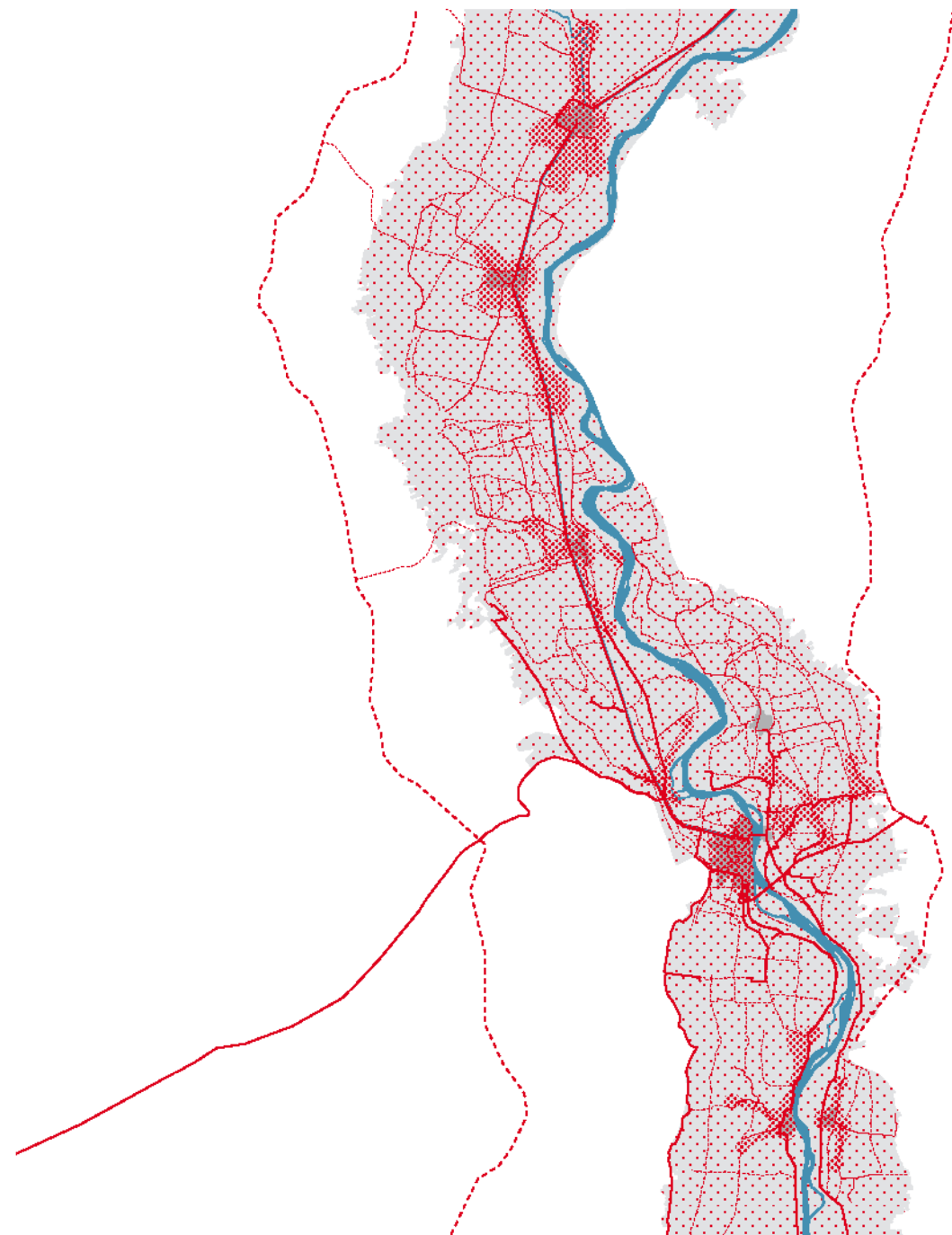
Catchment Vehicles

These vehicles operate in general areas, distributing passengers to shuttle exchange points. 1500 registered taxis in Assiut city take passengers anywhere in the city for a set rate of 1.50LE. Village tuk-tuks distribute passengers internally and to village peripheries. Outside the city, fares and routes of taxis and tuk-tuks can be negotiated.



Personal Vehicles

Privately owned and for personal use, these vehicles have complete coverage, but are less widely used due to maintenance cost, storage requirements, and the existence of an affordable and functional mass transit. To augment their value, owners allow villagers to hire these vehicles as private taxis between villages.



Interstitial Infrastructure

Assiut's formalized infrastructure, such as the Agricultural road and flanking Desert roads, acts as an open structure into which negotiable interstitial networks are formed and developed through interfacing supply and demand. Catchment areas—collection pools of mobile intensity—feed into these interstitial networks.

COMPREHENSIVE MOBILITY

High efficiency achieved by privately operated mass transit, general affordability due to government-set fares, and an accessible network enables the entire population of Assiut to be highly mobile. Access to services extends to the regional level, exchanged symbiotically between the city and its surrounding villages. The city supplies villagers with commercial needs and public services; in return, villagers supply the city with manpower and agricultural goods. Interchange enabled by the transit network accelerates the expansion of urban lifestyle into rural areas; in turn, regional mobility catalyzes urbanization.



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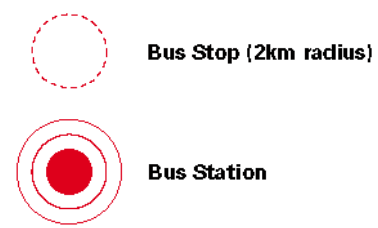
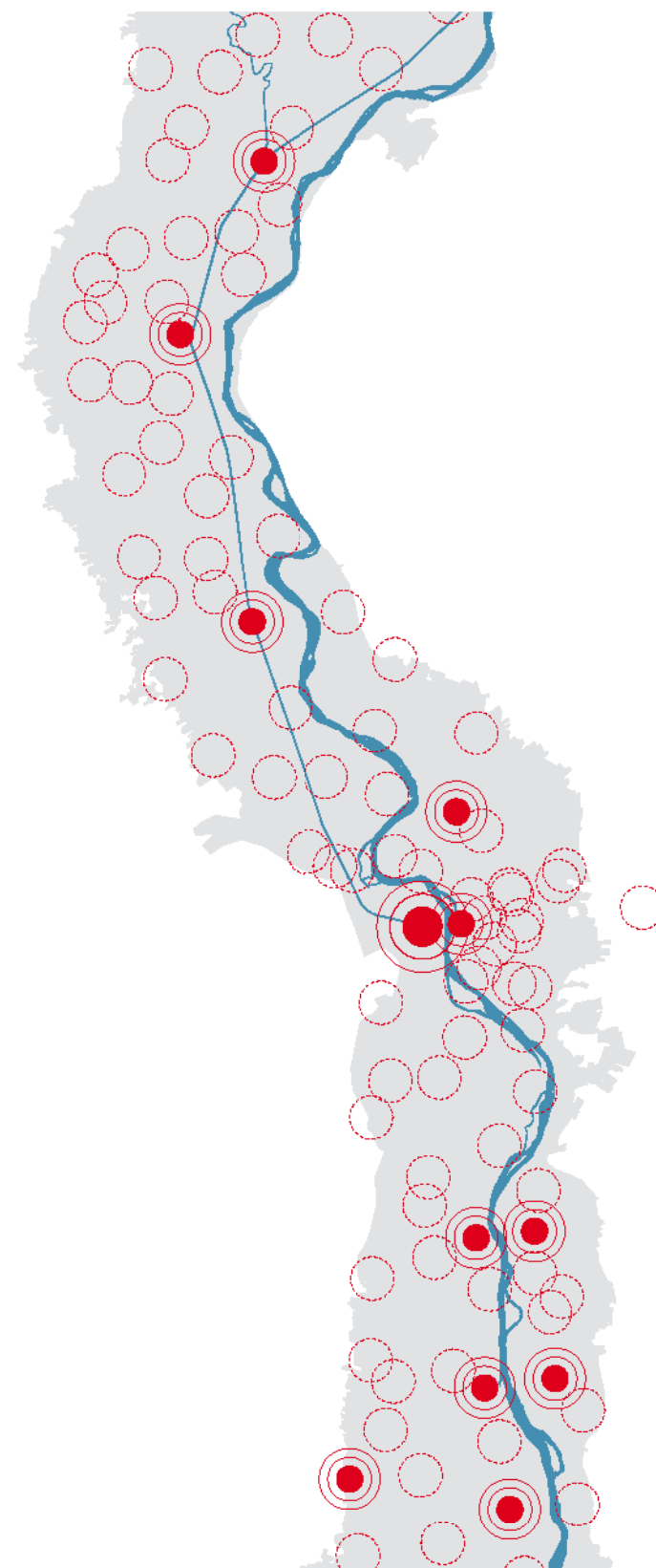
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Access on Demand

Organically formed rather than planned, bus stops are formalized structures of demand, dependant on a critical mass of waiting passengers. Vehicles pick up/drop off passengers at any point, making "hold-on-request" stops.



	inside Assiut City	0.30 LE
	Assiut - Village	> 0.30 LE
	Assiut - Village	> 0.50 LE
	inside Assiut City	1.50 LE
	10 pieces	0.50 LE
	1 kg	2 LE
	1 kg	1 LE
	1 kg	2 LE
	1 egg	0.60 LE
	1 plate	2 LE
	1 can	1 LE
	1 cup	0.75 LE

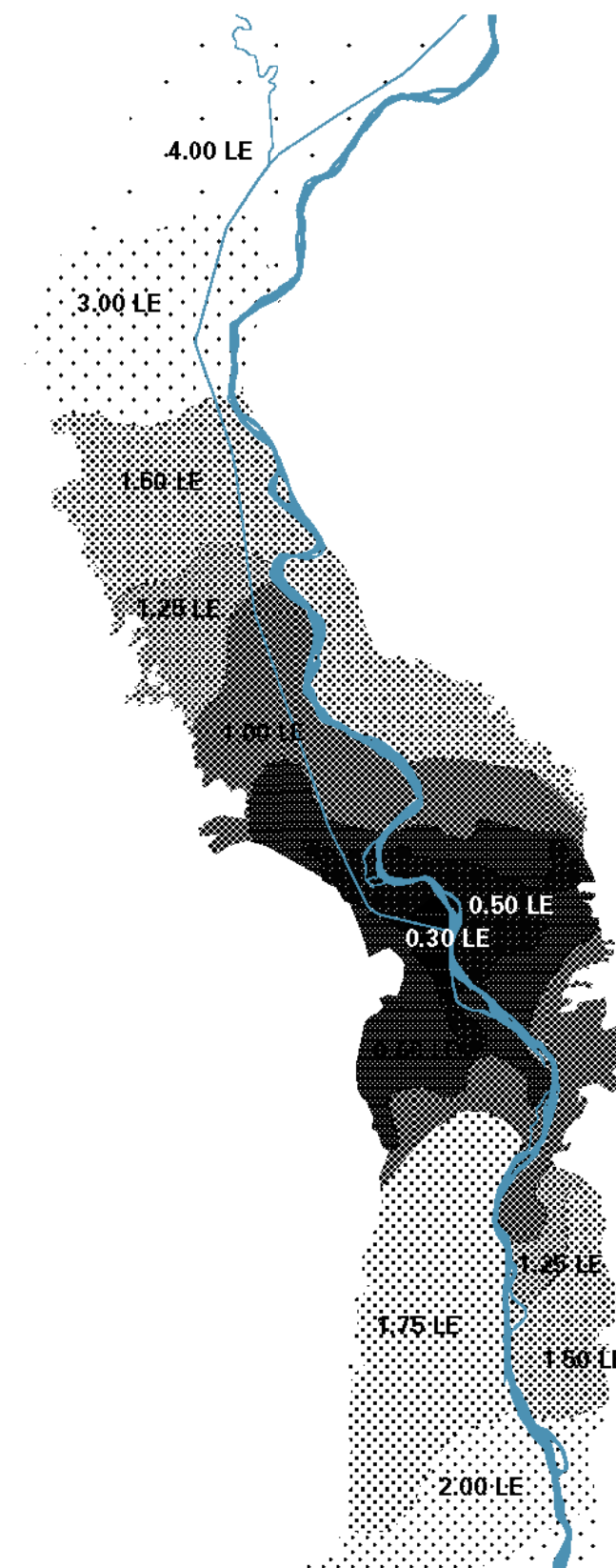


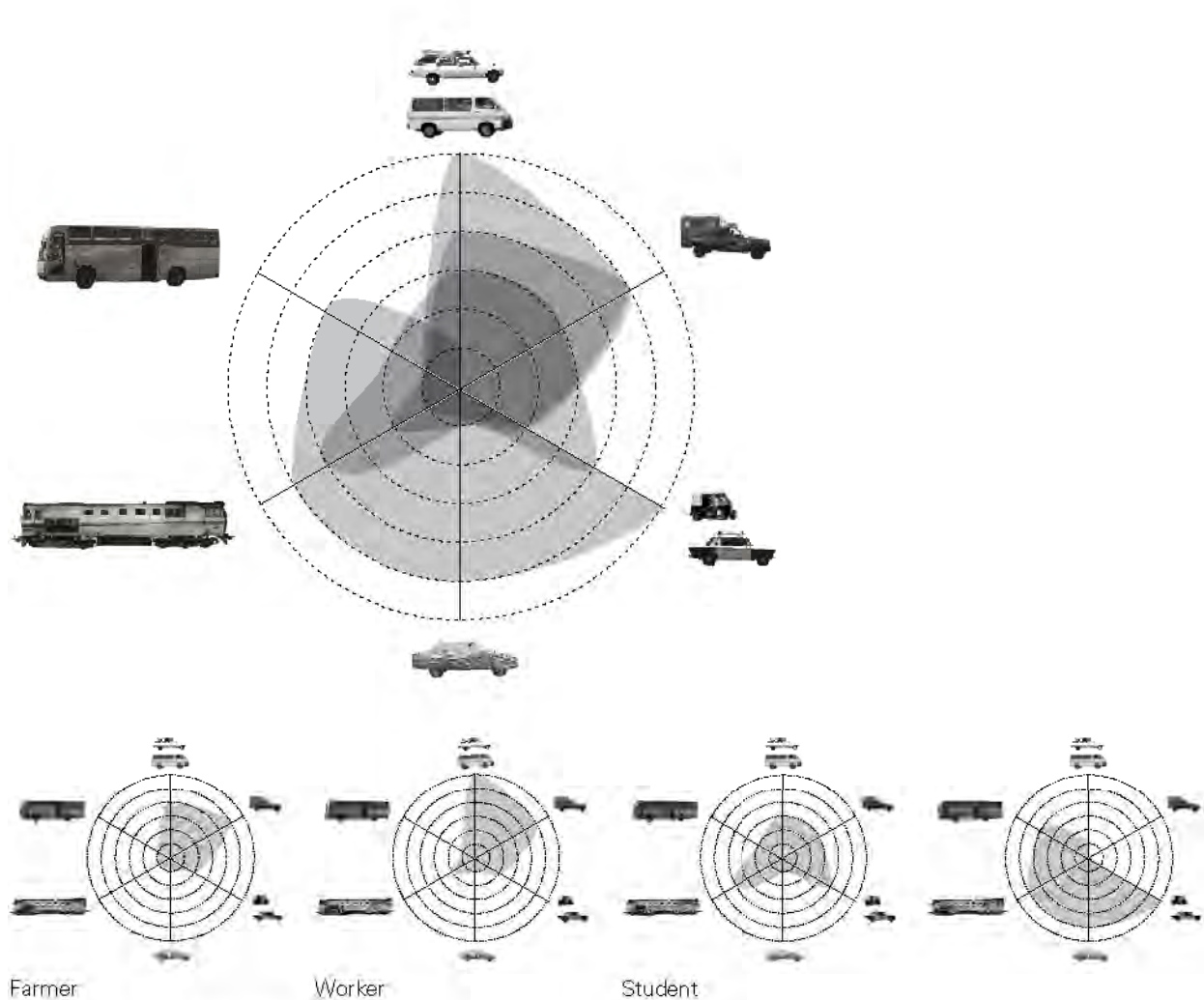
Monthly Income
350 LE



Affordable Fares

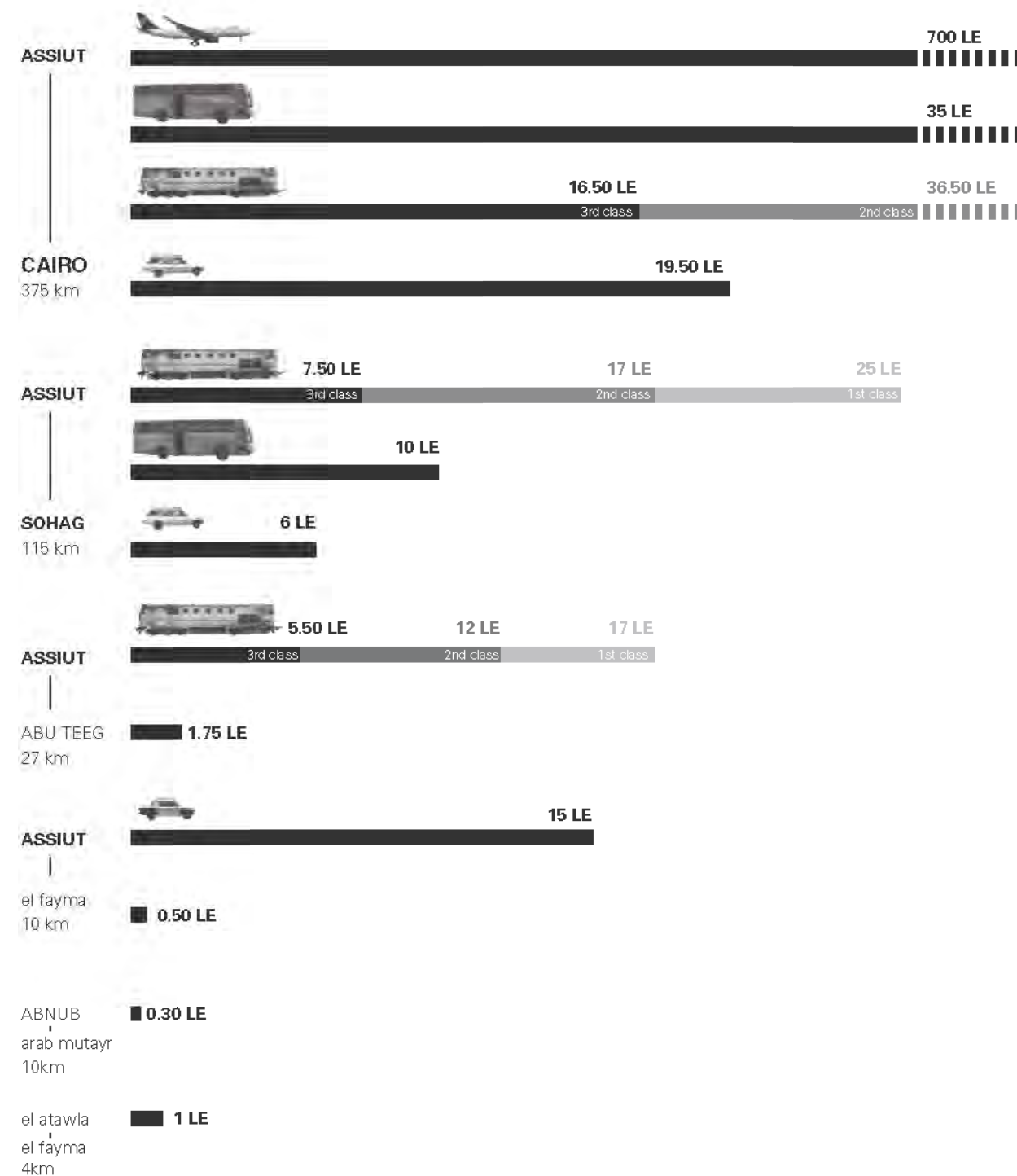
Government pegged fares allow for wide-ranging economic accessibility because they are often set lower than market value. The ensuing price topography shapes Assiut's reach in the region and allows for an affordable commute from regions within the 0.60-1LE price range, around 15-20km from the city core.





Diverse Passenger Profiles

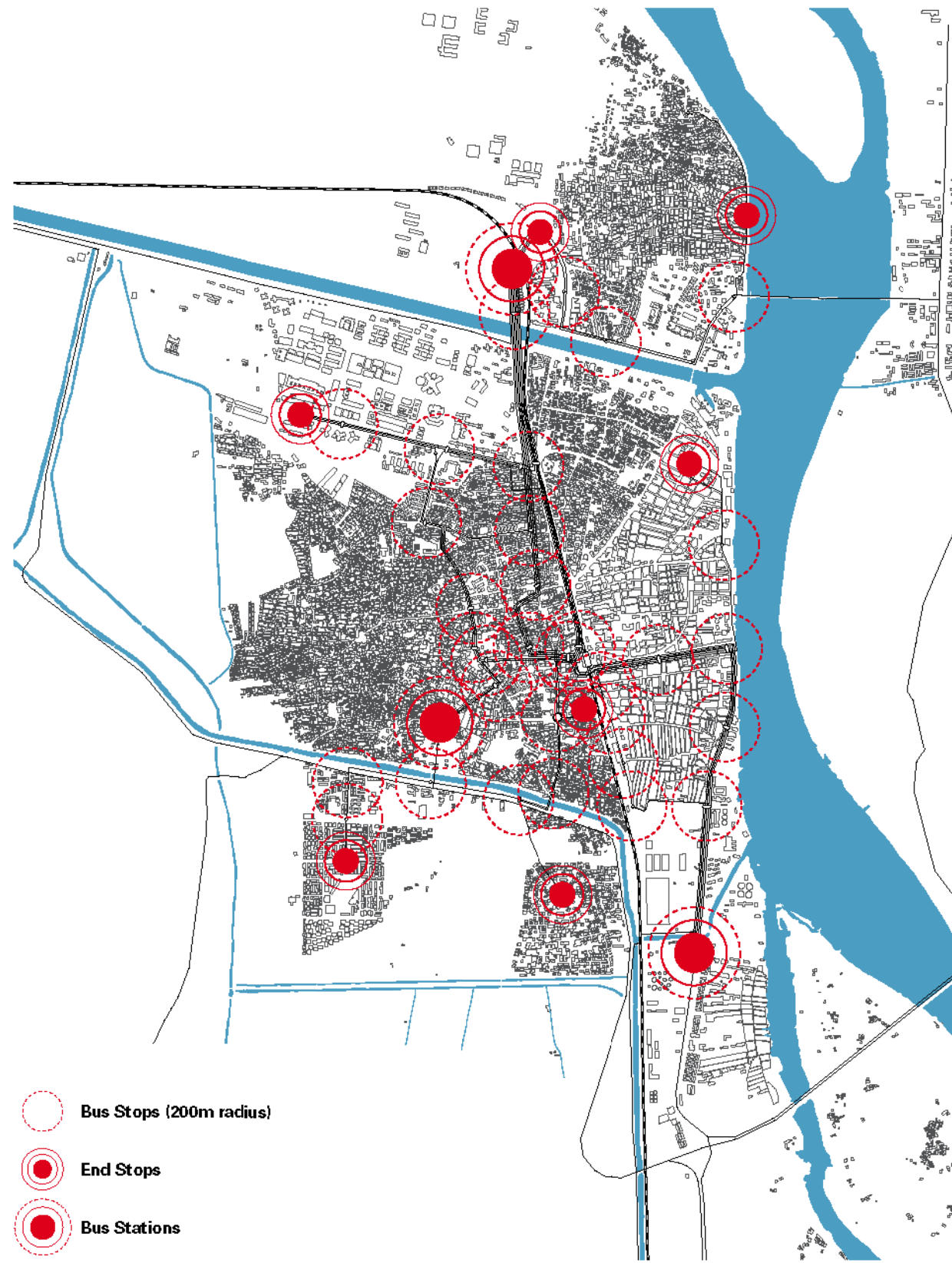
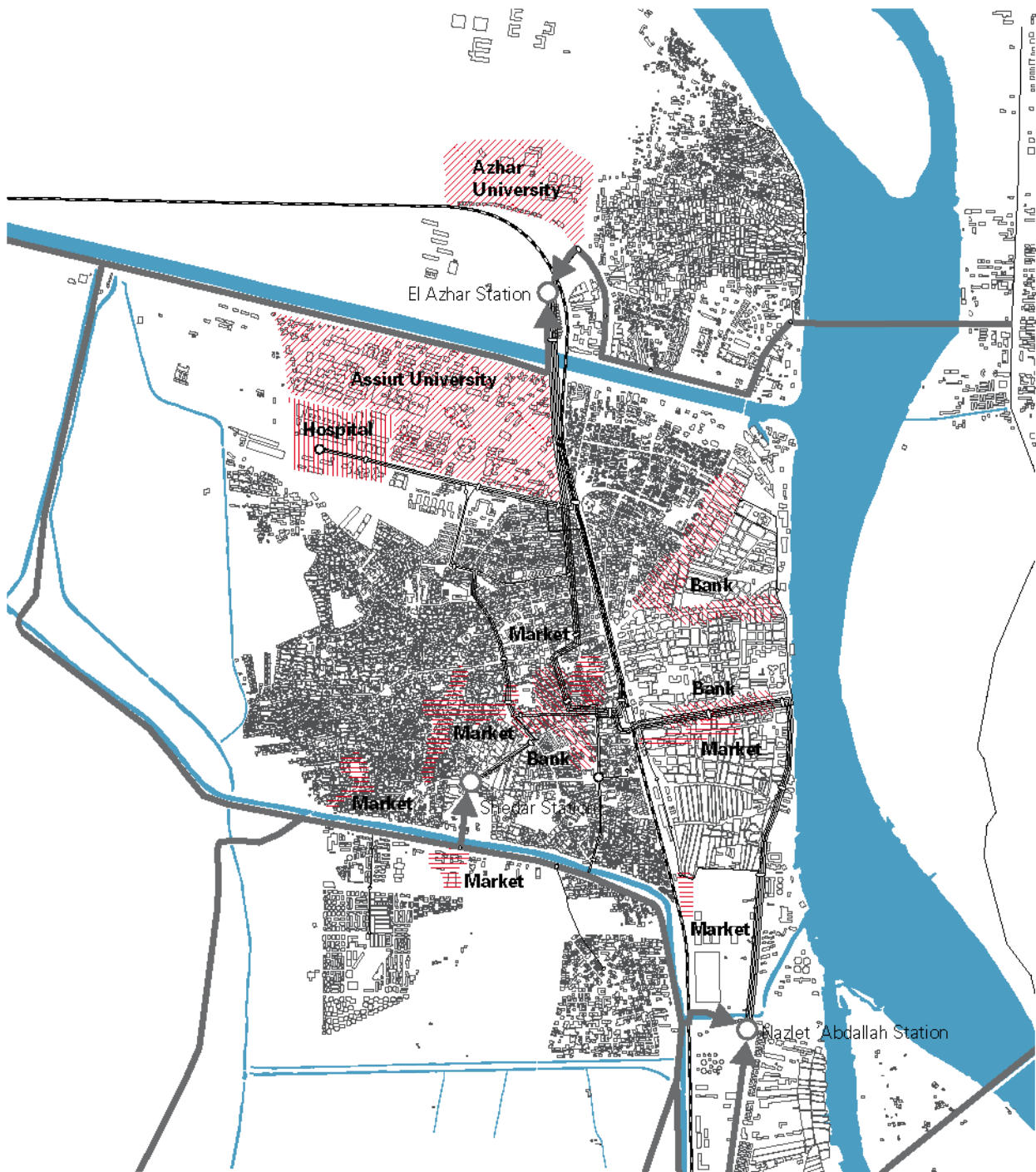
A high degree of overlap between user groups indicates that there is no inherent segregation within modes of mass transit, though self-segregation based on class can occur.



Scalar Alternatives




While regional transportation consists of inexpensive, singular options, larger scale distances command a greater range of vehicle alternatives and fares.

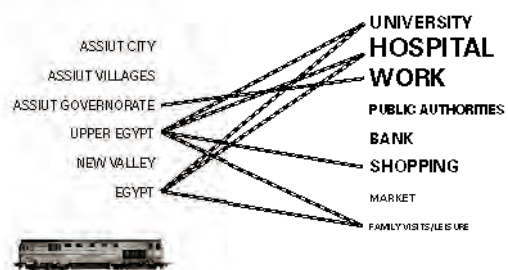
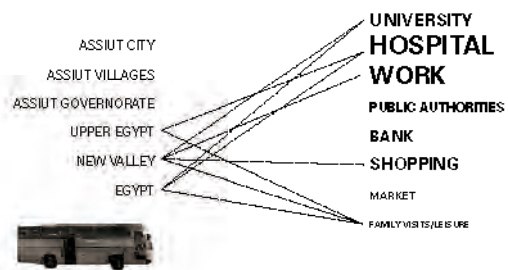
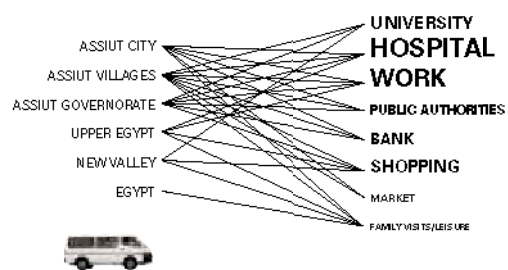
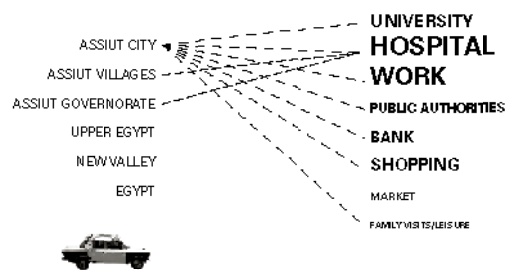
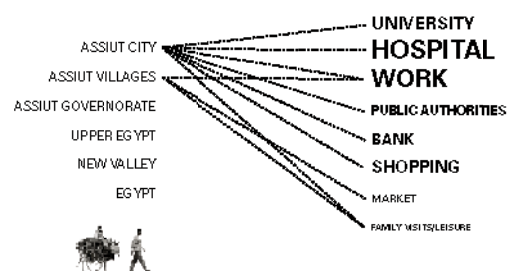
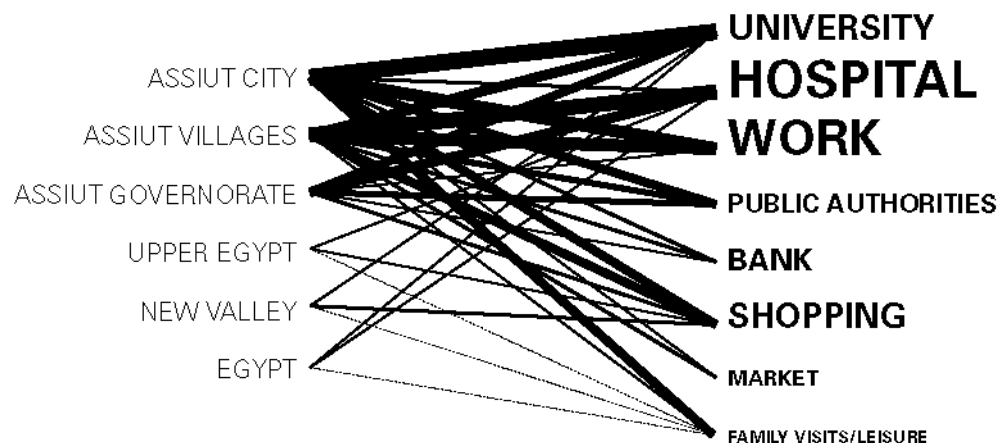




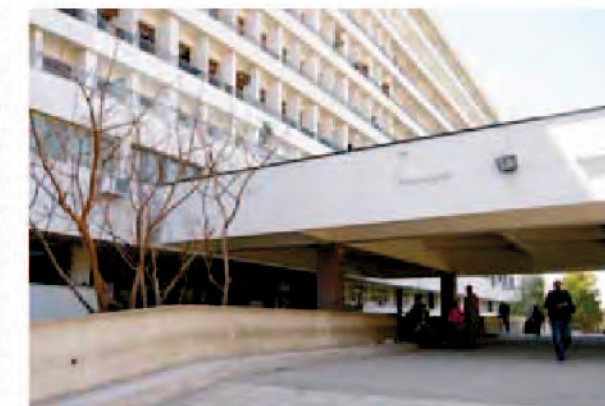
Supply City

Assiut's key urban indicators are the services it provides to the region. Access points cluster around major service programs. The linear configuration of the inner-city network and its redundancy of multiple lines emphasize Assiut as a service thoroughfare within the regional network.

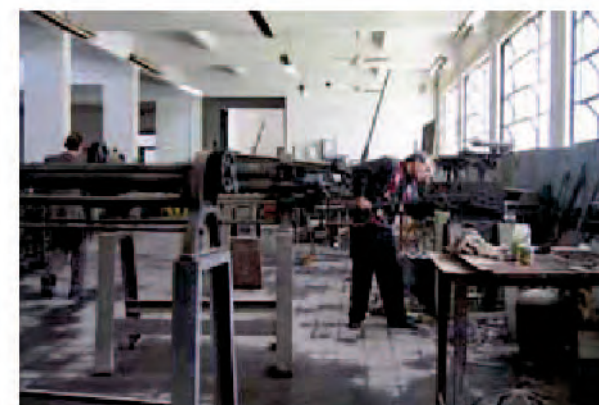
-  Bus Stops (200m radius)
-  End Stops
-  Bus Stations



1



2



3



4



5

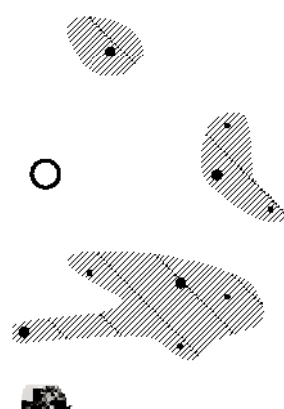
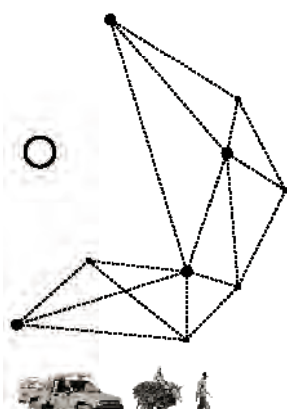
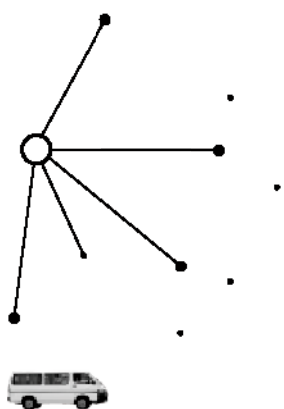
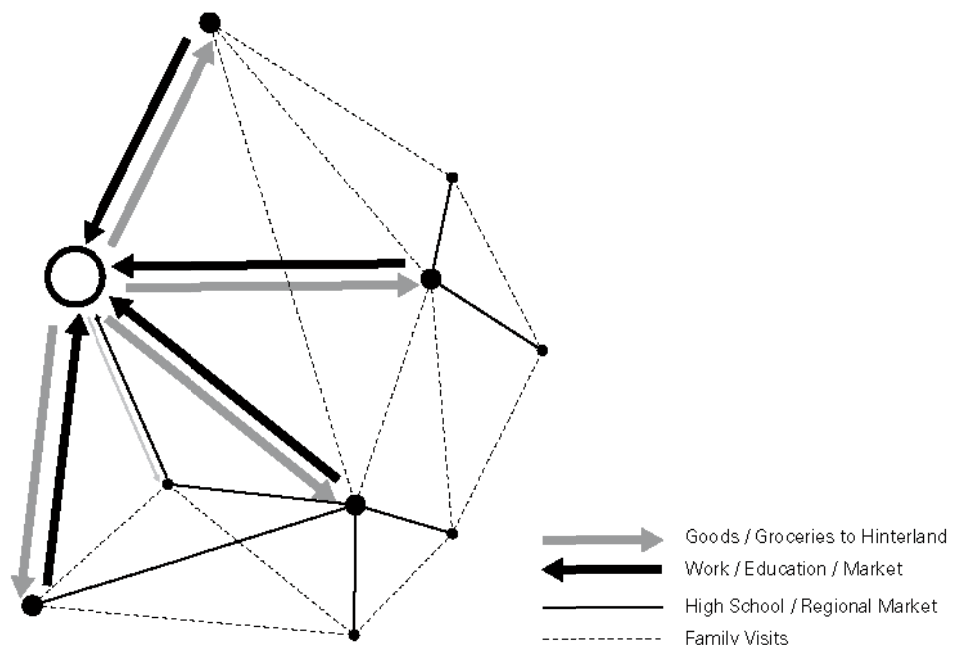


6

- 1. Assiut University
- 2. Hospital
- 3. Industrial Production
- 4. Public Authority
- 5. Bank
- 6. Shopping

Urban Attractors

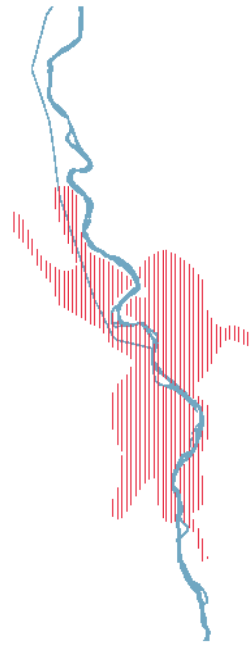
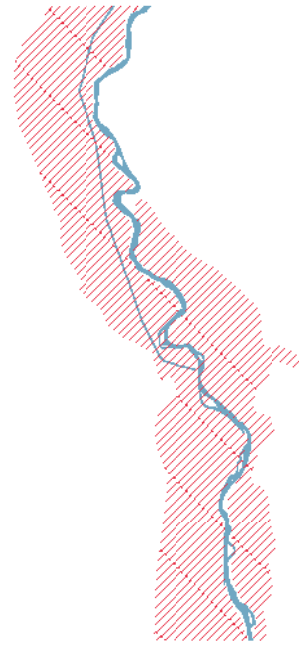
The services provided by Assiut extend its urban reach to the rest of the region. Assiut University attracts students Egypt-wide, the University Hospital draws patients from Upper Egypt, and inner-city employment opportunities and services compose the urban epicenter of Assiut's regional network.



Supply Symbiosis

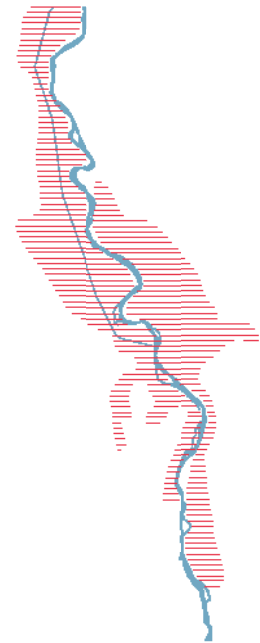
Assiut and its hinterland have a symbiotic relationship to optimize capital flows; without one, the other could not exist. Villages provide human capital while the city provides employment opportunities and diverse services unavailable in villages. The villages are strongly linked to Assiut and its services via numerous and frequent microbus shuttles. Since inter-village connections are primarily social, transit options are mostly limited to personal vehicles, although the tuk-tuk has recently emerged as a form of inter-village mass transit.





Hospital

Work

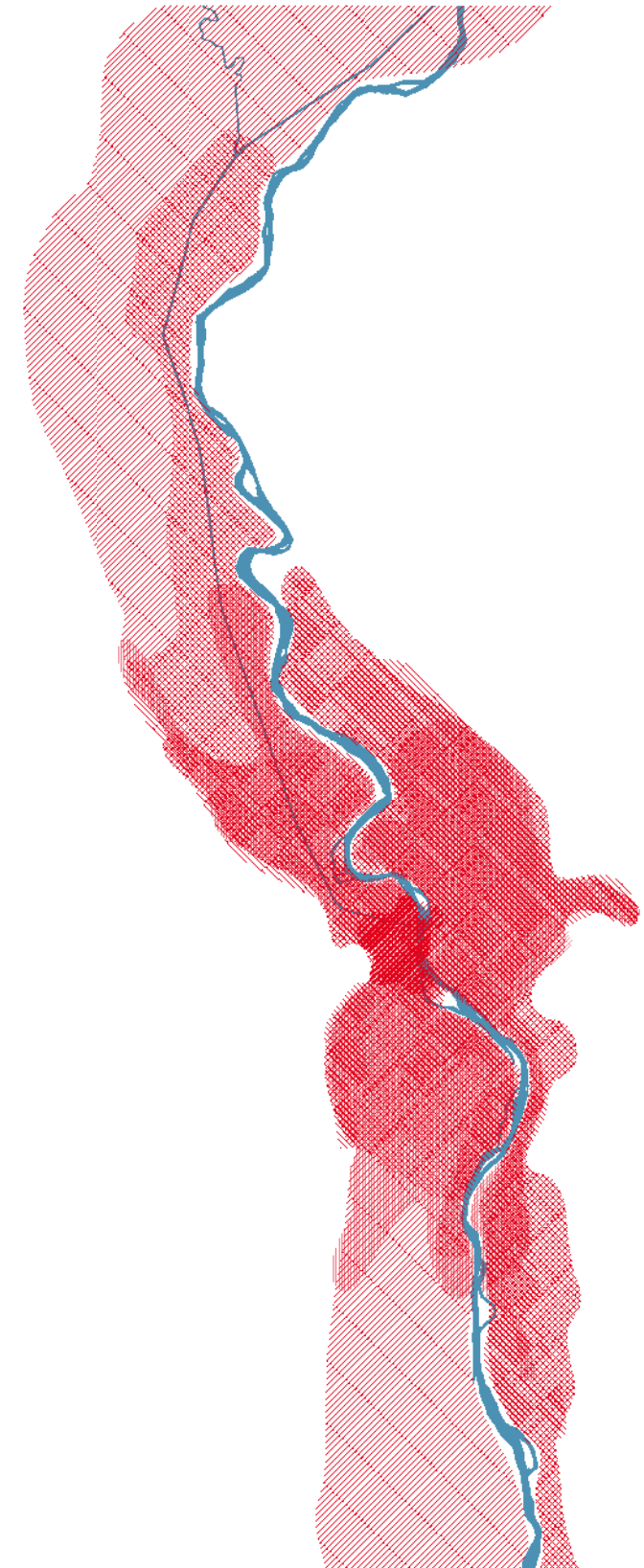


Bank

Shopping

Assiut's Reach

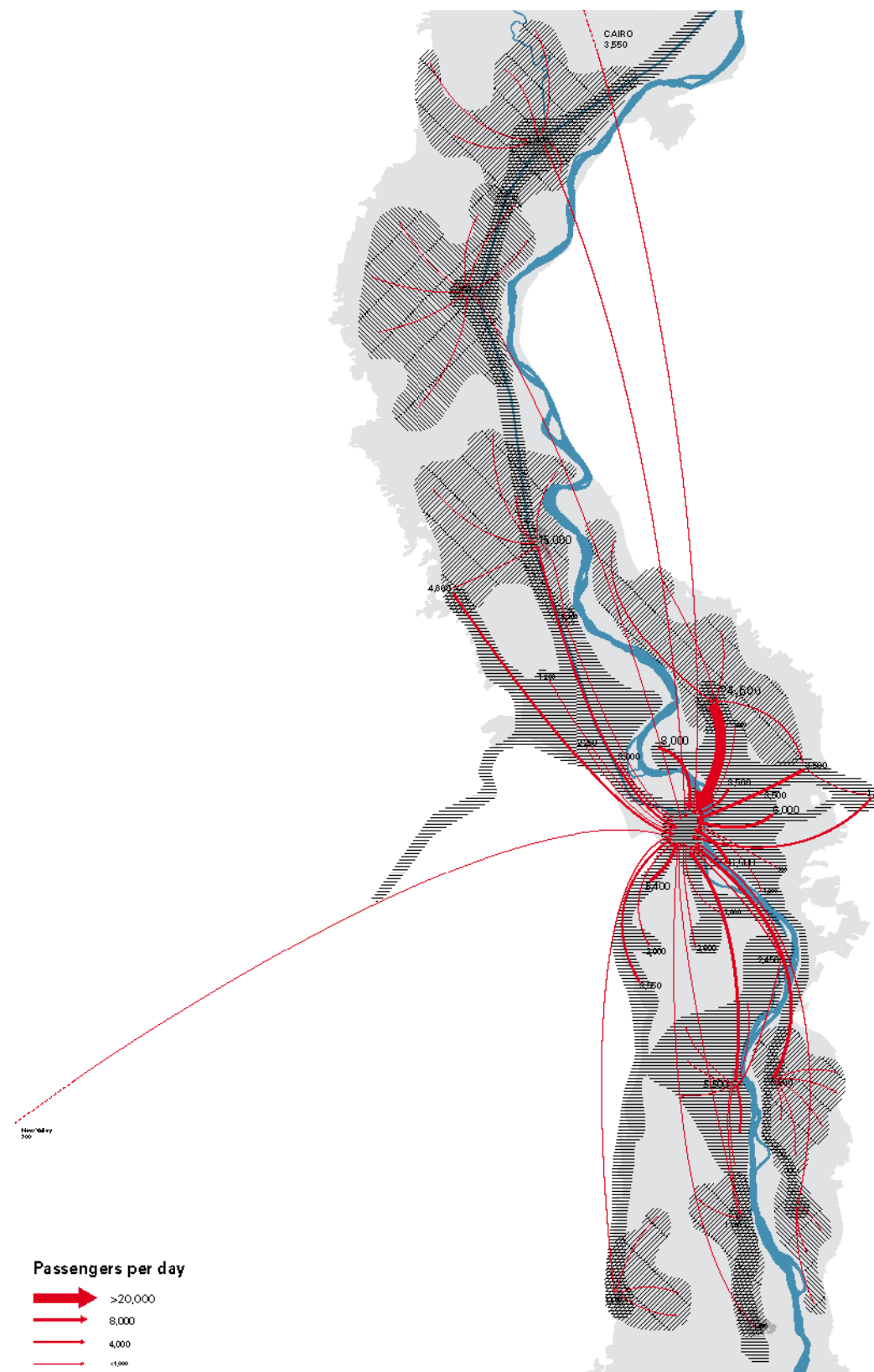
Overlaying service catchment areas produces Assiut's urban reach, and indicates that the city offers a range of services suited to different scales of regional need; Assiut's influence extends well beyond administrative borders.





Commuter Central

Around 130,000 people circulate through Assiut City on a given day, radiating from smaller scale distribution points into the city as the focus point of regional movement. Larger scale movement patterns of inhabitants of dormitory suburbs such as Abnub indicate the occurrence of service-commuting, where inhabitants go to Assiut for services but work in industrial areas in the city outskirts.





**AHMED
Bani Murr**

Prayer
daily
Work (Prayer in Mosque in Assiut)
30 LE transportation costs/month



**SUADA
El Hadaya**

High School Students
6 days/week
Secondary School in next Village
10 LE transportation costs/month



**MOHAMED
El Hadaya**

retired worker at Assiut University
El Hadaya
weekly
Services, Shopping
5 LE transportation costs/month



**SA'AD AHMED
Kharga (New Valley)**

Accountant, Student
2 times/month
Lectures at University of Assiut
48 LE transportation costs/month



**MAHFUZ
Durunka**

Cattle Dealer
several times/day
Cattle Dealer at Market in Assiut

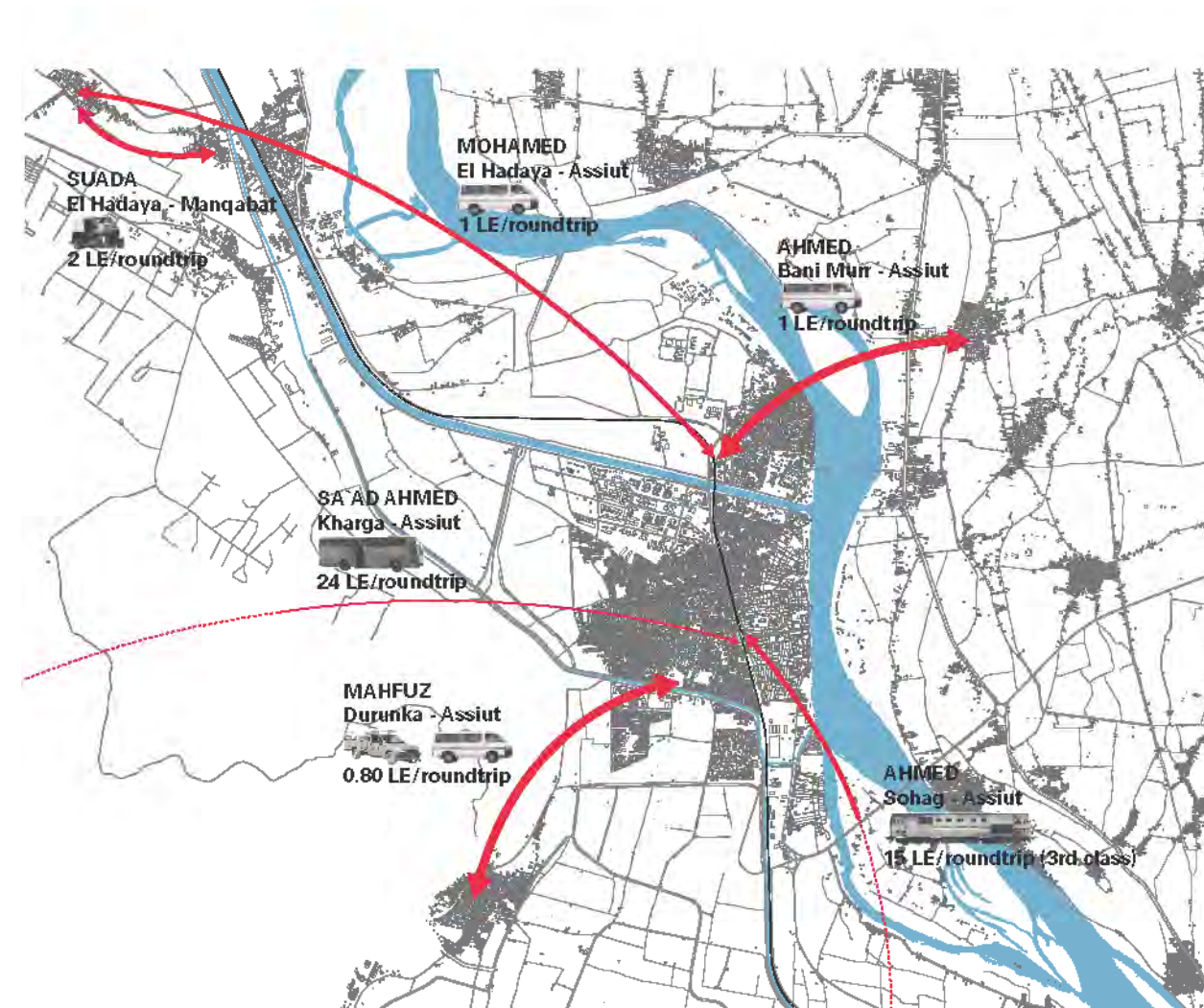


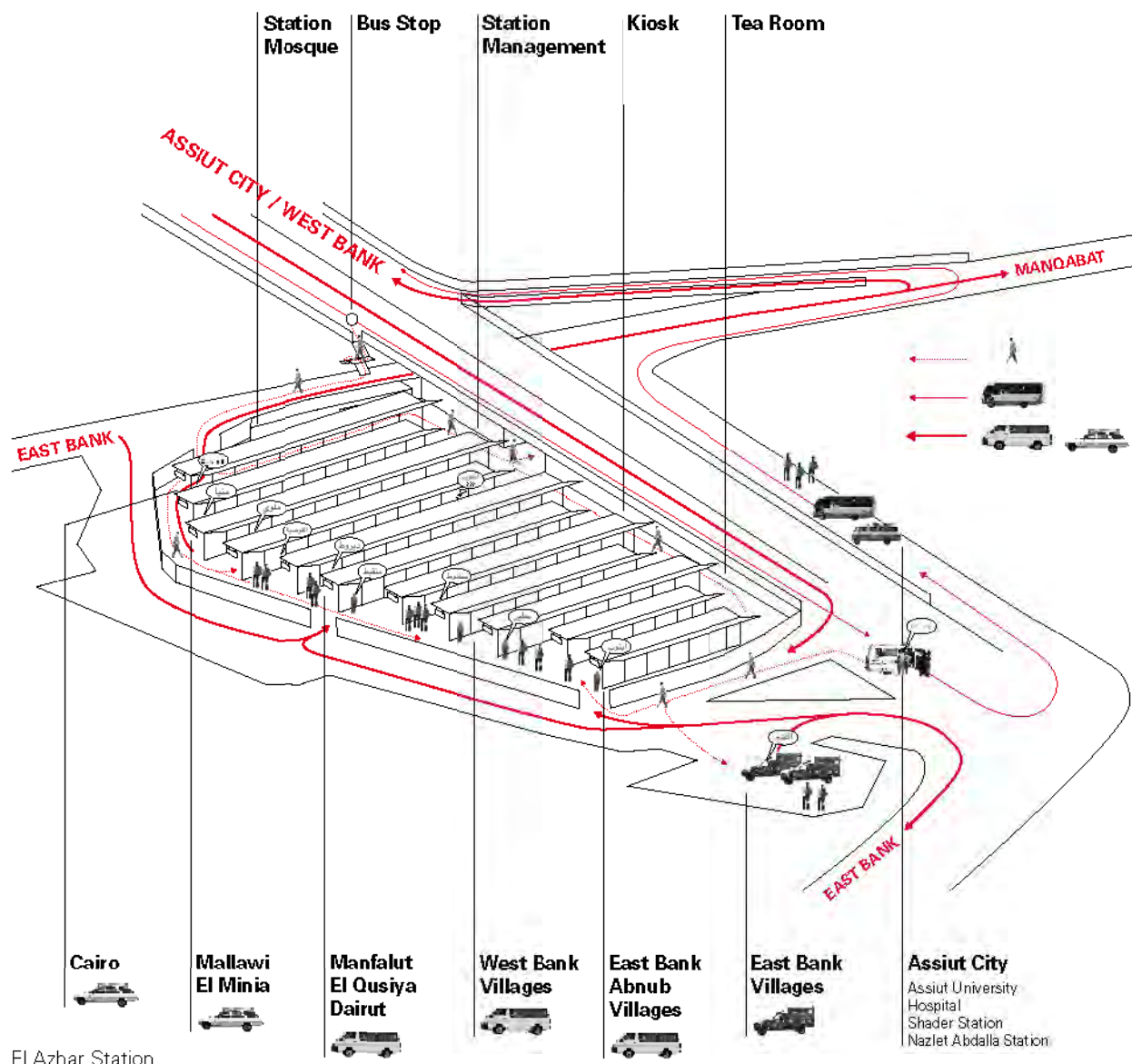
**AHMED
Assiut**

Law Student at Assiut University
every weekend
Family Visit
70 LE transportation costs/month

Mobile Society

A sampling of transportation patterns reveal a myriad of education, employment, and service needs fulfilled over diverse scales with no exclusion





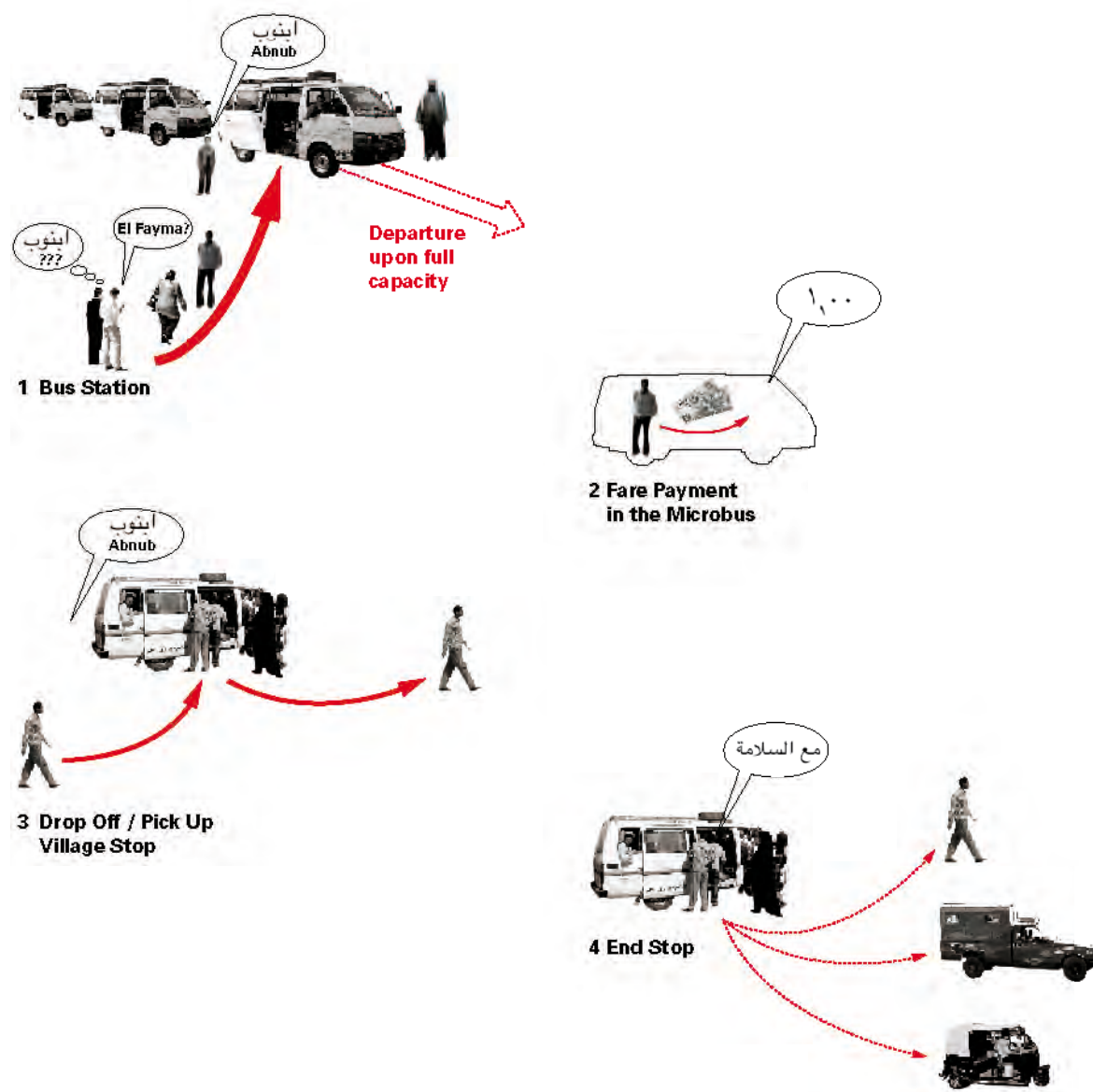
El Azhar Station

Anatomy of a Bus Station

Not only serving as a transit hub, a bus station also functions as an exchange point of services. Accommodating a body of human needs with small grocery stands and religious and social programs, the station facilitates services to waiting passengers and idling drivers. Stations specialize in different regional purposes; El Azhar Station primarily links northern cities and villages to Assiut, Shedar Station and Nazlet 'Abdallah Station are more oriented toward the south, as portals to Upper Egypt.







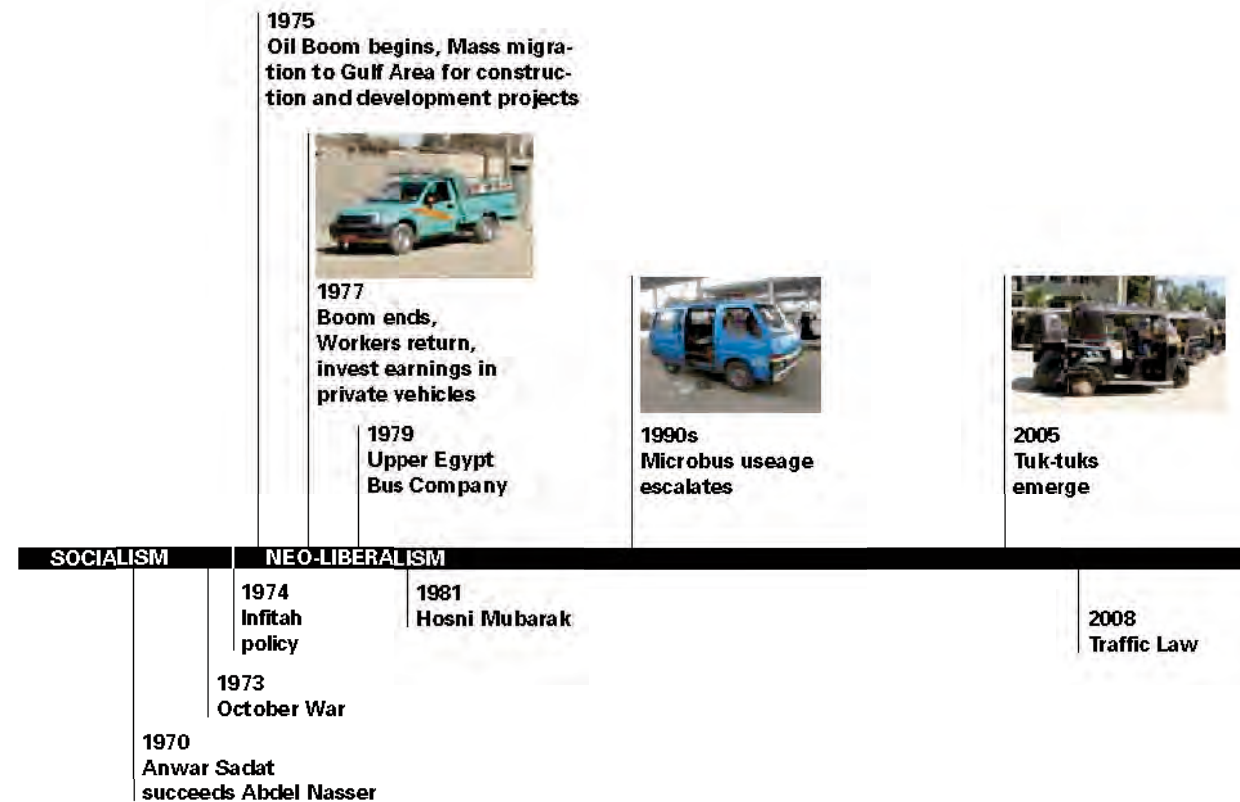
How to Ride a Microbus

The speed and reliability of a microbus stems from its functional flexibility and opportunistic nature. Convenient because it does not adhere to fixed schedules or route stops, nor does it require tickets, the microbus is the most prevalent mode of transportation.



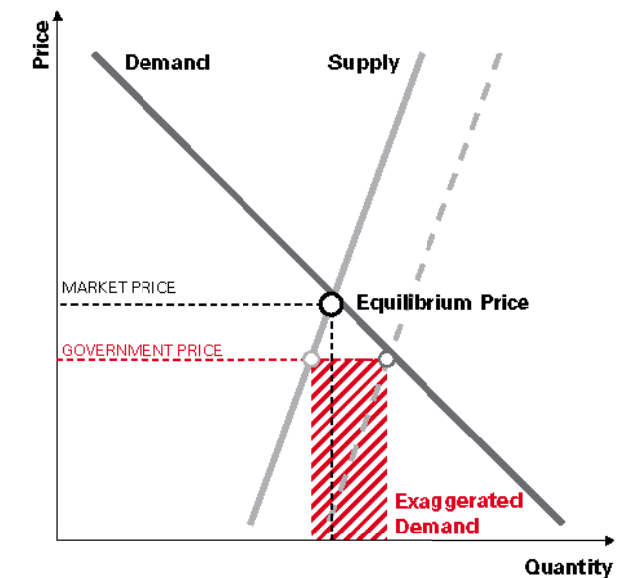
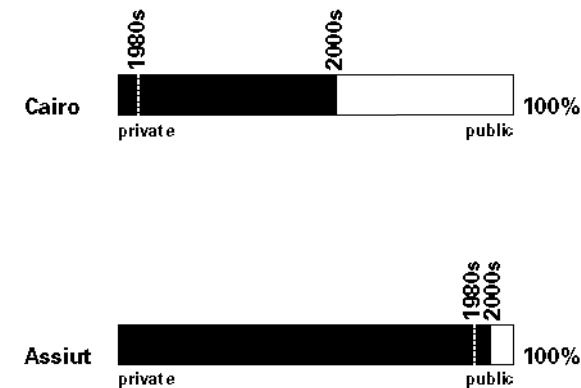
LAISSEZ-FAIRE REGULATION

Assiut performs as a regional hub due to its political and economic systems which adapt to the transportation needs of its rural population. Rather than being planned by the state, the mass transit system has formed from self-regulating supply and demand of passengers, and is executed by private sector operators with minimal state intervention. While this liberal approach encourages self-organized entrepreneurship, it lacks a mechanism to safeguard people from negative impacts, namely threats to public safety. In this aspect, the government assumes an authoritarian stance in order to protect passengers, by mandating vehicle registration and renewal, and imposing penalties on dangerous driving.



Opening the Market

Sadat's Infitah (Open Door) economic policy of 1974 enabled a capitalistic free market, allowing the emergence of a modern entrepreneurial and consumerist society in Egypt.

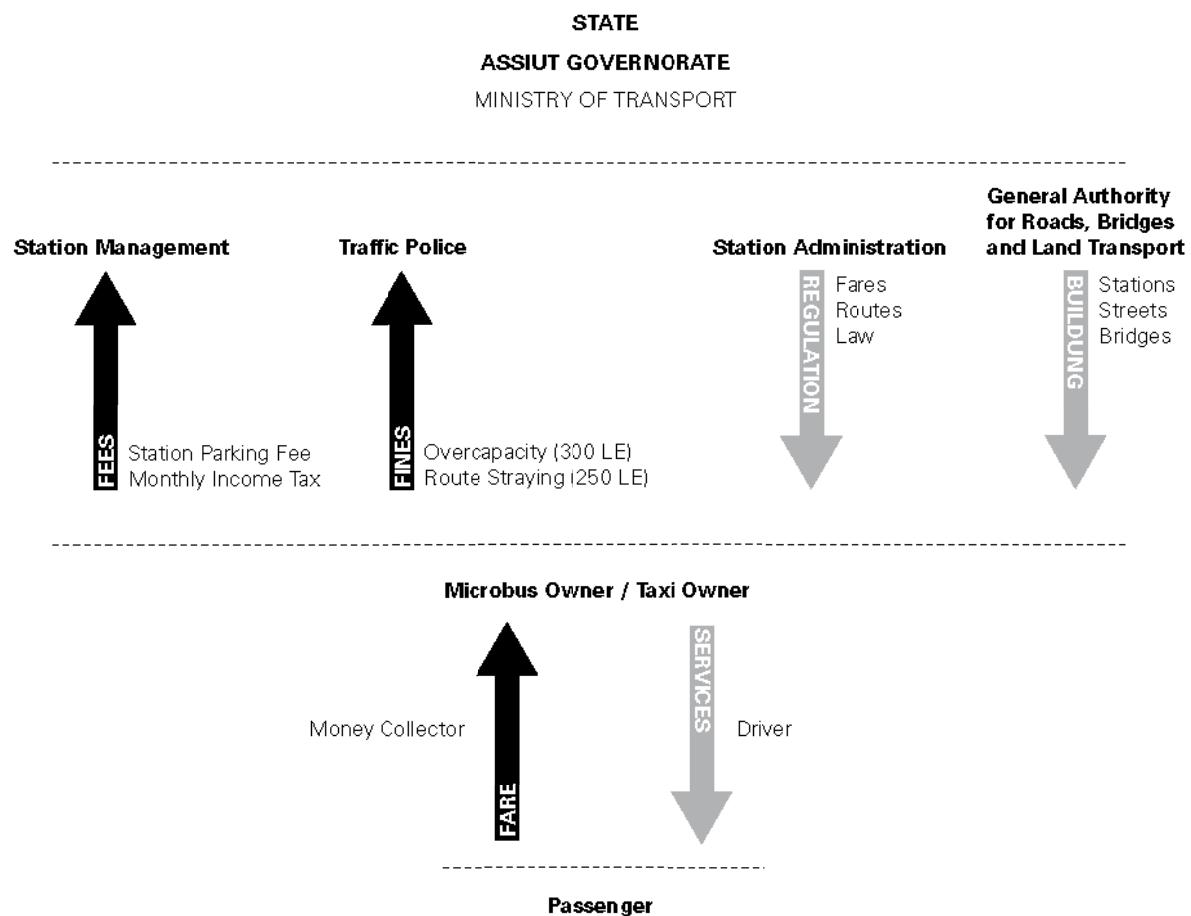


Private Sector Takeover

In the 1980s, public transport was the main metropolitan transit mode, but did not develop in Assiut because taxis offered adequate coverage. Public transport yielded to the private sector because the government allows it to function independently without economically burdening the state.

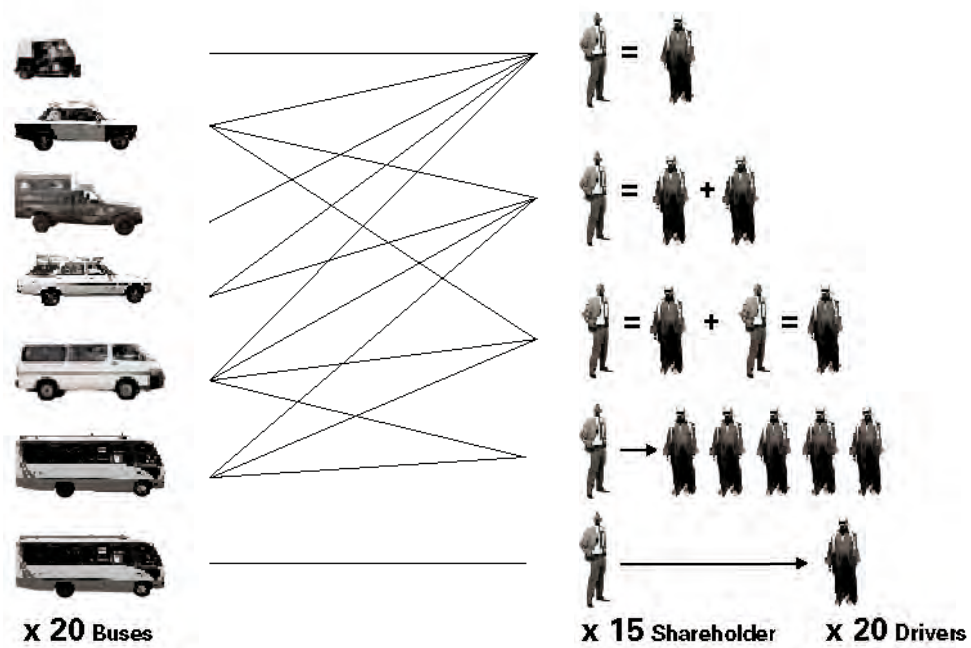
Adapting Price Elasticity

Because the government pegs fares lower than the market value, driver net revenue decreases, leading to insufficient driver earnings. Drivers operate within an elastic market in which prices vary between the market-favored equilibrium and the government pegged price.

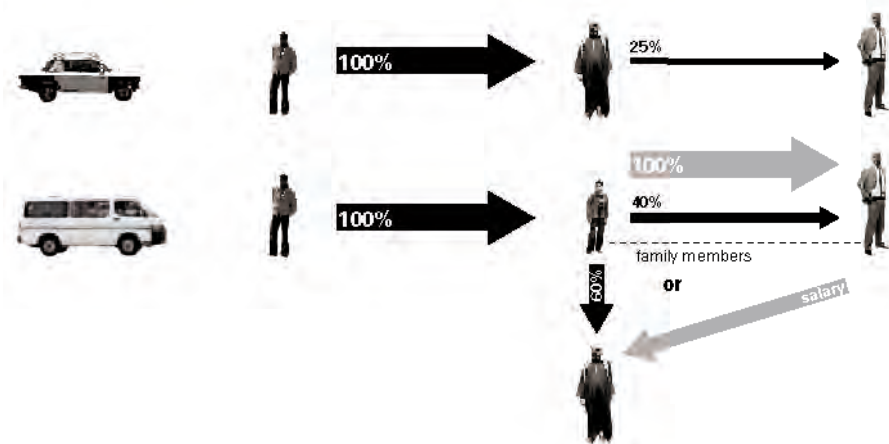


Landlord Economics

Within a negotiation of top-down vs. bottom-up power, the government regulates intercity prices while allowing individual operators to set outer-city prices at a market rate. The government gains revenue through taxes and fines, leaving the fare revenue distribution to the discretion of the owner. Owners allow drivers to keep a percentage of their earnings, or pay them a monthly salary, protecting their profits by often employing family members as money collectors. The state's presence within the private sector is often limited to an unobtrusive administrative hut to which drivers pay dues and organize licensing matters.



Private Ownership

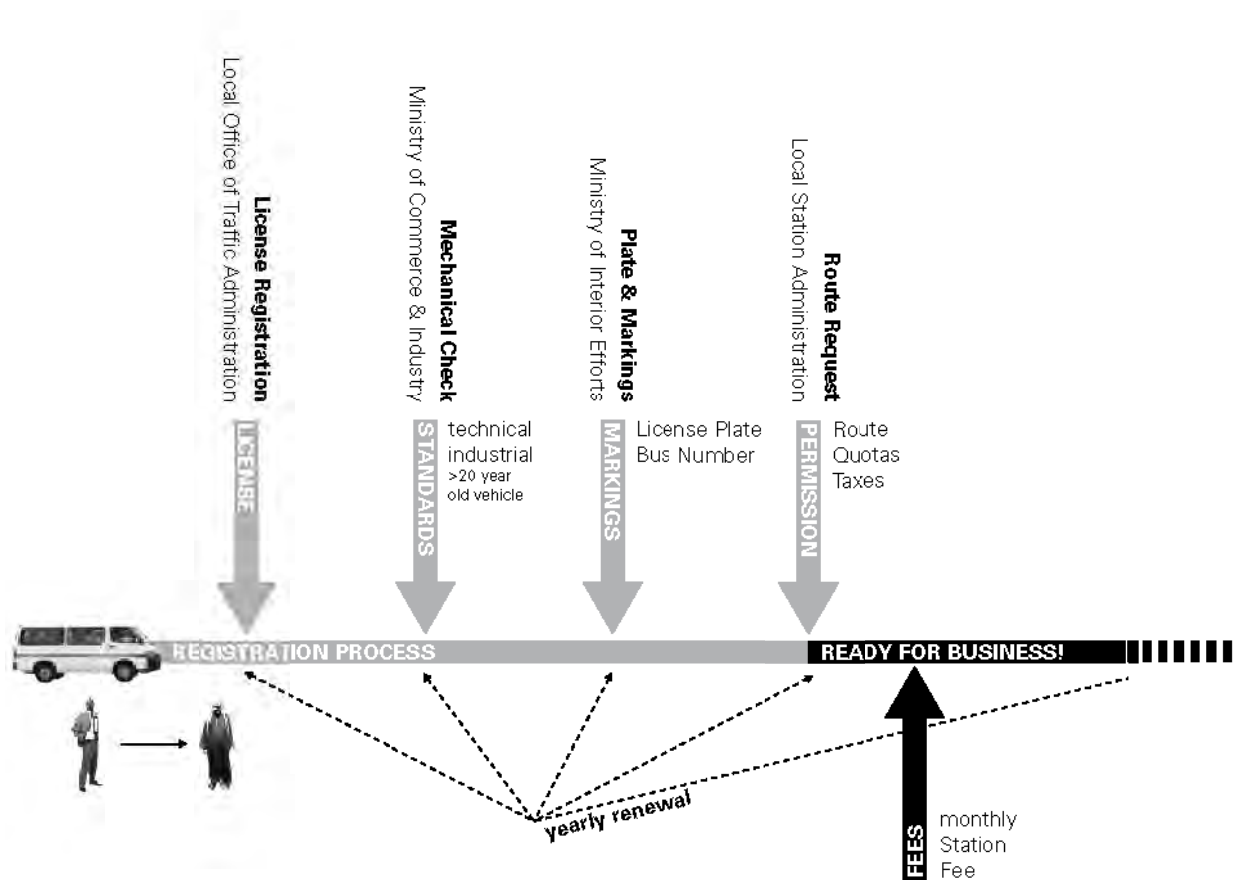


Payments

P2P Network

The inception of private ventures most often produced a one-to-one relationship between owners and drivers, who operated as individuals within the transportation industry. To increase operational efficiency, the government encourages joint ventures via private collective ownership to pool resources and self-organize in a peer-to-peer network. These collaborations expand capital and managerial capacity, also creating a reserve of ready-to-work drivers to fill in the gaps when individual drivers are unable to make their shifts.





How to Register a Microbus

Vehicles must pass through a circuit of legal and mechanical checkpoints administered by state ministries and local government to ensure legal accountability for vehicles and drivers. Toward the renewal of Egypt's aging vehicle population, the Prime Minister initiated a fund-raising effort towards subsidizing the purchase of replacement vehicles from a fund supported by the Ministry of Finance. The government has also instituted specific markings for vehicles based on their function and service area.



1 Inspired by India, businessmen import tuk-tuks from China



2 Internal mobility in villages improves



3 Hit-and-run accidents escalate

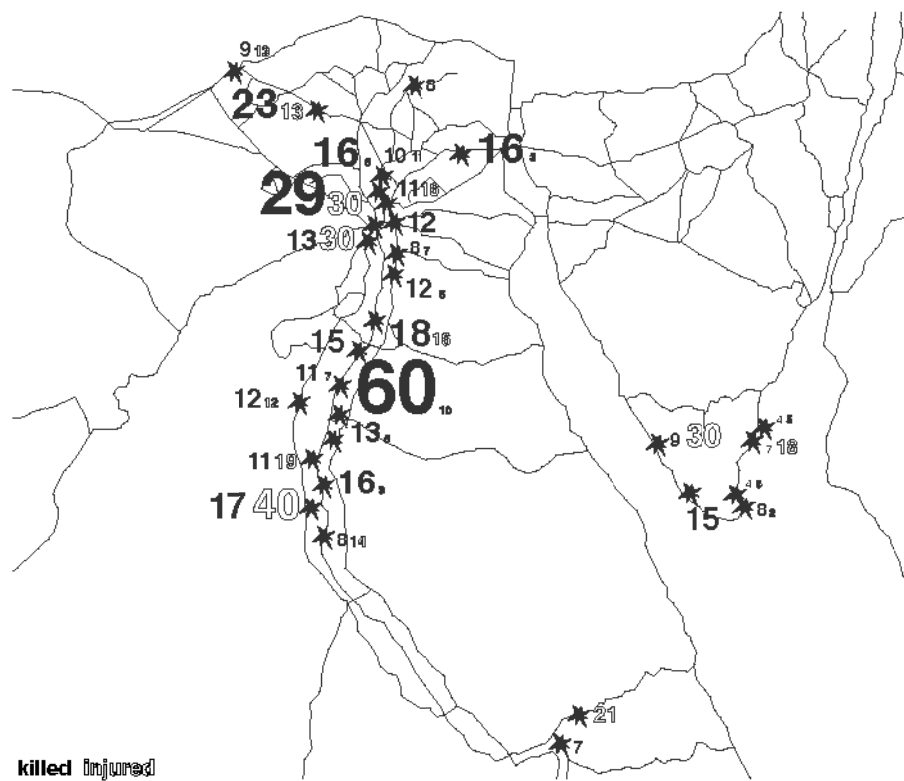


4 Government implements registration procedures

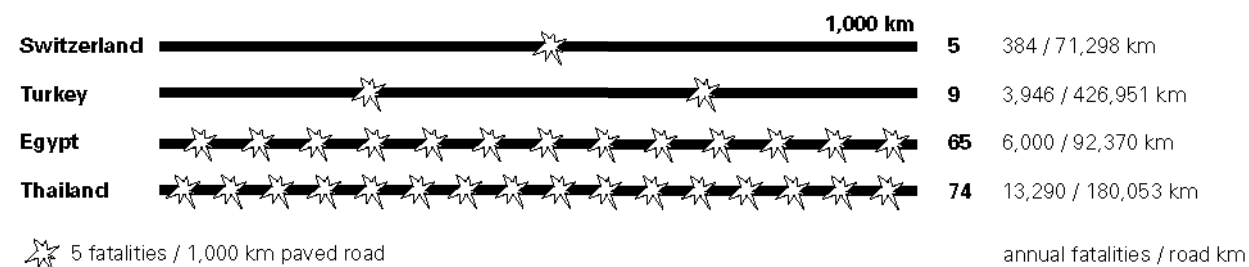
Tuk-tuk Transition

Because of their highly demanded services and lucrative purchasing value, Egyptian tuk-tuks have increased their numbers from zero to 1.2 million in three years. Tuk-tuks solve transportation problems in their maneuverability within villages and also serve as employment opportunities. However, hit-and-run accidents have escalated, along with other public safety concerns; since unregistered vehicles have no legal status, the owners hold no accountability and no one is able to identify the perpetrators. While the government is generally hands-off toward informal entrepreneurial efforts, it intervenes by imposing license registration and traffic regulations via the 2008 Traffic Law.





killed injured



Accidents Take Toll

Bad driving, lax traffic rules, and poor road conditions have led to a series of catastrophic crashes that caused public outcry over the government's record of road and transport safety; in 2008, the Shura Council announced that the economic impacts of road accidents amounted to 16 billion LE, 3% of the national GDP, prompting the government to pass the 2008 Traffic Law penalizing for hazardous driving.



1



2



3



4

- Using the horn with no reason (unless to prevent possible harm) 100-300 LE
- Exceeding the maximum stated speed / 300-1500 LE / Or jail for a period not less than 6 months
- Driving over capacity (Microbus: 15, Minibus: 23, Bus: 52) 304 LE
- Failure to provide vehicle with reflecting triangle or first aid kit. 100-300 LE / 1-3 month license suspension.

MASS TRANSITION

Nile Valley mass transit mediates the urbanization of Upper Egypt regional networks. A nexus of the Nile, Assiut is one of multiple exchange centers interlinked along the river. Within a condensed network of passengers and roadways, and with varying intensities and transit modes to facilitate exchange of services, regional mobility allows less migration to the Nile Delta and further development of the Nile Valley. Rather than drawing fixed conclusions, these investigations open issues about the sustained development of this unique system and how rural mass transit will continue to pave the way for Nile Valley urbanization.

Catalyzing Connectivity

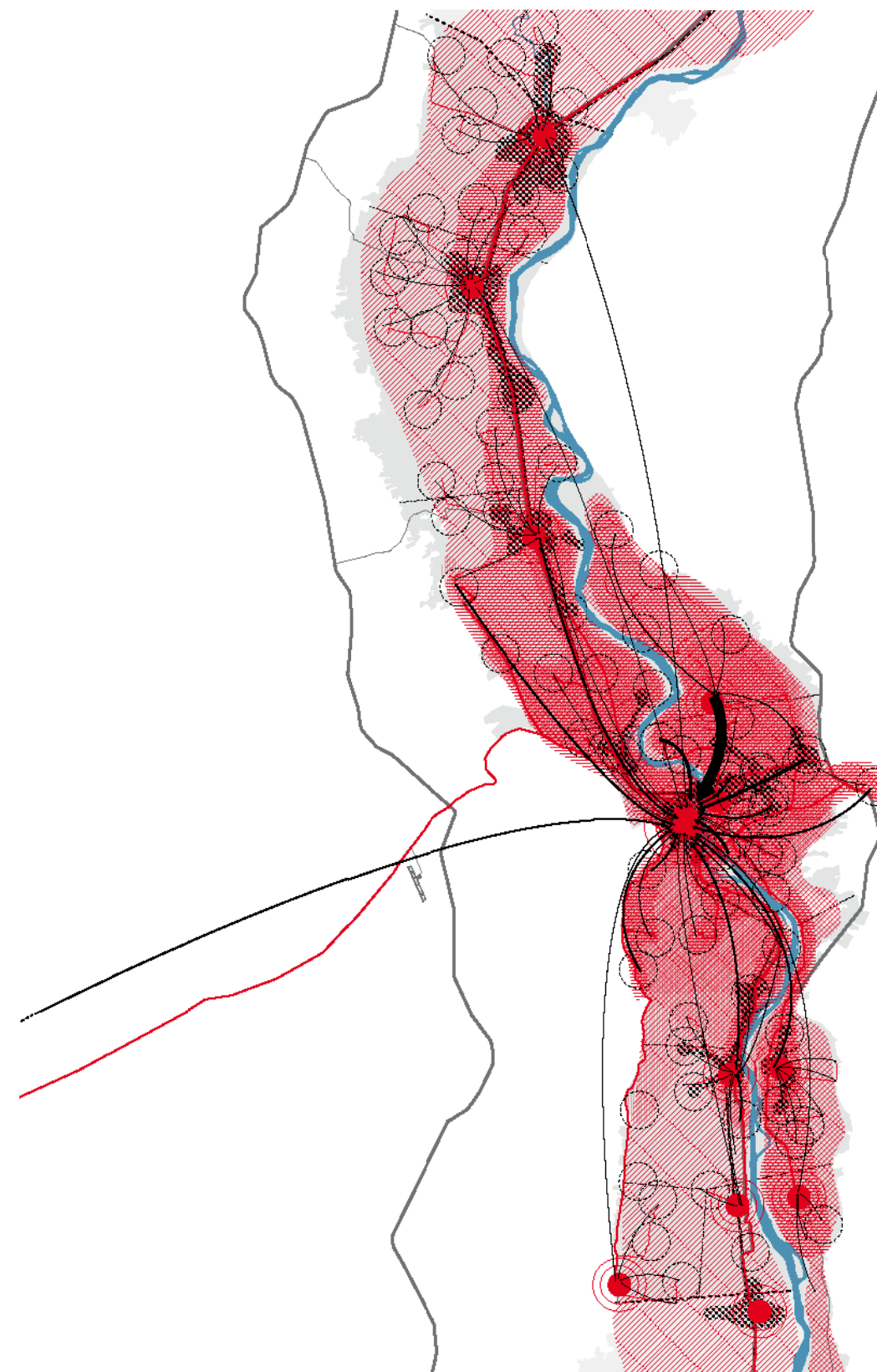
In the same way that mobility acts as a catalyst and indicator of Assiut's urban condition, insufficient mass transit hinders urban growth and development. While regional demands evolved a mass transit system of high mobility in the Nile Valley, state-initiated to develop desert cities have failed due to lack of density and passenger demand to develop sufficient linkages. Continued expansion of the Nile Valley into the desert will require fine tuning of transit proposals to instigate urbanization-facilitating mobility.

P2P Monopoly

Egypt's liberalism has enabled informal entrepreneurship within a highly efficient mass transit industry. However, laissez-faire governance can backfire in the event of political dissatisfaction of this highly powerful driver base; a strike could paralyze the mobility of a nation without state-developed transit alternatives. Additionally, lax enforcement of laws and regulation has eroded state power in curbing financial and public safety problems such as black market fares and anonymous crime in unregistered vehicles. Improving state efficacy in regulation implementation is critical to protecting passenger welfare and preserving the economic sustainability of this transit system.

Rural Hub

A regional mass transit system supports the symbiotic relationship between Assiut and its surrounding villages, resulting in urban flows within a rural setting and forming a commuter hub for its services. With Egypt's fourth-oldest University, a leading medical school, and numerous public services, Assiut has become a rural hub of its region, sometimes touted as the "capital of Upper Egypt." Yet, one may question whether Assiut will develop into something more than a supply city. While many Egyptian residents "dream of Cairo," Assiut's highly mobile governorate has yet to determine what their city can offer as "stuff dreams are made on"; commuting culture can evolve to another culture altogether.



TRANSPORT AND MOBILITY: COMMENTARY

Mobility is an important indicator of a region's urbanization. There are two factors that affirm the thesis of a developed urban territory in the Nile Valley: First, the transportation network in Egypt in general and particularly in the Nile Valley is characterized by a high density and a wide permeability and second, each citizen in the Nile Valley has access – economical and physically – to this network. The high degree of mobility is not only mapping an urban reality, rather, it becomes the generic element of the Nile city par excellence. Commuter movement allow a form of human settlement in the villages, which is not exclusively based on agricultural production. As shown, the villages became the basic units of the urbanization along the Nile. This development is supported by a high elasticity of the transport system: in a fragile balance of formal and informal forces, that means in governmental regimentation and private initiative, a demand-driven transport system could develop, which meets the needs for local, regional and national connections. Parallel structures and different short-cuts within these three levels make this System serviceable to almost everybody in the Nile Valley.

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P. 100-101

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P. 109, fig. 1

Google Earth

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Esther Götz, Katharina Kiesbauer

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P. 221, fig. 1

Oliver Muff and James Junkyung Yeo

P. 231, figs. 1-6.

Olympia Georgoudaki and Argyro Poulivoali

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