Open Vernacular

Exploring the Potential of an Autopoietic Framework for Critical Dialogue between Tradition and Modernity to Address Future Complexity in Addis Ababa

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Research Backgroung

Addis Ababa

Between accretion and rupture

Strategically located in the central part of the country, in close proximity to vital resources, Addis, the "New Flower of Ethiopia", was established in the late 19th century by Emperor Menelik II, ending the long-lasting tradition of Ethiopian "roving capitals". Originally founded as a garrison town where villages and road were being built around the leaders' palaces, it attracted many to the area, stimulating its organic growth into the complex and unique urban reality that it is today.\(^1\) Over time, Addis became a melting pot of the Ethiopian culture, a place where different ethnicities, religions, and traditions managed to coexist.

More recently, Addis Ababa has also acquired a significant role in the international scene. Being the Seat of the African Union since its foundation in 1962, it became a pivotal political and economic centre for its continent and the African interface with the rest of the world. Its new diplomatic role attracted a great deal of international interest and foreign investments, which have been re-shaping the city from its very core, pushing for modernization of the traditional urban environment and practices: glass-walled skyscrapers redefined the urban skyline, while new massive circulation infrastructure now runs all over the city.²

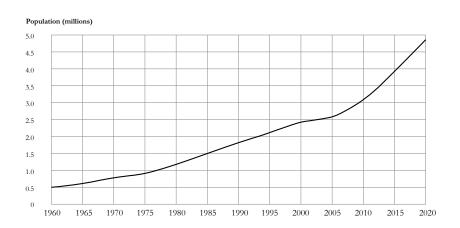


Demographic and Urban Growth

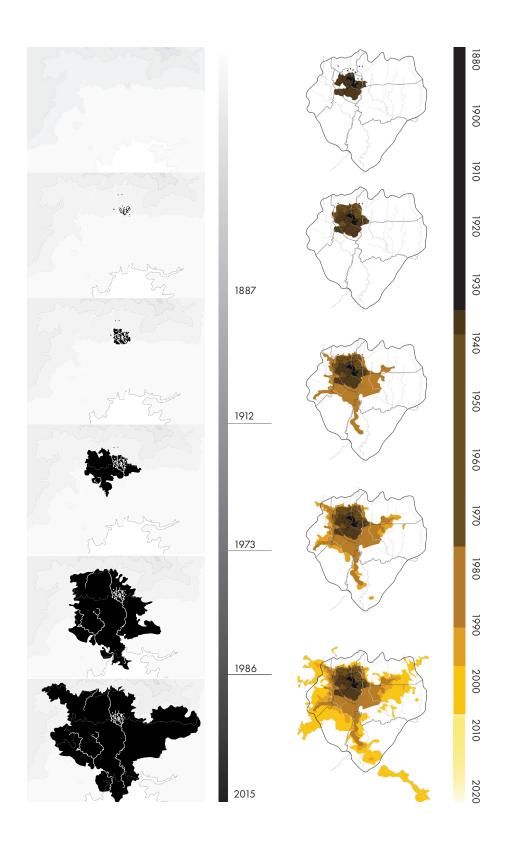
Ethiopia, like many other countries in the Global South, is currently experiencing unprecedented population growth, however, this phenomenon is not spread equally throughout the country. Likewise, although Ethiopia presents one of the highest poverty rates in the entire world, a great disparity exists between rural and urban areas. Indeed, mass rural migrations to primary and secondary cities, where more resources and opportunities are sought to be, are becoming more and more prominent.³

Projections estimate that the country capital alone will reach over seven million inhabitants by 2030, almost three-folding the numbers registered at the beginning of this millennium.⁴

People from all over Ethiopia migrate to Addis seeking opportunities of self-realization, or to improve the quality of life. Instead, as of today, once there, they are faced with a fragile socio-economic structure and a severe housing shortage. Despite the astonishing pace at which Addis Ababa's population is growing, the city is yet undergoing an over half-century-long housing crisis. This has, in turn, resulted in the aggravation of urban poverty among the most vulnerable, low-income groups and newcomers, and in a rapid-unregulated urban sprawl, pushing the city to its limits both physically and psychologically.



Demographic Boom



Urban Expansion over Time

Expansion and urbanization

Modernization

In general, Addis Ababa is undergoing a process of modernization initiated, in the beginning of the new millennium, with the new City Masterplan of 2003. ¹⁶¹ [See also Thematic Mapping - Overview - CDP]. The central government is trying to redefine the image of the city both on a national and international level, by replacing the existing urban tissue, seen as a sign of backwardness and poverty, with new modern architecture. The approach can be equated to a tabula rasa.

This has been the case in many areas in the inner city, where informal settlements and their communities have been wiped out in order to create a new modern central district, with high-rise buildings defining a new skyline.⁵

One significant example of this urban tendency is identifiable in the African Union Headquarters. A 117 m high building, with glass facades, stands in the middle of the city; no trace of the former informal settlement is left. What is notable, is that the African Union headquarter has been donated and built by the Chinese government. Since 2000, Ethiopia has received at least \$12.1 billion from Chinese creditors. The government used the money to fund various investments including the new metro system and advanced road infrastructure.





Modernization of Addis Ababa

The light rail on the left and the AU headquarters on the right

The Housing Shortage & the Government Response

In the beginning of the 21st century, Ethiopia is facing an extensive housing shortage, which affects all income groups, in Addis Ababa especially. According to UN-Habitat definition of slum, in 2005 about 80% of Addis Ababa's residential areas were considered "slums", and are, thus, characterized by inadequate access to safe water, sanitation and other infrastructure, poor structural quality of housing, overcrowding, and illegal appropriation of land.

In 2004, the Urban Sector Millennium Development Goals Needs Assessment (2004) predicted that to meet the Millennium Development Goals (MDGs) in 2015, it required a total of 2,250,831 units, which equates to a considerable 225,000 houses per annum.

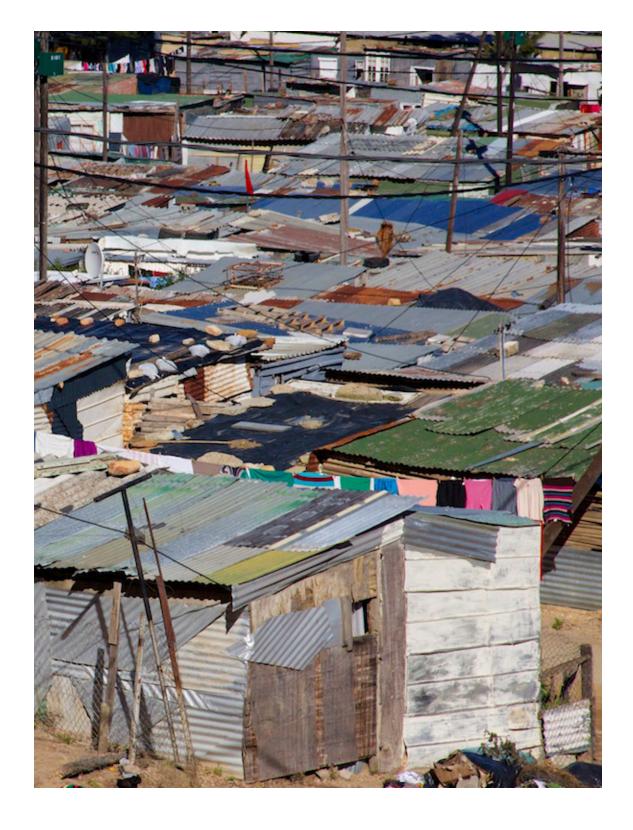
To cope with the housing backlog, Ethiopia signed a bilateral agreement for technical assistance with the German government, in 1999. As a result, together with Germany's official development agency GTZ (German Technical Cooperation), they developed a program divided into three stages:

- 1) LCH technology (1999-2002);
- 2) Addis Ababa Grand Housing Program (2002-2006)
- 3) Integrated Housing Development Program (2005-2010) (Delz, 2016).

All the three programs have the same goal: to construct an ambitious government initiated programme for lowand middle- income housing.

The IHDP developed six goals they wanted to achieve:

- 1. Build 300.000 housing units for low- and middle-income households
- 2. Create 200.000 jobs in the construction sector
- 3. Provide space for 10.000 new enterprises
- 4. Stimulate construction sector
- 5. Regenerate inner city slums
- 6. Promote home ownership



An Informal Settlement in Addis Ababa

-11-

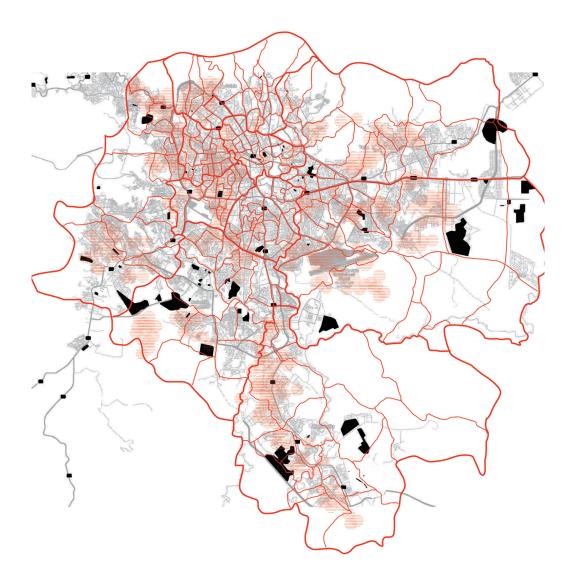
The IHDP

Over the past fifteen years, the government has tried to cope with the housing shortage, and urban poverty more in general, by playing an active, or better, a solo role in the national low-income and middle-incomehousing production, launching the IHDP – Integrated Housing Development Program -, commonly referred to as the "condominium scheme". By 2018, over 160'000 dwellings have been provided in Addis Ababa, some located in the consolidated city, redeveloping informal settlements or filling in urban brownfields, and many in its outskirts, replacing rural villages and agricultural fields, in an overall attempt to redefine Addis Ababa's image as that of a modern city, more suitable to its role of diplomatic capital of Africa.

The pilot project started in 2005, took place on brownfield in the area of Bole Gerji. The first master plan for the design of the project was drawn by Fasil Giorgis (750 housing units: studios, 1 and 2-bedroom typologies, an office building, several commercial units). Government agencies were in charge of the water supply and

electricity but were not effective. Regarding the cost of the construction, considering that the target was USD Condominium 61/m², they managed to achieve a cost of USD 68/m². After the successful pilot project, GTZ ceased the actual collaboration with the Ethiopian Government, taking an advisory role. Thus, under their recommendation, the Housing Development Project Office (HDPO) was created to have a specific office for housing development.

However, the success of the pilot project differs from the actual situation of condominium housing. Among the factors, the location, services, and affordability, which are all bound to economic issues. As a matter of fact, the first projects had a lower cost since were in brown or open fields in the periphery of the city, in order to avoid the cost and time of evictions. The social and economic effects of relocating people in areas far from the city center have been overseen by the government in the view of Addis' dwellers though. On the contrary, as time went by, the necessity to build in the inner city grew and thus the costs.



Condominium Sites and Informal Settlements in Addis Ababa

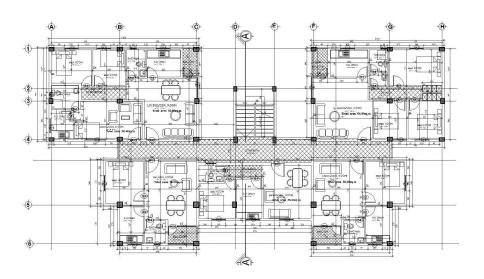
Condominium in black and informal settlements in red

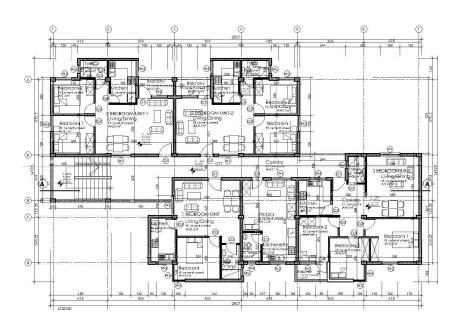
In 2014, although the considerable number of units built during the first decade of the century, the IHDP estimated a housing shortfall of 1,200,000 units, including the actual deficit, but also the units which are overcrowded or in need of renovation. Furthermore, rural migration is increasing at a fast pace. During the years, the housing program has developed different typologies of condominiums, also bound to different economical strategies. Nowadays, condominiums can be divided into three groups considering the ratio between down payment and loan: 10/90, 20/80, 40/60 condominiums. The housing program, which the Ethiopian government have envisioned to help the country turning from a lowincome to a middle-income country, is now putting effort on the construction of the 40/60 condominiums.

The two main schemes, the 20/80 and later on the 40/60, cater respectively for low-income and middle income groups. The first relies on standard midrise, concrete housing block types, a typology that could be cost-effective and drive densification. However, as a matter of fact, until the mid-2000s, in Addis Ababa 97% of residential units were still single stories, while 75 % of units' walls were made of mud and wood. The latter differs in terms of housing typology, proposing a highrise solution in form of ten to twelve storey-high towers with a commercial plinth, and in units sizing, with larger apartments up to four bedrooms, but the main urban and spatial operational principles remain the same.



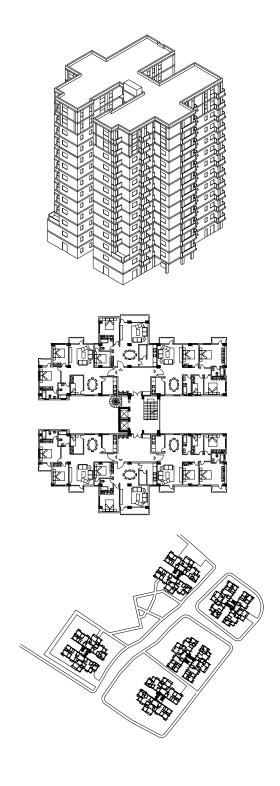
A Condominium





28/80 Condominiums

Typical floor plans



40/60 Condominiums

Typical floor plan and urban arrangement

what does Housing mean?

The theme of "Housing" can be investigated form different perspectives. Housing has, in fact, multiple dimensions in our lives: we live in our houses, we shaped them according to our needs, or they shape us in relation to what they can and cannot cater for, at the same time, however, houses also define the urban environment that surrounds us, the way we experience the cities we live in. Their lack or abundance, their variety or monotony can tell us about how a city works.

In the Global Housing Studio four main approaches were proposed to investigate the theme of housing. The first, "Graphic Anatomy of Home" was based on architectural ethnographic methods and prompted us to explore our personal experience in relation to housing. Secondly, a rather quantitative approach was used to analyse

affordable housing precedents, and the condominium system of Addis Ababa. Contextual research was also carried out as an indispensable resource to understand housing at its various scales in the specific context of Addis Ababa. Finally, literature review and precedents were also analysed.

All these different approaches were useful in finding an answer to a more specific question: what does housing mean in Addis Ababa? The design project tries, in fact, to spatially investigates and translates the answer to this complex question.

In the following pages I will present the results of the different methodologies used during research and design.

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The Social Family_Graphic Anatomy of Home

Investigating the meaning of "home" through Architectural Ethnography

The Social Family is the result of an auto-ethnographic research exploring the theme of home from an architectural perspective. This project investigates my personal experience in living home through two main time-frames, one complementary to the other. The first explores generational changes and the relative adaptations in the dwelling production and renovation. The second focuses on the daily patterns of habitation, particularly in the ritual of the Sunday Lunch, a weekly occasion that brings the entire family together, the actualization of The Social Family.

The first analysis showed how family dynamics have shaped, and re-shaped in most cases, the living environment throughout the years. Yet, not always the two houses were able to accommodate change, particularly the one my parents and grandparents built together: this indeed responded perfectly to the need for more space for a growing family, but years later, when the growing dynamic inverted, it was not able to re-configure itself.

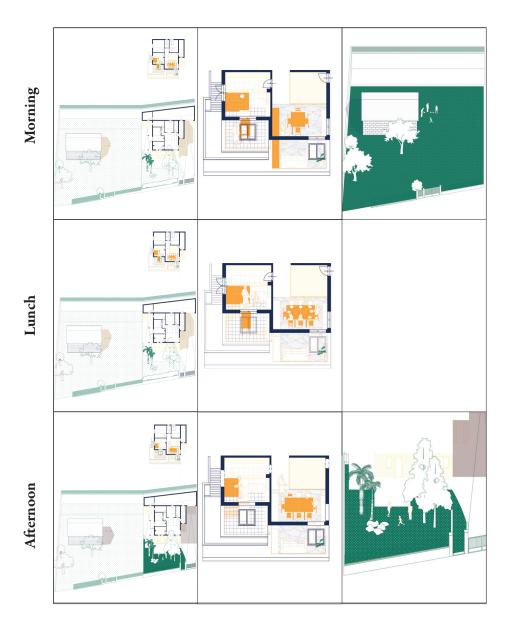
The second investigation, on the other hand, shows how social patterns and habits tend to influence the way we shape our living space.



Dwelling Evolution throughout Time

Expansion and transformation in relation to family development

1990s 200

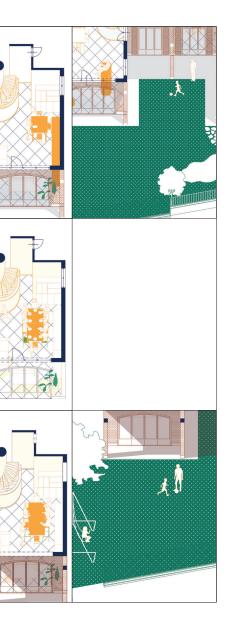




Family Rituals throughout the Years

Patters of activities around the Sunday Lunch

2020s



0s



ZUP Saint Croix, Bayonne (France)

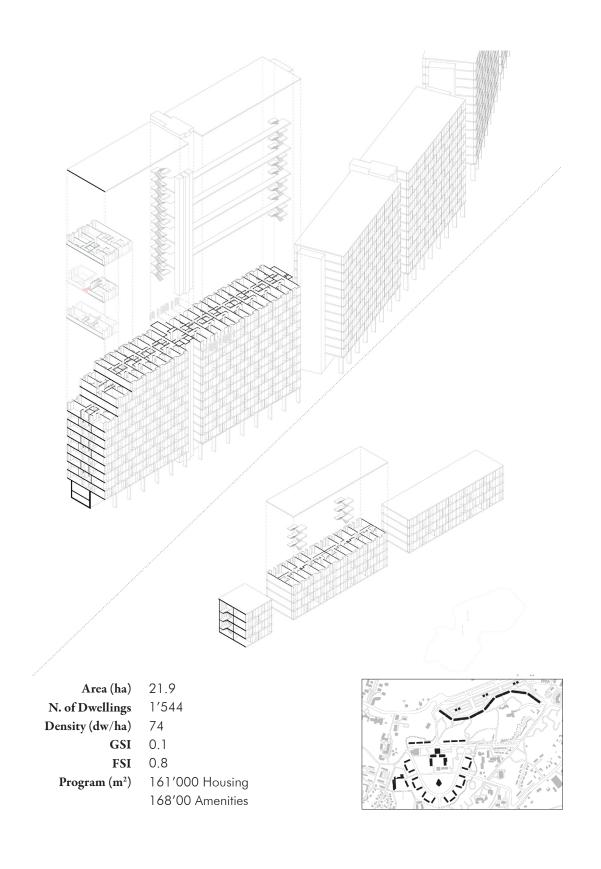
Investigating the meaning of "home" through housing standards

The Saint Croix development in Bayonne is a mixed housing project designed by Marcel Breuer and Jean Barets during the 1960s as part of the ZUP (Priority Development Area) national program in response to the housing crisis affecting France after WW2.

The design consists of seven thirteen-storey slabs, monumentally located on top of a hill overlooking a green area where some other twenty low-rise blocks and a few amenities were also built. The high-rise typology consisted of three main dwelling types organized along four internal corridors, creating four blocks of three storeys each. While the low-rise blocks consisted of three- and four-bedroom apartments, organized around

two main staircases. The entire development was realized using a cellular concrete structure concept: 5,7-meter wide, 2,66-meter high and 15,3-mter long concrete cells were stocked one over the other, finished on the two ends by 75-cm deep prefabricated concrete panels.

The project was analysed at three scales: urban, the housing block, and the dwelling units. At the urban level a series of parameters, such as density, GSI and FSI were calculated, but also the diversity of program was analysed. Typological analysis were conducted on both the block scale and the dwelling units.



ZUP Saint Croix

Project overview (urban setting and housing typologies)

what does

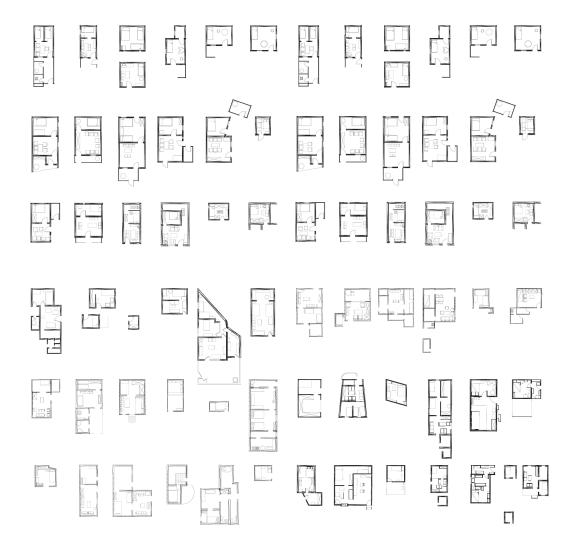
Housing mean in Addis Ababa?

When it comes to define the notion of "housing" in Addis Ababa it is necessary to take into account the influence that socio-economic conditions have on inhabitants' lifestyles and, therefore, on the way they define their dwellings. In this sense one can identify mainly five housing typologies in the city: villas, row houses, apartments, condominiums, and informal sheds. The first two can be associated with the highest income groups, apartments and condominiums with middle (low)-income groups, and finally informal sheds with low-income groups.

Even though these typologies can be significantly different from one another, in Addis Ababa, they coexist one next to the other.

Housing typologies are, thus, defined not much by particular historic periods or fashions, but rather by the way of living of their inhabitants. In fact, whereas, for instance, villas and row houses cater for a more individualistic lifestyles, informal settlements rely on a multitude of shared spaces and are much interrelated with a sense of community. ⁷

This last typology will be further discussed in the following pages.



A Collection of Addis Ababa's Housing Floor Plans

From "Building Ethiopia"

Informal Settlements

According to Glossary of Environment Statistics, informal settlements can be defined in two terms:

- 1. Areas where groups of housing units have been constructed on land that the occupants have no legal claim to, or occupy illegally;
- 2. Unplanned settlements and areas where housing is not in compliance with current planning and building regulations (unauthorized housing).

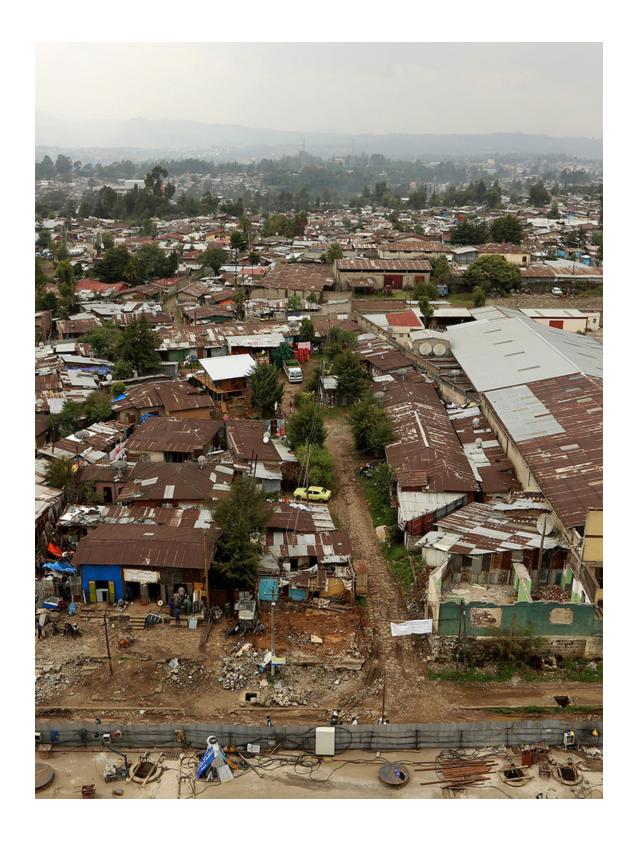
When talking about informal settlements in Addis Ababa the idiom of 'slum' comes up to people's mind. According to the UN-HABITAT, slums are characterized by inadequate access to safe water, sanitation and other infrastructure, poor structural quality of housing, overcrowding, and illegal appropriation of land. One can recognize these conditions in almost every housing area in Addis Ababa, which makes the slums the standard layout of the urban tissue instead of an exception that causes the eradication of the urban fabric.

Even though the informal settlements are often associated with unsafe, unsanitary, badly serviced living environments without security of tenure, in Addis Ababa these conditions represent the housing environments of the urban poor. The inhabitants of these areas therefore have developed their own ways of living, working and other ways of practicing social activities.

The informal settlements in Addis Ababa can be roughly divided into two types. The first is informal settlements in the city center. These are unplanned settlements in the old town, often called kebele housing. The formal, aspects of those settlements are being handled by Kebele - an organisation established during the Derg regime to manage the houses that rented below 100 ETB. Kebele is in practice the smallest administrative division of Ethiopian city.

These settlements have been addressed in several masterplans. However, those made pre-Derg lacked a socio-economic evaluation of the city and omitted problems of the poorest, while others exacerbated the problem by discouraging their upgrade.151 Because of this lack of top-down management, dwellers display multiple self-actualisation efforts, traditional frugality practices, uses of social networks and form a variety of community-based support organisations.

One of such self-help associations is Idir, which was formed around Italian occupation to financially support and to "fulfill community commitments" of its members. Idir performs as a non profit organisation - it has a leadership branch, a set of rules, regulations, and monthly payments that finances the support it provides to its membership.



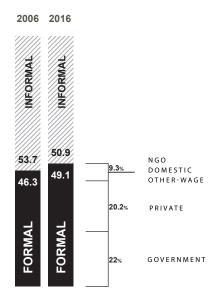
An Informal Settlement in Addis Ababa

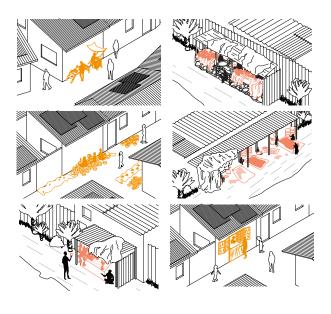
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Informal Economy

Many inhabitants of informal settlements depend on informal income-generating activities. This condition has great repercussions on their lifestyles, and, thus, on the way they conceive their living environments. To be able to afford a living, they have created a quite complex informal economy. Because many of these activities take place within or in proximity to their homes, the very definition of the notion of housing that we are used to begins to stumble. Being so intertwined with

income-generating activities, housing in Addis Ababa cannot be conceived just as a living/resting space. This, in fact, relies on a series of other conditions that are indispensable for the survival of informal dwellers. In this sense the role of the street as, somehow, an temporary extension of the private realm to perform economic or domestic activities is particularly interesting.





Formal and Informal Economies in Urban Ethiopia

Street Used for Temporary Economic Activities



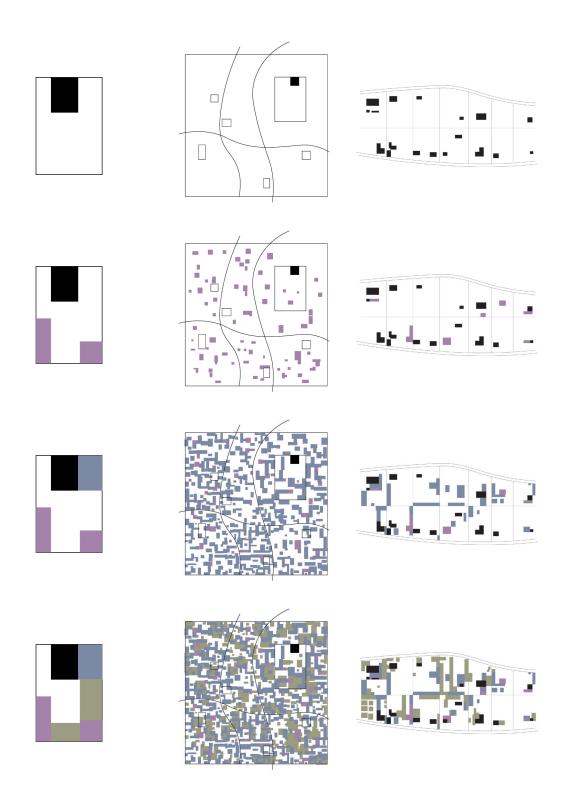
Street Used as an Extension of the Private Realm

Sense of Time

Incrementality and re-configuration of space

Informal housing is usually built incrementally, following residents' fluctuant access to economic and material resources, time, and security for additions and modifications. In African cities, half to three-quarters of new housing is developed on informally acquired land. Informal houses and the informal livelihoods that usually accompany them will become the characteristics of future cities.

An interesting aspect characterizing incrementality in Addis Ababa lays in what we can call 'patterns of growth'. These are the result of a recurring dynamic that affects the urban tissue at the bigger scale, and the development of one urban compound alike. This pattern is characterized by a great degree of resilience. Indeed, rather than growth, they are pattern of densification and reconfiguration. In other words, the space amount remains fixed in time, but its use and configuration are always in motion.



Addis Ababa's Patterns of Growth

From the a compound to different kind of settlements (urban and rural)

Sense of Time

Multi-layered use of living space

Following these premises, one can re-read housing in Addis Ababa as part of a process that takes place over time, cyclically. In fact, in a way, the way space is conceived by its inhabitants is resilient, in that it can reconfigure itself when needed, almost endlessly.

Many informal settlement dwellers, for instance, live in just one room, this, therefore, is charged with multiple meanings at different times. The same can be observed in the use of outside spaces, even when shared, they can host a multitude of activities simultaneously.



Multi-layered Use of Courtyards

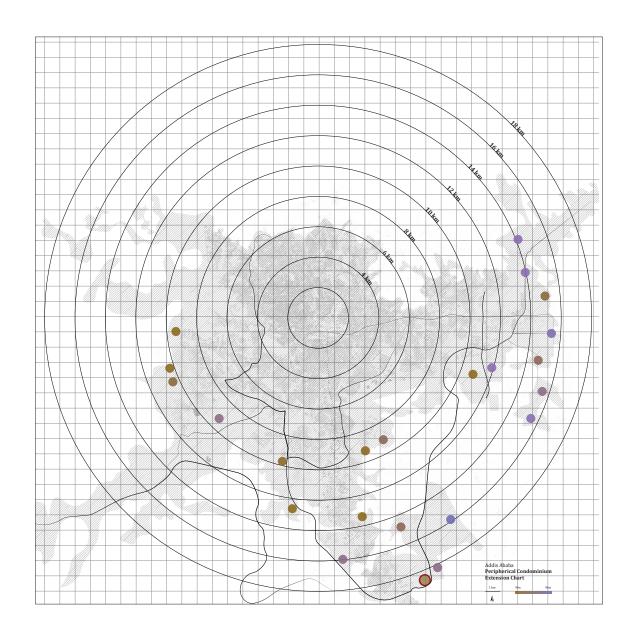
Problem Statement

The driving idea behind the IHDP was to tackle urban poverty by providing everyone with a home. The urgency of the issue and the scarcity of resources pushed the government to look for the most time- and cost-efficient solution. However, considering that the urban land was nationalized by the Derg Regime in the 1970s, all the efforts to minimize the costs went into the only parameter defining them: the quality of the built environment. Here again, affordable housing became synonymous with low-cost and low-quality housing. Thus, a set of standardized housing typologies and arrangements, together with modern construction methods based on a modular reinforced concrete structure, allowed to contain costs, while also providing immediate response to the crisis.

The most common scheme, known as the '20-80' in virtue of the amount one must pay as down payment, the 20%, and the amount that will be covered as a mortgage, the 80%, consists of four apartment types, ranging from studios to three-bedrooms units, mixed and distributed by a gallery, one floor stack on top of the other, to compose four to seven-storey high housing blocks. Moreover, communal facilities for various activities, such as animal slaughtering and open-fire cooking, are sometimes provided for each compound,

serving even more than two-hundred households each. Some commercial spaces are also built, in order to be sold at high fares and yield some revenue to be invested in new developments, and therefore not accessible by most condominium beneficiaries. Further, a new typology for high-middle income groups, the '40-60', has been introduced in the shape of twelve-storey high towers, with a distribution core equipped with elevators located in the middle, organizing three to six apartment units on each floor, while commercial and office spaces occupy the first two floors.^{9, 10}

As previously mentioned, most of the IHDP resulted in green-field developments, due to the scarcity of the brownfields in the consolidated city, and to the complexity of re-developing informal settlements. 11 Therefore, the fringes of the city have been rapidly urbanized: first, the infrastructure is set, typically a big road that connects these far-away areas to the city, second, the street layout is developed, dividing the land in regular plots and, finally, construction begins. 12 The concrete skeleton is erected, floor slabs are built, and walls are filled in with hollow concrete blocks. 13 Ultimately, the infrastructure is completed, roads are paved, and outdoor spaces are adorned with young trees and pedestrian paths.



Overview of Condominium Greenfield Developments

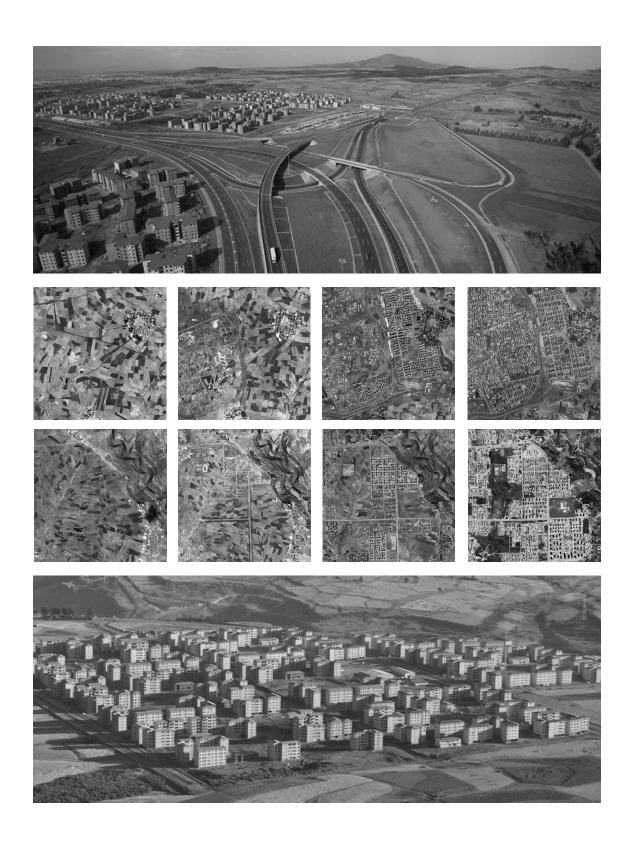
Distance from the city centre

However, this approach relies on the unrealistic presumption that, in the context of Addis Ababa, home refers to the place where to rest after coming back from work, supposedly in a different location. The sea of identical housing blocks, variously arranged in what seems to be an attempt to generate some sort of recognisability, turned out to create a new anonymous and unfamiliar urban tissue, or better, a series of dormitory villages in the countryside, where freestanding blocks float in an undefined "public space", soon to be no man's land. Foreign standards and imaginaries of modernity were brought in and adopted as local aspirations, eventually clashing with the local reality at multiple scales, disrupting and displacing existing communities, ignoring local identities.¹⁴ Furthermore, the deployment of foreign materials and construction methods caused several complications. If the introduction of concrete allowed multi-story construction for firm structures, its very production soon proved to be problematic, requiring the importation of raw materials and skilled labour from abroad, causing a sharp rise in production costs while providing little improvements to the local economy. 15 Moreover, when the condominium beneficiaries moved

in, they found themselves both economically and skilfully unprepared for its maintenance and upkeep.¹⁶

Even more so, the definition of specific population targets, being them low-income or high-middle income, precluded the urban poor from accessing the formal housing market, while the definition of a mono-functional scheme and the location of several developments in the outskirts of the city, with very little access to income-generating activities, both in loco and elsewhere, forced many to return to informality, 17 hence proving that homeownership alone is not an efficient, nor an effective solution to urban poverty, nor it is a substitute to a sense of belonging.

Thus, what was designed to be an efficient solution, soon proved to be incapable of dealing with the local complex socio-economic system, and therefore inefficient in the long run. As Richard Sennett would pose it, the overdetermination of form and social functions of the condominium model has produced a close system incapable of adaptation both in the immediate and in the future.¹⁸



Akaky Kality and Ayat Condominium Sites, Addis Ababa

In 2003, 2008, 2014 and 2020

However, if the involvement of the government in the affordable housing production is a quite recent event, spontaneous and informal urbanization processes have substantially defined Addis Ababa since its very foundation. Since the last decades of the 19th century, people from all over Ethiopia started moving to the new capital, where leaders loyal to the emperor were erecting their palaces and organizing the land around them, generating work opportunities for the newcomers. Migrants gathered around the official palaces, starting off what today we identify as 'informal settlements'.

Over time, these urban agglomerations known as 'sefers', have been charged with intangible connotations related to a sense of community, sense of belonging and collective identity. In fact, to cope with rapid changes and challenges, these communities have come together through association, creating community support systems, such as the Iddir – a funeral association -, to look after one another in times of need, stressing the significance of social networks and social exchange in the lives of low-income groups in the city.¹⁹ Social interaction has been and still is, indeed, at the very core of informal urbanization processes, and have left visible marks on the built form of these settlements. The urban morphology of the sefers, clearly shows how the spatial organization of the public realm came about as the result of social interaction itself, of a constant negotiation between parts, as a collectively arranged residual space surrounded by individual acts of self-realization.

Furthermore, to the western eye informality has produced a hybrid urbanity, defined by an ambiguous distinction of urban and rural, opposing the clear distinction proper to western modern cities. Indeed, rural patterns of habitation – the blurry boundary between inside and outside, dwellings serving living, productive, social, and economic purposes, the capacity of the units to incrementally adapt to fluctuant spatial needs, to grow and to split, and self-building initiatives – are still common practices of low-income groups in Addis Ababa.²⁰ Likewise, the very spatial notion of house transcends that of enclosed shelter, it is not limited by walls, it extends into the public space, where social interaction and exchange take place. Outside areas and contact to the ground are, therefore, crucial in the everyday life of the urban poor. Indeed, many dwellers in informal settlements consider their home as much more than just a place where to rest and, being it their main source of income: houses are used as a vending area or storage spaces, and are sometimes partially rented out.

"In the lower-income group, you always have to look first for a good and stable income, employment, some sort of income and, then, you want to improve your housing. [...] So, this is a very fundamental issue. The space here is not only a living space, it is also a working space, living and working go together, hand in hand."²¹

In this sense, the very notion of shelter is multi-layered and strongly flexible in time. Housing is, thus, a process of daily transformational and incremental growth. Piece by piece, dwellers adapt their dwellings to their economic possibilities, using local materials and techniques, recycling building components and second-hand items, making the most of available resources.²²



Scenes from an informal settlement in the Piassa neighbourhood, Addis Ababa

Over time, these informal processes have shown significant resiliency in shaping and re-shaping the existing urban conditions, responding to the complexity of the ever-changing needs and possibilities of their inhabitants; an autopoietic capacity, that of a system that reproduces itself from within itself. Hence, informal settlements can be regarded as the urban actualization of vernacular practices and know-how. As Paul Oliver advocates "All forms of vernacular architecture are built to meet specific needs, accommodating the values, economies and ways of living of the cultures that produce them." Vernacular practices are intrinsically intertwined with local values and customs to which they have resiliently adapted over time, yet they are also directly determined by local resources and environmental conditions, resulting in a high degree of efficiency.²³

However, the unregulated nature of informal developments proved incapable of providing sustainable solutions to the growing pressure of rapid urbanization and mass urban migration. The resiliency that for so long contributed to the growth of these communities, has eventually determined their stagnation.²⁴

Up until now, in Addis Ababa, formality and informality have developed independently to one another, perpetrating inequality, and unsustainable living conditions for the urban poor. Following this trend, through the IHDP, the government has established yet another alternative to informality which does not understand, include, nor relieve the precarious conditions of the poor. Yet, quoting Richard Sennett: "'Growth' in an urban environment is a more complicated phenomenon than simple replacement of what existed before; growth requires a dialogue between past and present, it is a matter of evolution rather than erasure."²⁵

Whereas the IHDP is consuming space, pushing the city to its physical limits, and taking over natural and socio-economic resources, the relentless pressure of demographic growth is exhausting the resilient capacity of informal settlements, pushing the city to its psychological limits.

Whereas the IHDP provides permanent solutions incapable of addressing the specific potentialities of the local context, informal settlements that have since now transformed and adapted, have become too complex and multi-layered to cope with the current pressures.

Yet, whereas condominiums provide a firm and secure built environment and have doubtlessly improved the living conditions of many, informality enhances communities' formation, local identities, sense of belonging and opportunities of self-actualization.

As a matter of fact, when new developments are undertaken in the fringes of the city, where existing local communities and practices are erased, and the socioeconomic resources of the consolidated city are lacking, the consequences of the missing-communication between formality and informality are felt the hardest. Thus, critical and constructive dialogue between these two forces, top-down and bottom-up, as well as modernity and tradition, rapture and accretion, must be pursued and stimulated.

Introducing the 'sense of time' of traditional ways of living in the condominium schemes, is of vital importance to design an urban framework able to balance efficiency and resiliency, fundamental premises of a flexible environment capable of adaptation, anticipation, and open to the unexpected.²⁶



Farmland and traditional housing next to near finished modern apartments in Koye, Addis Ababa

Research Question

Could a **balance** between the excess **efficiency of the condominium system** and the excess **resilience of informal processes** be achieved by introducing the **vernacular as a mediator**, this being by nature characterized by efficiency and resiliency as complementary components, in order **to turn the condominium** into an **active participant** in the **process** of city-making of an **inclusive and open Addis Ababa**?

This can be broken down in several sub-questions:

How can informality and vernacular practices and know-how inform the design of housing for the great numbers?

What is then the minimum that one should provide to support communities and enable their growth?

How could the condominium scheme be re-configured into an open system able to accommodate the fluctuant needs of low-income groups and enhance their growth?

How could vernacular promote Addis Ababa as an open city?

Unpacking *Openness*

Richard Sennett and the Open City

In his numerous works, Richard Sennett also identifies incomplete forms as fundamental premises of what he defines the 'Open City'. He, indeed, advocates for the need of new approaches to urban planning in which new emphasis is directed on user-oriented practices, towards more inclusive, resilient, and sustainable urban environments, able to cope with unpredictable changes, enabling the production of "urban imagination image formed by anticipation, friendly to surprise."27 The notion of time is therefore charged with multiple connotations. In fact, according to Sennett urban development is a process resulting from the interaction of two forces: accretion and rupture, the first being the city's traditional response to the passage of time, the second being the result of rapid change, thus of modernity. In the open city, rather than being opposed to one another, accretion and rapture act as complementary forces, as part of an autopoietic system: day after day the city grows by accumulation, shaping and adapting its identity, yet raptures trigger a critical confrontation with the existing, enabling the city to avert stagnation.²⁸

"In particular, what's missing in modern urbanism is a sense of time – not time looking backwards nostalgically but forward-looking time, the city understood as process, its imagery changing through use, an urban imagination image formed by anticipation, friendly to surprise."

- R. Sennett (2006)

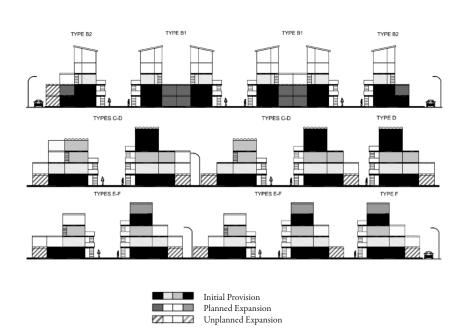
John Habraken: Support and Infill

In the 1960s, the Dutch architect John Habraken, while dealing with post-war Netherlands' response to the housing shortage, expressed the urgent need of a new architectural paradigm, more inclusive and capable to deal with the transformation. In this context. he introduced time as a crucial design parameter and elaborated a systematic design framework based on two complementary notions: support and infill. Grounded on the understanding of housing as a social practice in which dwellers have the right to self-determine their environments, Habraken advocated for a major shift in the professional practice dealing with the built environment. Accordingly, the architect must give up the desire of the total design, to become the enabler of a support system which enhances individuality rather than massification, which generates space for growth rather than finished space. 29,30

Site & Service Scheme in Bogotà, Colombia

No more than a decade later, in the 1970s, a new nonconventional housing strategy for low-income groups, known by the name of "Site and Services", was launched with the support of the World Bank to cope with the severe housing shortage affecting many countries in the Global South. By recognizing and taking advantage of the capacity of self-actualization of low-income groups and the inherent incremental nature of their self-building practices, the government role in housing production shifted from that of the provider to that of the enabler.³¹ Instead of providing ready-for-use residential units, local governments had only to prepare the necessary infrastructure - streets, electricity, water, sanitation, drainage - and to allocate the plots of land to the beneficiaries. Although not all S&S projects succeeded in delivering the necessary conditions for supporting the growth of these neighbourhoods, with time many of these communities successfully grew into thriving neighbourhoods.³² An interesting exemplification of this approach can be found in the Ciudad Bauché in Bogotá (1977), where a set of unfinished housing typologies were conceived to immediately grant a minimum provision, while also providing a framework of growth for the future. What was left incomplete by the architect was soon filled in by the inhabitants in interestingly unexpected ways.33





Ciudad Bauché, Bogotà

From "Incremental Housing Project in Bogotà, Colombia"

"... the traditional dualism between being and appearance is replaced by a straight polarity of finite and infinite, which locates the infinite at the very core of the finite. This sort of "openness" is at the heart of every act of perception. It characterizes every moment of our cognitive experience."

- U. Eco (1962)

Opera Aperta, Umberto Eco

Openness as a fundamental quality of human experience has been a central point of interest for architects and intellectuals since the late 20th century. In the 1960s Umberto Eco, with his "Opera Aperta", defined openness an inherent condition of any artistic production, being this always subject to the interpretation of the observer. He thus noted that, following Einstein's Relativity Theory, which redefined the way we conceive reality, many 20th-century artists embraced the open condition of artistic production by involving the public in the process itself, turning it into an active participant rather than relegating it to the role of mere observer.³⁴

Lacaton & Vassal

"We believe that through observation of the existing context and employing strategies such as densification and highlighting inherent qualities, we can respond to the building's ability to change. It isn't necessary to start from a blank slate, but rather, to focus on integrating a capacity for permanent adaptation within the existing structure. This, in turn, is inseparable to the use defined by the people who inhabit the space. We cannot talk about architecture if we do not bring people and program into the discussion."³⁵

"At the same time, in term of sustainability, it is interesting to note that existing stock can be refurbished in a sustainable way instead of constructing sustainable new buildings." 36



Transformation of 530 dwellings, block G, H, I, Bordeaux

Lacaton & Vassal (2017)

Unpacking *Vernacular*

"Vernacular architecture comprises the dwellings and all other buildings of the people. Related to their environmental context and available resources, they are customarily owner- or community-built, utilizing traditional technologies. All forms of vernacular architecture are built to meet specific needs, accommodating values, economies and ways of living of the culture that produces them."

- P. Oliver (2006)

Paul Oliver: Defining and Cataloguing Vernacular Architecture

Starting in the 1960s, vernacular practices started to be regarded by many as important assets in the context of housing shortages and rapid urbanization. If most feared the vernacular to be threatened by these processes, some recognized its potential to relive them. Vernacular architecture has defined most of our cities' past, and defines many others' present, as it happens in South America, South-East Asia, Africa, so it might as well help us anticipate their future.³⁷

Paraphrasing Paul Oliver, vernacular architecture physically represents a culture's values and knowledge, its context, and its evolution over time. In this sense, his book "Build to Meet Needs" emphasizes with its simple title the natural correlation existing between vernacular practices, and, by extension, vernacular architecture, and the actual needs of who produces it, as it directly and personally links people and space, or better people and place. With those four simple words, however, the author manages to communicate another core principle of vernacular architecture: efficiency. Indeed, vernacular construction methods are intrinsically related to their territories, to the climatic conditions in which they perform, and to the available resources. Thus drawing the natural correlation between culture and place. Whereas the latter might not change at a significant pace over time, the first is in continuous evolution, and so is vernacular architecture.

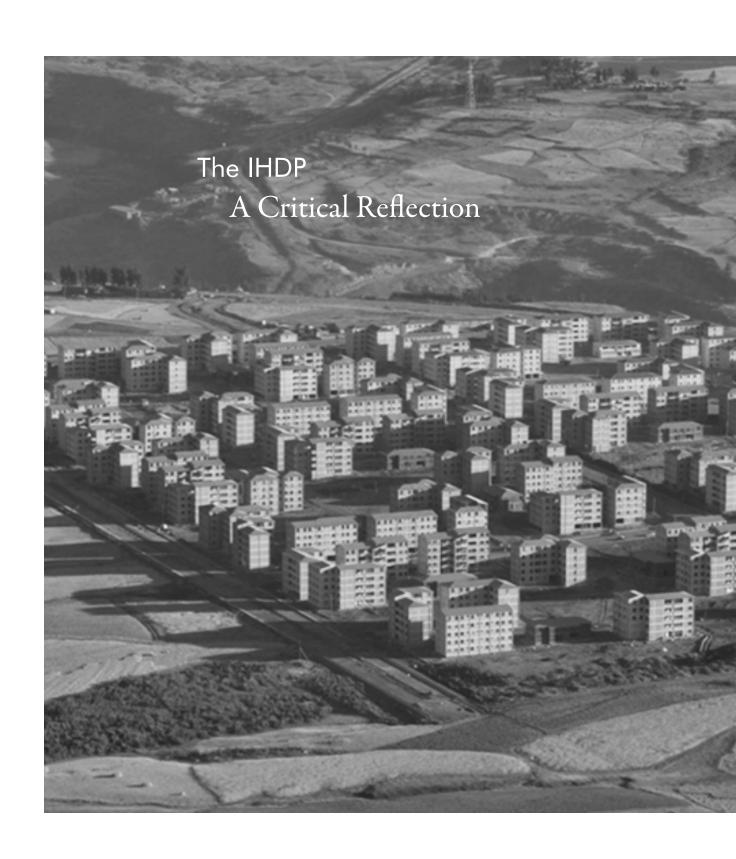
The INA Casa: As they had always been there

In the INA Casa Program in post-war Italy the housing theme was addressed in its multi-scalar dimensions, providing places for the individual as well as the community, building neighbourhoods that not only constitute new parts of the existing city, but pieces of the city itself in the broader sense. Moreover, the re-evaluation of vernacular architecture, in its physical form, relation to the specific context, construction techniques and local knowledge, combined with modern standardization methods, proved to be a significant economic asset, providing job opportunities in the construction sector, for both unskilled labour and specialized figures, while also generating a sense of belonging for the communities, who could easily recognize themselves in the new neighbourhoods.^{38,39}



INA Casa Tiburtino, Rome

Mario Ridolfi and Ludovico Quaroni (1949-54)

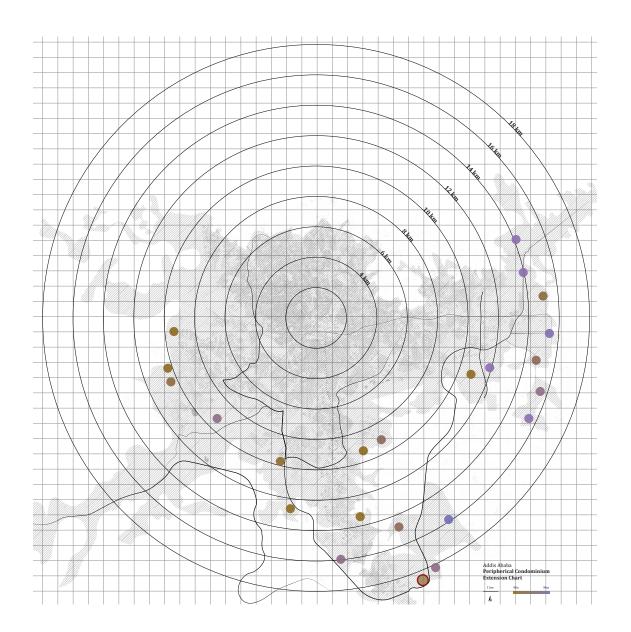




Greenfield Developments: Urbanizing the Fringes

Most IHDP condominium schemes have resulted into greenfield developments due to the complexity inherent into inner city redevelopments and due to the scarcity of brown fields in the consolidated city. If on the one hand greenfield developments have been used to avert the problems of re-housing and re-allocation of inhabitants, they might as well be considered their unhappy solution. They indeed allow to re-house people without causing more re-housing, they do not require temporary solutions for local inhabitants because -almost- no one lives there. The few rural villages or farms that find themselves on the path of condominium developments are simply erased (in exchange for monetary compensation) or surrounded.

Moreover, greenfield developments offer the possibility to intervene on a larger scale, to build more and at once, and more efficiently. It seems that by avoiding re-location and compensation problems, and by mobilizing resources in a more efficient way, this kind of interventions can be considered more moneyeffective than others. However, there is another side of the story, which proves otherwise. In fact, urbanization has a cost, an economic and social cost. Firstly, greenfield developments require the construction of completely new urban infrastructure: streets, electricity lines, water, sewage and so on. Yet, urban infrastructure is unable to perform any urban role on its own, an urbanized area does not necessarily mean an urban area. Secondly, they cause - or are caused - by social displacement. People, generally low-income groups targeted by the program, end in these housing developments which are located even some 20 kilometres form the city centre, with almost no public transport system to connect them, and with insufficient urban and spatial conditions to carry on their previous lifestyles.



Overview of Condominium Greenfield Developments

Distance from the city centre

Exhausting Physical and Social Resources

Being Addis Ababa a chartered city, endless expansion and urbanization are not feasible, nor legal, options. However, condominium developments have been, during the last fifteen years, one of the major cause of land exhaustion, or even invasion of land. In fact, with most developments taking place in the most peripheral areas of the city, several of these ended up right along the administrative border that separates Addis Ababa from the Oromia region. Already in 2014, when the Ethiopian Government proposed the "Addis Ababa Integrated Development Masterplan", according to which the city could expand and occupy the surrounding farmland belonging to Oromia, a strong discontent

started growing among Oromo people. Only after months of deadly protests, the Ethiopian Government announced the withdrawal for the plans of the expansion of boundaries.⁴⁰

Nevertheless, when in March 2019 the Addis Ababa City administration announced the winners of the lottery for new condominium houses in Koy Fitche, a site located along the administrative border, new protests began.⁴¹ Not only the city is exceeding its own borders, but fair compensation and alternative housing solutions were not provided to the people evicted from the area.⁴²



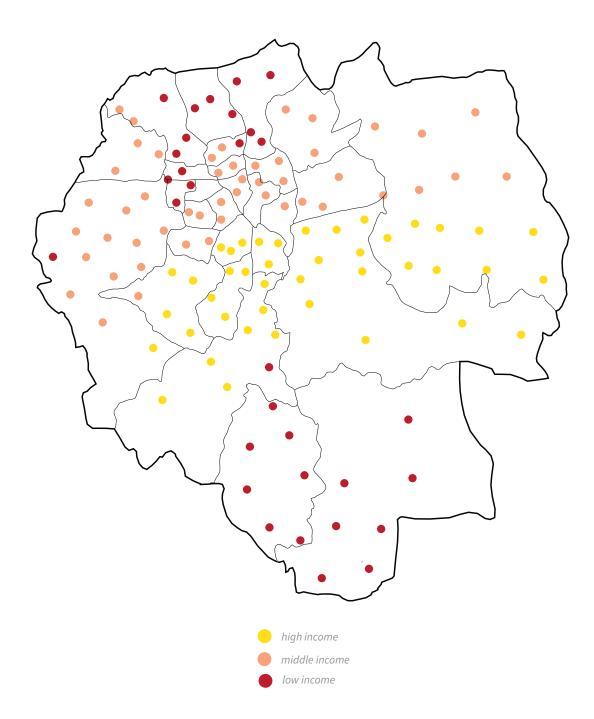
Oromo Protests

Urban Segregation

Location, accesibility and target group

The location of Condominium Developments in peripheral areas is contributing to the perpetration of urban and economic inequalities. The IHDP targets the population able to afford at least the down payment of, initially 10 %, 20% of the final cost of the housing units. To access the lottery through which units are allocated one must no be already a homeowner. Addressing a specific target group and locating the housing schemes in the periphery of the city has resulted in urban segregation of the low-income population. Indeed, these areas, unattractive to most due to their location, become

the place where only people who have no other option end up. In turn, due to the lack of an efficient public transportation system and being these people often part of low-income groups, and therefore very unlikely to own a private transportation, such as a car, they find themselves completely isolated. Thus, on the one hand the area is not equipped with a functional and social mix that would allow for economic and social exchange in loco, and, on the other hand, the lack of accessibility to the city centre excludes the possibility to maintain a job or any kind of income-generating activity elsewhere.



Distribution of Income Groups in the Addis Ababa

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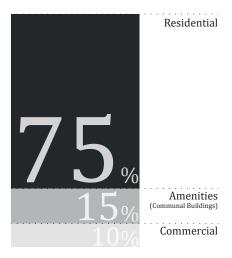
Urban Segregation

Mono-functional neighbourhoods

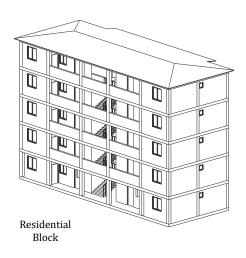
When affordable housing for low-income population is realized within the consolidated city, it can still benefit from the diversity of the surrounding areas and neighbourhoods. In greenfield developments, on the other hand, this contamination is completely lacking. Moreover, the schemes can be considered almost mono-functional: only 10% of the built area is reserved for commercial spaces, which are then bidden out to the higher offerer. Sometimes communal buildings with shared facilities are also included in the schemes, providing spaces for activities such as open-fire cooking, laundry, animal slaughtering. The remaining buildings are entirely residential, and no other amenities are

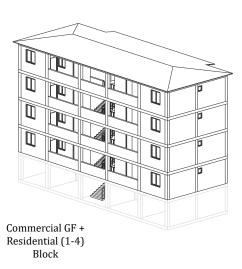
provided. This, again, negatively contributes to daily lives of the condominium inhabitants of greenfield developments, where no pre-existing amenity can be found. Furthermore, the already problematic situation is worsen by the lack of efficient public transportation system. Many of these condominium sites have very poor access to even a bus stop.

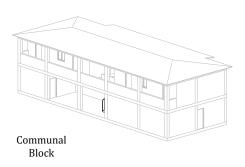
The combination of all this factors poses the condominium inhabitants in a complicated environment, in which they cannot carry on their previous lifestyles in loco nor elsewhere.



Condominium Program Distribution







Condominium Functional Typologies Abacus

Urban Segregation

Social Displacement

To be fair to everyone, units allocation is carried out through a computer-based lottery system. When registering, applicants choose which condominium site, sub-city and unit type they prefer. The first 30% of the vacant places are available only for women and their children.

However, if it is true that this system was prompt to guarantee fairness, its downsides are represented by urban displacement. Being the lottery only open to individuals, the important of socio-economic networks of low-income population is completely neglected. Thus, communities are torn apart by the system.

	ABAYNEH ALEMAYEHU TAKELE	MALE	178412	BA2S4-B40/HN/604	3 Bed Room	Bole	Bole Ayat 2-Site 4	Block 40	6
12	ABAYNESH SHIFERAW ESHETE	FEMALE	198237	BAS2-B10/HN/303	3 Bed Room	Bole	Bole Ayat 1-Site 2	Block 10	3
13	ABAYNESH ASFAW ERMEKO	FEMALE	121458	BBL1-B18/HN/806	3 Bed Room	Bole	Bole Bulbula Lot 1	Block 18	8
14	ABAYNESH DEJENE ZERGE	FEMALE	189972	BA1-B1/HN/601	3 Bed Room	Bole	Bole Ayat 1-Site 1	Block 01	6
5	ABAYNESH G/EGZEHABER MANDEFRO	FEMALE	146825	BBL1-B27/HN/805	3 Bed Room	Bole	Bole Bulbula Lot 1	Block 27	8
6	ABAYNESH WOLDETINSAY HASSEN	FEMALE	154512	BA2S4-B13/HN/405	3 Bed Room	Bole	Bole Ayat 2-Site 4	Block 13	4
7	ABDELLA GULTAMO NUR	MALE	130637	TOU-B7/HN/1805	3 Bed Room	Bole	Tourist	Block 07	18
8	ABDELLA SADO DEKEMO	MALE	163108	BAS2-B17/HN/804	3 Bed Room	Bole	Bole Ayat 1-Site 2	Block 17	8
9	ABDELLA SIED HAGOS	MALE	155034	TOU-B11/HN/1707	3 Bed Room	Bole	Tourist	Block 11	17
0	ABDI ABRAR SIRAJ	MALE	137981	AS-B13/HN/806	3 Bed Room	Kolfe	Asko	Block 13	8
1	ABDI ALI SAYO	MALE	167485	BAS2-B15/HN/701	3 Bed Room	Bole	Bole Ayat 1-Site 2	Block 15	7
2	ABDI BATI WETIYE	MALE	150838	BAS2-B31/HN/204	3 Bed Room	Bole	Bole Ayat 1-Site 2	Block 31	2
3	ABDI EDAO JIBA	MALE	121149	BA2S4-B23/HN/505	3 Bed Room	Bole	Bole Ayat 2-Site 4	Block 23	5
5	ABDI GETACHEW BIRU ABDI JEBEREL EMAMU	MALE	118257 121487	BA2-B42/HN/1410 BAS3-B34/HN/803	3 Bed Room 3 Bed Room	Bole	Bole Ayat 2	Block 42 Block 34	14
6	ABDI JEBEREL EMAMU ABDI KEDIR KELIFA	MALE	181608	BESH-B15/HN/701	3 Bed Room	Bole	Bole Ayat 1-Site 3 Bole Beshale	Block 34 Block 15	7
7	ABDI MUHAMMEDABDI	MALE	105045	BAS3-B18/HN/603	3 Bed Room	Bole	Bole Ayat 1-Site 3	Block 18	6
8	ABDI TEZERA GULIMA	MALE	183468	BAS3-B31/HN/802	3 Bed Room	Bole	Bole Ayat 1-Site 3	Block 31	8
9	ABDIAZIZ HASSAN MUHUMED	MALE	137572	Sum-B7/HN/502	3 Bed Room	Bole	Summit	Block 07	5
0	ABDILGENI MUHAMMED YAHYA	MALE	188667	BA2-B41/HN/606	3 Bed Room	Bole	Bole Ayat 2	Block 41	6
1	ABDILHAMID MEHAMMED	MALE	150867	AS-B11/HN/1105	3 Bed Room	Kolfe	Asko	Block 11	11
2	YASIN ABDILKERIM MUKITAR	MALE	145253	BA2-B7/HN/1206	3 Bed Room	Bole	Bole Ayat 2	Block 07	12
3	MEHAMMED ABDILMEJID YAHIYA EBRAHIM	MALE	194457	BESH-B16/HN/1510		Bole	Bole Beshale	Block 16	15
4	ABDIR TEMAM HASSEN	MALE	194457	BAS3-B12/HN/803	3 Bed Room	Bole	Bole Besnale Bole Ayat 1-Site 3	Block 16 Block 12	8
5	ABDIR TEMAM HASSEN ABDIRAHMAN HASSAN	MALE	129941	AS-B9/HN/405	3 Bed Room	Kolfe	Asko	Block 12 Block 09	4
6	ABDIRAHMAN HASSAN ABDIRAHMAN HUSEN CHUMETO	MALE	158127	TOU-B10/HN/1405	3 Bed Room	Bole	Tourist	Block 10	14
7	ABDIRASHID SHEIKH HUSSEIN	MALE	131229	BAS2-B13/HN/703	3 Bed Room	Bole	Bole Ayat 1-Site 2	Block 10	7
8	ABDIRISAK HUSSEIN ABDI	MALE	146655	TOU- B11/HN/707	3 Bed Room	Bole	Tourist	Block 11	7
9	ABDIRKADIR ADEM UCHECHU	MALE	145356	AS-B1/HN/906	3 Bed Room	Kolfe	Asko	Block 01	9
0	ABDISA ADUGNA YAI	MALE	125062	BA2S4-B35/HN/701	3 Bed Room	Bole	Bole Ayat 2-Site 4	Block 35	7
1	ABDISA LEULSEGED ABDISA	MALE	106784	TOU-B10/HN/1107	3 Bed Room	Bole	Tourist	Block 10	11
2	ABDISA ZERAY BAMANO	MALE	107394	BA2S4-B14/HN/606	3 Bed Room	Bole	Bole Ayat 2-Site 4	Block 14	6
2	ÓR)NIGUSSIE TEGEGNE GULILAT	MALE	115169	BAS3-B34/HN/701	3 Bed Room	Bôlê	Bôle Ayat 1-Site 3	Block 34	7
_	ABABI DEMISSIE SIDELIL	MALE	155708	BA2S4-B26/HN/403	3 Bed Room	Bole	Bole Ayat 1-Site 3	Block 26	4
	ABADIT KIROS ALEMAYEHU	FEMALE	124702	TOU- B10/HN/1805	3 Bed Room	Bole	Tourist	Block 10	18
	ABADIT TSEGAYE TEDILA	FEMALE	156395	BA1-B5/HN/603	3 Bed Room	Bole	Bole Ayat 1-Site 1	Block 05	6
	ABATE ABEGAZ ALI	MALE	130169	BBL2-B42/HN/1410	3 Bed Room	Bole	Bole Bulbula Lot 2	Block 42	14
	ABAY DEGEN	MALE	132103	BA2S4-B7/HN/1105	3 Bed Room	Bole	Bole Ayat 2-Site 4	Block 07	11
				AS-B5/HN/1206	3 Bed Room		Asko	Block 07	
	ABAY GELANEW TAYE ABAY TASSEW TADESSE	MALE MALE				Kolfe Bole			12
_	ABAY GELANEW TAYE	MALE	127259	AS-B5/HN/1206	3 Bed Room	Kolfe	Asko	Block 05	12
	ABAY GELANEW TAYE ABAY TASSEW TADESSE	MALE MALE	127259 105475	AS-B5/HN/1206 Sum-B2/HN/804	3 Bed Room 3 Bed Room	Kolfe Bole	Asko Summit	Block 05 Block 02	12 8
0	ABAY GELANEW TAYE ABAY TASSEW TADESSE ABAYA HORDOFA BORU	MALE MALE MALE	127259 105475 195747	AS-B5/HN/1206 Sum-B2/HN/804 BESH-B26/HN/1305	3 Bed Room 3 Bed Room 3 Bed Room	Kolfe Bole Bole	Asko Summit Bole Beshale	Block 05 Block 02 Block 26	12 8 13
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0 1 2	ABAY GELANEW TAYE ABAY TASSEW TADESSE ABAYA HORDOFA BORU ABAYADHANA KEDENEW ABAYNEH ALEMAYEHU TAKELE	MALE MALE MALE MALE MALE	127259 105475 195747 101615 178412	AS-B5/HN/1206 Sum-B2/HN/804 BESH-B26/HN/1305 BAS2-B11/HN/204 BA2S4-B40/HN/604	3 Bed Room	Kolfe Bole Bole Bole Bole	Asko Summit Bole Beshale Bole Ayat 1-Site 2 Bole Ayat 2-Site 4	Block 05 Block 02 Block 26 Block 11 Block 40	12 8 13 2 6
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0 1 2 3 4 5	ABAY GELANEW TAYE ABAY TASSEW TADESSE ABAYA HORDOPA BORU ABAYADHANA KEDENEW ABAYNEH ALEMAYEHU TAKELE ABAYNESH SHERAW ESHETE ABAYNESH ASFAW ESHETE ABAYNESH ASFAW ERMEKO ABAYNESH GYEGZEHABER MANDERFO ABAYNESH WOLDETINSAY HASSEN	MALE MALE MALE MALE MALE FEMALE FEMALE FEMALE FEMALE FEMALE	1.—27259 1.—05475 1.—05475 1.—01615 1.—78412 1.—98237 1.—21458 1.—89972 1.—46825 1.—54512	AS-B5/HN/1206 Sum-B2/HN/804 BESH-B26/HN/1305 BAS2-B11/HN/204 BAS2-B10/HN/603 BBL1-B18/HN/806 BA1-B1/HN/801 BBL1-B27/HN/805 BA2S4-B13/HN/405	3 Bed Room	Kolfe Bole Bole Bole Bole Bole Bole Bole Bol	Asko Summit Bole Beshale Bole Ayat 1-Site 2 Bole Ayat 2-Site 4 Bole Ayat 1-Site 2 Bole Bulbula Lot 1 Bole Ayat 1-Site 1	Block 05 Block 02 Block 26 Block 11 Block 40 Block 10 Block 18 Block 01 Block 27	12 8 13 2 6 3 8 6 8
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0 1 2 3 4 5 6	ABAY GELANEW TAYE ABAY TASSEW TADESSE ABAYA HORDOPA BORU ABAYADHANA KEDENEW ABAYNEH ALEMAYEHU TAKELE ABAYNESH SHIFERAW ESHETE ABAYNESH SFAW ESHESTE ABAYNESH GERGESHABER MANDERFO ABAYNESH WOLDETINSAY HASSEN ABBULLA GULTAMO NUR ABDELLA SADO DEKEMO	MALE MALE MALE MALE MALE FEMALE FEMALE FEMALE FEMALE FEMALE MALE MALE MALE MALE	1.—27259 1.—05475 1.—05475 1.—01615 1.—78412 1.—98237 1.—21458 1.—89972 1.—6825 1.—54512 1.—30637 1.—3108	AS-B5/HN/1206 Sum-B2/HN/804 BESH-B26/HN/1305 BAS2-B11/HN/204 BAS2-B10/HN/903 BBL1-B18/HN/806 BA1-B1/HN/806 BA1-B1/HN/805 BA2S4-B13/HN/405 TOU-B7/HN/1805 BAS2-B17/HN/805	3 Bed Room 3 Bed Room	Kolfe Bole Bole Bole Bole Bole Bole Bole Bol	Asko Summit Bole Beshale Bole Ayat 1-Site 2 Bole Ayat 2-Site 4 Bole Ayat 1-Site 2 Bole Bulbula Lot 1 Bole Ayat 1-Site 1 Bole Bulbula Lot 1 Bole Ayat 2-Site 4 Tourist Bole Ayat 1-Site 2	Block 05 Block 02 Block 26 Block 11 Block 40 Block 10 Block 10 Block 18 Block 01 Block 27 Block 13 Block 07 Block 17	12 8 13 2 6 3 8 6 8 4
0 1 2 3 4 5 6 7 8	ABAY GELANEW TAYE ABAY TASSEW TADESSE ABAYA HORDOFA BORU ABAYADHANA KEDENEW ABAYNEH ALEMAYEHU TAKELE ABAYNESH SHEMAYEHU TAKELE ABAYNESH SHEMENO ABAYNESH GEOZEHABER MANDERFO ABAYNESH GEOZEHABER MANDERFO ABAYNESH WOLDETINSAY HASSEN ABDELLA GUUTAMO NUR ABDELLA SADO DEKEMO ABDELLA SEDO HAGOS	MALE MALE MALE MALE MALE FEMALE FEMALE FEMALE FEMALE FEMALE FEMALE MALE MALE MALE MALE	127259 105475 105475 101615 178412 198237 121458 189972 146825 154512 130637 163108 15334	AS-BS/HN/1206 Sum-B2/HN/804 BESH-B26/HN/1305 BAS2-B11/HN/204 BAS2-B10/HN/303 BBL1-B18/HN/806 BAS2-B10/HN/805 BALSH-B1/HN/805 BASS-B1/HN/805 TOU-B7/HN/1805 BAS2-B17/HN/804	3 Bed Room	Kolfe Bole Bole Bole Bole Bole Bole Bole Bol	Asko Summit Bole Beshale Bole Ayat 1-Site 2 Bole Ayat 2-Site 4 Bole Ayat 1-Site 12 Bole Bulbula Lot 1 Bole Bulbula Lot 1 Bole Bulbula Lot 1 Bole Ayat 1-Site 4 Tourist Tourist 2 Tourist 2 Tourist 2	Block 05 Block 02 Block 26 Block 10 Block 10 Block 10 Block 10 Block 01 Block 27 Block 13 Block 07 Block 13	12 8 13 2 6 3 8 6 8 4 18 8 17
0 1 1 2 2 3 3 4 4 5 5 6 7 8 8 9 9	ABAY GELANEW TAYE ABAY TAOSSEW TADESSE ABAYA HORDOFA BORU ABAYADHANA KEDENEW ABAYNEH ALEMAYEHU TAKELE ABAYNESH SHIFERAW ESHETE ABAYNESH ASFAW ERMEKO ABAYNESH DELENE ZERGE ABAYNESH OFECTEABER MANDEFRO ABAYNESH OFECTEABER MANDEFRO ABAYNESH OGEOZEHABER MANDERSH WOLDETINSAY HASSEN ABDELLA GULTAMO NUR ABDELLA SULD HAGOS ABDI ABRAR SIKAJ	MALE MALE MALE MALE MALE FEMALE FEMALE FEMALE FEMALE FEMALE MALE MALE MALE MALE MALE	127259 105475 105174 101615 178412 198237 121458 189972 146825 154512 130637 163108 155034 157981	AS-B5/HN/1206 Sum-B2/HN/804 BBSH-B2/GHN/1305 BAS2-B1/HN/204 BA25-B1/HN/204 BA25-B1/HN/204 BA25-B1/HN/204 BBL1-B1/HN/805 BBL1-B2/7HN/805 BA25-B1/HN/805 TOU-B7/HN/1805 BA32-B1/7HN/805 TOU-B1/HN/1805 BA32-B1/7HN/804 TOU-B1/HN/1706	3 Bed Room	Kolfe Bole Bole Bole Bole Bole Bole Bole Bol	Asko Summit Bole Beshale Bole Ayat 1-Site 2 Bole Ayat 2-Site 4 Bole Ayat 1-Site 2 Bole Bubbula Lot 1 Bole Ayat 2-Site 4 Tourist Bole Ayat 2-Site 4 Tourist Bole Ayat 1-Site 2 Tourist Asko	Block 05 Block 02 Block 26 Block 10 Block 10 Block 10 Block 10 Block 18 Block 01 Block 13 Block 07 Block 13	12 8 13 2 6 3 8 6 8 6 8 4 18 8 17
0 1 1 2 3 3 4 5 6 7 8 8 9 0 0	ABAY GELANEW TAYE ABAY TASSEW TADESSE ABAYA HORDOFA BORU ABAYADHANA KEDENEW ABAYNEH ALEMAYEHU TAKELE ABAYNESH SHEMAYEHU TAKELE ABAYNESH SHEFEAW ESHETE ABAYNESH ASFAW ESHETE ABAYNESH GYEGZEHABER MANDEFRO ABAYNESH WOLDETINSAY HASSEN ABDELLA SADD DEKEMO ABDELLA GULTAMO NUR ABDELLA SIED HAGOS ABDI ALI SADD DEKEMO ABDELLA SIED HAGOS ABDI ALI SADD AKEMO	MALE MALE MALE MALE MALE MALE FEMALE FEMALE FEMALE FEMALE FEMALE MALE MALE MALE MALE MALE MALE MALE	127259 105475 105475 101615 178412 198237 121458 158972 146825 154612 1363108 155034 157981 17785	AS-B5/HN/1206 Sum-B2/HN/804 BISHI-B2/GHN/804 BAS2-B1/HN/804 BAS2-B1/HN/804 BAS2-B1/HN/804 BAS2-B1/HN/806 BBL1-B1/HN/806 BBL1-B1/HN/806 BBL1-B1/HN/806 BBL2-S4-B1/HN/805 BAS2-B1/HN/806 BAS2-B1/HN/806 BAS2-B1/HN/806	3 Bed Room	Kolfe Bole Bole Bole Bole Bole Bole Bole Bol	Asko Summit Bole Beshale Bole Ayat 1-Site 2 Bole Ayat 2-Site 4 Bole Ayat 1-Site 2 Bole Bulbula Lot 1 Bole Ayat 2-Site 4 Bole Ayat 1-Site 1 Bole Bulbula Lot 1 Bole Ayat 1-Site 1 Bole Ayat 1-Site 2 Tourist Asko Bole Ayat 1-Site 2 Tourist Asko Bole Ayat 1-Site 2	Block 05 Block 02 Block 26 Block 11 Block 10 Block 10 Block 18 Block 01 Block 27 Block 13 Block 07 Block 17 Block 11 Block 11	12 8 13 2 6 3 8 6 8 4 18 8 17 8
0 1 1 2 2 3 4 4 5 6 6 7 8 8 9 9 0 0 1 1 1 2 2	ABAY GELANEW TAYE ABAY TASSEW TADESSE ABAYA HORDOFA BORU ABAYADHANA KEDENEW ABAYADHANA KEDENEW ABAYNEH ALEMAYEHU TAKELE ABAYNESH SHIFERAW ESHETE ABAYNESH ASFAW ERMEKO ABAYNESH GEOZEHABER MANDEFRO ABAYNESH GEOZEHABER MANDEFRO ABAYNESH GOZEHABER MADERAS ABDELLA SEDE DIAGOS ABDI ALI SAYO ABDI ALI SAYO ABDI ALI SAYO ABDI BATI WETIYE	MALE MALE MALE MALE MALE MALE MALE FEMALE FEMALE FEMALE FEMALE MALE MALE MALE MALE MALE MALE MALE	127259 105475 1051747 101615 178412 198237 121458 189972 146825 154512 13037 163108 155034 137981 167485 150338	AS-B5/HN/1206 Sum-B2/HN/804 BISHI-B2/RH/804 BAS2-B1/RH/804 BAS2-B1/RH/804 BAS2-B1/RH/804 BAS2-B1/RH/805 BBL1-B1/RH/805 BBL1-B1/RH/805 BAS2-B1/RH/805 TOU-B1/RH/805 DAS2-B1/RH/805 DAS2-B1/RH/805 BAS2-B1/RH/805 BAS2-B1/RH/805	3 Bed Room	Kolfe Bole Bole Bole Bole Bole Bole Bole Bol	Asko Summit Bole Beshale Bole Ayat 1-Site 2 Bole Ayat 2-Site 4 Bole Ayat 1-Site 2 Bole Bulbula Lot 1 Bole Bylbula Lot 1 Bole Bulbula Lot 1 Bole Ayat 2-Site 4 Tourist Bole Ayat 1-Site 2 Tourist Asko Bole Ayat 1-Site 2 Bole Ayat 1-Site 2 Bole Ayat 1-Site 2 Bole Ayat 1-Site 2	Block 05 Block 02 Block 26 Block 10 Block 10 Block 10 Block 10 Block 18 Block 01 Block 27 Block 13 Block 07 Block 17 Block 11 Block 13 Block 13 Block 13	12 8 13 2 6 3 8 6 8 4 18 8 17 8
0 1 2 3 3 4 4 5 6 7 8 8 9 0 0 1 1 2 2 3 3	ABAY GILANEW TAYE ABAY TASSEW TADESSE ABAYA HORDOPA BORU ABAYADHANA KEDENEW ABAYNEH ALEMAYEHU TAKELE ABAYNESH SHIFERAW ESHETE ABAYNESH SHIFERAW ESHETE ABAYNESH ASFAW ERMENO ABAYNESH MOEJENE ZERGE ABAYNESH MOEJENE ZERGE ABAYNESH WOLDETINSAY HASSEN ABDELLA SULTAMO NUR ABDELLA SULTAMO NUR ABDELLA SIDD DEKEMO ABDI ABARA SIRAJ	MALE MALE MALE MALE MALE MALE MALE FEMALE FEMALE FEMALE FEMALE MALE MALE MALE MALE MALE MALE MALE	127259 105475 105475 105747 101615 178412 188237 121458 189972 146825 154512 13037 13037 15034 155034 157981 167485 150388 157981	AS-B5/HN/1206 Sum-B2/HN/804 BESH-B26/HN/804 BESH-B26/HN/1305 BAS2-B1/HN/804 BAS2-B1/HN/804 BAS2-B1/HN/806 BA1-B1/HN/806 BA1-B1/HN/806 BA1-B1/HN/806 BA2-B1/HN/806 BA2-B1/HN/806 BAS2-B1/HN/806 BAS2-B1/HN/806 BAS2-B1/HN/806	3 Bed Room	Kolfe Bole Bole Bole Bole Bole Bole Bole Bol	Asko Summit Bole Beshale Bole Ayat 1-Site 2 Bole Ayat 1-Site 4 Bole Ayat 1-Site 4 Bole Ayat 1-Site 4 Bole Ayat 1-Site 4 Bole Ayat 1-Site 1 Bole Bulbula Lot 1 Bole Ayat 1-Site 4 Tourist Bole Ayat 1-Site 2 Tourist Asko Bole Ayat 1-Site 2 Bole Ayat 1-Site 2 Bole Ayat 1-Site 2 Bole Ayat 1-Site 2	Block 05 Block 02 Block 26 Block 12 Block 10 Block 10 Block 18 Block 18 Block 07 Block 07 Block 07 Block 13 Block 11 Block 13 Block 13 Block 13 Block 13 Block 13	12 8 13 2 6 3 8 6 8 4 18 8 17 8 7 2
0 1 1 2 3 3 4 4 5 6 6 7 8 8 9 9 0 0 1 1 1 2 2 3 3 4 4 4 4 4 4 4 4 4 7 1 1 2 2 3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	JABAY GELANEW TAYE ABAY TASSEW TADESSE ABAYA HORDOFA BORU ABAYADHANA KEDENEW ABAYNEH ALEMAYEHU TAKELE ABAYNESH SHEMAYEHU TAKELE ABAYNESH ASFAW EMBEKO ABAYNESH GEORGE ABAYNESH GEORGE ABAYNESH OFFORD ABAYNESH OFFORD ABAYNESH OFFORD ABAYNESH WOLDETINSAY HASSEN ABDELLA GUUTAMO NUR ABDELLA SADO DEKEMO ABDELLA SED HAGOS ABDI ABARAR SIRAI ABDELLA SED BAGOS ABDI ABRAR SIRAI ABDI ABAYO ABDI BATI WETIYE ABDI BATI WETIYE ABDI BATI WETIYE ABDI BADA OIBA	MALE MALE MALE MALE MALE MALE FEMALE FEMALE FEMALE FEMALE MALE MALE MALE MALE MALE MALE MALE	127259 105475 105475 101615 178412 198237 121458 154512 154512 154512 150637 127981 15034 137981 150388 121149 150388	AS-B5/HN/1206 Sum-B2/HN/804 BISHI-B2/HN/804 BISHI-B2/HN/804 BAS2-B1/HN/104 BAS2-B1/HN/104 BAS2-B1/HN/104 BAS2-B1/HN/804 BAS2-B1/HN/805 BAS2-B1/HN/805 BAS2-B1/HN/806 TOU-B1/HN/107 AS-B1/HN/804 TOU-B1/HN/107 AS-B1/HN/804 TOU-B1/HN/107 AS-B1/HN/804 TOU-B1/HN/107 BAS2-B1/HN/804 TOU-B1/HN/107 BAS2-B1/HN/804 TOU-B1/HN/107 BAS2-B1/HN/804 TOU-B1/HN/107 BAS2-B1/HN/105 BAS2-B1/HN/105 BAS2-B1/HN/105 BAS2-B1/HN/104	3 Bed Room	Kolfe Bole Bole Bole Bole Bole Bole Bole Bol	Asko Summit Bole Beshale Bole Ayat 1-Site 2 Bole Ayat 1-Site 2 Bole Ayat 1-Site 2 Bole Bulbula Lot 1 Bole Ayat 2-Site 4 Bole Ayat 2-Site 4 Tourist Bole Ayat 1-Site 2 Tourist Asko Bole Ayat 1-Site 2	Block 05 Block 02 Block 26 Block 11 Block 40 Block 10 Block 10 Block 13 Block 14 Block 13 Block 14 Block 14 Block 14 Block 14 Block 14 Block 15 Block 14 Block 14 Blo	12 8 13 2 6 3 8 6 8 4 18 8 17 8 7 2 5 14
1 22 3 3 4 4 5 5 6 6 7 7 8 8 9 9 9 0 0 0 1 1 1 2 2 2 3 3 3 4 4 4 4 4 5 5 5 7 8 8 8 8 7 8 7 8 8 7 8 7 8 8 8 8	ABAY GELANEW TAYE ABAY TASSEW TADESSE ABAYA HORODOFA BORU ABAYADHANA KEDENEW ABAYADHANA KEDENEW ABAYNEH ALEMAYEHU TAKELE ABAYNESH SHIFERAW ESHETE ABAYNESH HOERINE ZERGE ABAYNESH GEOZEHABER MANDERFO ABAYNESH WOLDETINSAY HASSEN ABDELLA GULTAMO NUR ABDELLA SEID HAGOS ABDI ABTAY SHA WELLA SADO DEKEMO ABBAYNESH WOLDETINSAY HASSEN ABDELA GULTAMO NUR ABDELLA SIED HAGOS ABDI ABTAY SHA WELLA SADO JEKEMO ABDI ABTAY WETIYE ABDI EDAO JIBA ABDI ABTAY WETIYE ABDI EDAO JIBA ABDI GETACHEW BIRU ABDI JEBEREL EMAMU	MALE MALE MALE MALE MALE MALE FEMALE FEMALE FEMALE FEMALE MALE MALE MALE MALE MALE MALE MALE	1	AS-B5/HN/1206 Sum-B2/HN/804 BBSH-B2/GHN/1305 BAS2-B1/HN/204 BAS2-B1/HN/204 BAS2-B1/HN/204 BAS2-B1/HN/805 BBL1-B1/HN/805 BAL-B1/HN/805 BAS2-B1/HN/805 BAS2-B1/HN/805 BAS2-B1/HN/805 BAS2-B1/HN/805 BAS2-B1/HN/805 BAS2-B1/HN/805	3 Bed Room	Kolfe Bole Bole Bole Bole Bole Bole Bole Bol	Asko Summit Bole Beshale Bole Ayat 1-Site 2 Bole Ayat 2-Site 4 Bole Ayat 1-Site 2 Bole Bulbula Lot 1 Bole Ayat 1-Site 2 Bole Bulbula Lot 1 Bole Ayat 1-Site 2 Tourist Bole Ayat 1-Site 2 Tourist Asko Bole Ayat 1-Site 2 Bole Ayat 1-Site 3	Block 05 Block 02 Block 26 Block 11 Block 10 Block 10 Block 10 Block 13 Block 13 Block 13 Block 13 Block 13 Block 15 Block 11 Block 15 Block 15 Block 12 Block 14 Block 14 Block 14 Block 15 Block 15 Block 15 Block 23 Block 23 Block 23	12 8 13 2 6 3 8 6 8 4 18 8 17 8 7 2 5 14 8
0 1 1 2 3 3 4 4 5 6 6 7 7 8 8 9 9 0 0 1 1 2 2 3 3 4 4 5 6 6 6 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7 1 7	JABAY GELANEW TAYE ABAY TASSEW TADESSE ABAYA HORDOFA BORU ABAYADHANA KEDENEW ABAYNEH ALEMAYEHU TAKELE ABAYNESH SHERAW ESHETE ABAYNESH ASHAW ESHETE ABAYNESH ASHAW ESHETE ABAYNESH GYGCZEHABER MANDERFO ABAYNESH WOLDETINSAY HASSEN ABDELLA SUD DEKEMO ABDELLA GULTAMO NUR ABDELLA SUD DEKEMO ABDELLA SIED HAGOS ABDI ALB SAND ASHAW ABDELLA SUD DEKEMO ABDI ALB SUD BATI WETIYE ABDI GETACHEW BIRU ABDI GETACHEW BIRU ABDI GETACHEW BIRU ABDI IEBEREL EMAMU ABDI IEBEREL EMAMU	MALE MALE MALE MALE MALE MALE FEMALE FEMALE FEMALE FEMALE MALE MALE MALE MALE MALE MALE MALE	1	AS-B5/HN/1206 Sum-B2/HN/804 BISHI-B2/GHN/1805 BAS2-B1/HN/804 BAS2-B1/HN/804 BAS2-B1/HN/804 BAS2-B1/HN/806 BA1-B1/HN/801 BB1.1-B1/HN/805 BA2-B1/HN/805 BA2-S4-B1/HN/805 BA2-S4-B1/HN/805 BA2-S4-B1/HN/804 TOU-B1/HN/1805 BAS2-B1/HN/804 TOU-B1/HN/1805 BAS2-B1/HN/804 TOU-B1/HN/1805 BAS2-B1/HN/804 TOU-B1/HN/107 BAS2-B1/HN/804 TOU-B1/HN/107 BAS2-B1/HN/806 BAS3-B3/HN/806 BAS3-B3/HN/806 BAS3-B3/HN/806 BAS3-B3/HN/806	3 Bed Room	Kolfe Bole Bole Bole Bole Bole Bole Bole Bol	Asko Summit Bole Beshale Bole Ayat 1-Site 2 Bole Ayat 2-Site 4 Bole Ayat 1-Site 2 Bole Bulbula Lot 1 Bole Ayat 2-Site 4 Tourist Bole Ayat 1-Site 2 Tourist Asko Bole Ayat 1-Site 2 Tourist Asko Bole Ayat 1-Site 2 Bole Ayat 2-Site 4 Bole Ayat 1-Site 2 Bole Ayat 1-Site 2 Bole Ayat 1-Site 2 Bole Ayat 2-Site 4 Bole Ayat 2-Site 4 Bole Ayat 1-Site 3 Bole Beshale	Block 05 Block 02 Block 16 Block 11 Block 40 Block 10 Block 10 Block 10 Block 13 Block 01 Block 13 Block 13 Block 13 Block 13 Block 15 Block 15 Block 23 Block 42 Block 42 Block 42 Block 42 Block 43 Block 44 Block 43	12 8 13 2 6 6 3 8 6 8 4 4 18 8 17 8 7 2 2 14 8
0 1 2 3 4 4 5 6 7 8 8 9 9 0 1 1 2 2 3 3 4 4 5 5 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	JABAY GELANEW TAYE ABAYA HORDOFA BORU ABAYAHORDOFA BORU ABAYAHORDOFA BORU ABAYAHANA KEDENEW ABAYNEH ALEMAYEHU TAKELE ABAYNESH SHIFERAW ESHETE ABAYNESH ASFAW ERMEKO ABAYNESH GERENE ZERGE ABAYNESH GEGZEHABER MANDERFO ABAYNESH GOGZEHABER MANDERFO ABAYNESH WOLDETINSAY HASSEN ABDELLA SEDE HAGOS ABDI ALSAYO ABDI ALSAYO ABDI BATI WETIYE ABDI EDAO JIBA ABDI GATCHEW BIRU ABDI GERCHEW BIRU ABDI GERCHEW BIRU ABDI GERCHEW BIRU ABDI MEBEREL EMAMU ABDI KELIFA ABDI MEDIR KELIFA ABDI MEDIR KELIFA ABDI MEDIR KELIFA ABDI MEDIR KELIFA ABDI MAMMEDABDI	MALE MALE MALE MALE MALE MALE FEMALE FEMALE FEMALE FEMALE MALE MALE MALE MALE MALE MALE MALE	127259 105475 1051747 101615 178412 198237 121458 189972 146825 154512 130637 163108 155034 137981 150348 15108	AS-B5/HN/1206 Sum-B2/HN/804 BISSH-B2/GHN/804 BAS2-B1/HN/804 BAS2-B1/HN/804 BAS2-B1/HN/804 BAS2-B1/HN/805 BBL-B1/HN/805 BBL-B1/HN/805 BAS2-B1/HN/805 BAS3-B1/HN/805 BAS3-B1/HN/805 BAS3-B1/HN/805	3 Bed Room	Kolfe Bole Bole Bole Bole Bole Bole Bole Bol	Asko Summit Bole Beshale Bole Ayat 1-Site 2 Bole Ayat 2-Site 4 Bole Ayat 1-Site 2 Bole Bulbula Lot 1 Bole Bulbula Lot 1 Bole Bulbula Lot 1 Bole Bulbula Lot 1 Bole Ayat 2-Site 4 Tourist Bole Ayat 1-Site 2 Tourist Asko Bole Ayat 1-Site 2 Bole Ayat 1-Site 2 Bole Ayat 1-Site 2 Bole Ayat 1-Site 2 Bole Ayat 1-Site 3 Bole Ayat 1-Site 4 Bole Ayat 2-Site 4 Bole Ayat 1-Site 3 Bole Ayat 1-Site 3 Bole Ayat 1-Site 3 Bole Bole Ayat 1-Site 3	Block 05 Block 02 Block 26 Block 11 Block 40 Block 10 Block 10 Block 11 Block 01 Block 17 Block 17 Block 17 Block 13 Block 13 Block 13 Block 13 Block 13 Block 14 Block 13 Block 14 Block 13 Block 13 Block 13 Block 14 Block 13 Block 14 Block 13 Block 15 Block 15 Block 15	12 8 13 2 6 3 8 6 8 4 18 8 17 8 7 2 5 14 8 7
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The Lottery System

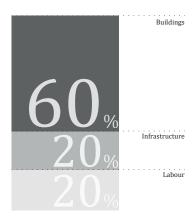
Example of the outcome of a lottery

Lack of Urbanity

Infrastructure as the only urban connector

Greenfield developments usually entail the extension of the existing infrastructural system, they requires roads, power lines, water pipes and a sewage. On average, 20% of the total construction costs goes into infrastructural works.

Nonetheless, infrastructure seems to constitute the only element of urbanity provided to these new neighbourhoods. This infrastructural approach reveals to be a too-simplistic approach to urbanization. In fact, these new developments often end up being the final destination of these new road system. Around them there is nothing more than farmland, within the neighbourhood only residential buildings, and a small percentage of commercial units, these new developments are nothing more than dormitory villages in the countryside. By taking into account infrastructure as the main and only means of urbanization, they lack the complexity and variety of urban environments.



Construction Costs Analysis



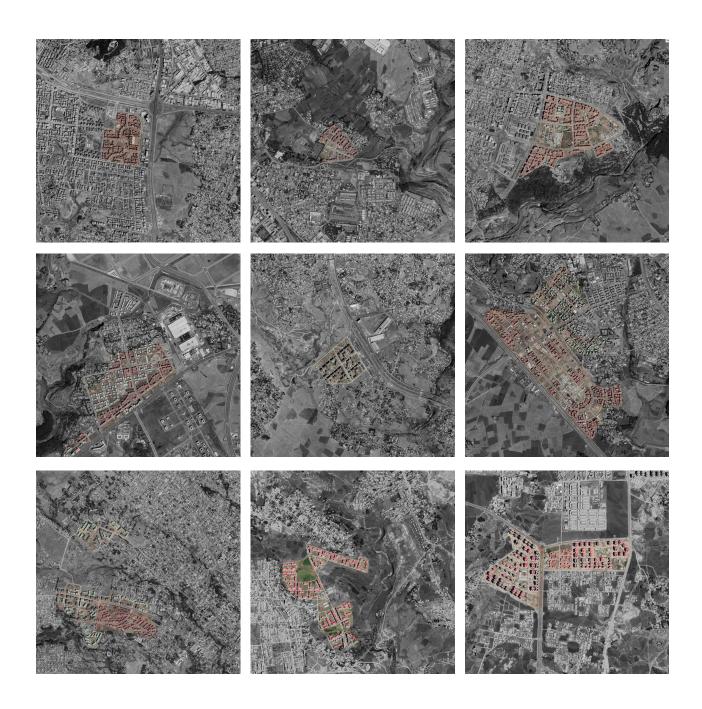






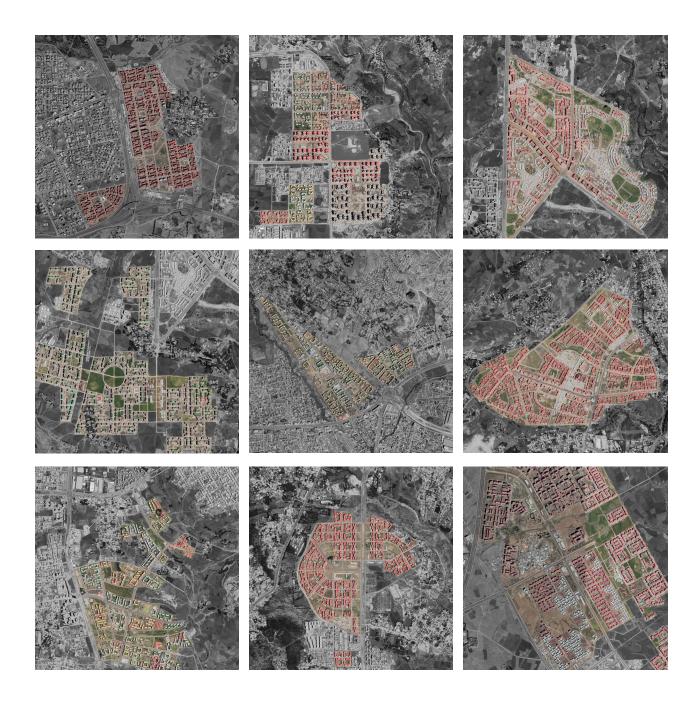
Urban Infrastructure

Road to nowhere



Overview of Condominium Greenfield Developments

Repetition of Urban Patterns



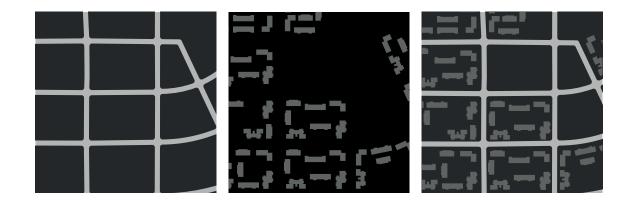
Lack of Urbanity

Point-based design

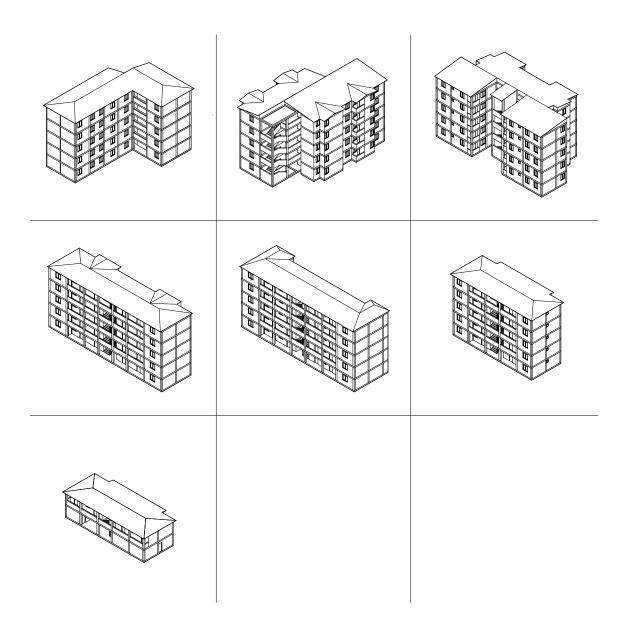
The complexity of urbanization is overseen also at the scale of the site spatial definition. When local architectural firms take part in the masterplan competitions, they are already provided with a kit of housing blocks, and their job is to simply define a street layout and arrange the blocks within it. These encourages a point-based approach to design, as the complexity of urbanity could be simply provided by spatially arranging objects in space.

This issue is made worse by the design of the blocks themselves. Being these completely independent elements, they are unable to relate to one another, nor to their surroundings, thus they are not able to define the space around them. Moreover, the definition of a clear back and front creates a completely dead side of the building. All this results in the improper use of residual spaces as dumping sites, in the creation of gated communities, or in the simple abandonment of communal spaces.

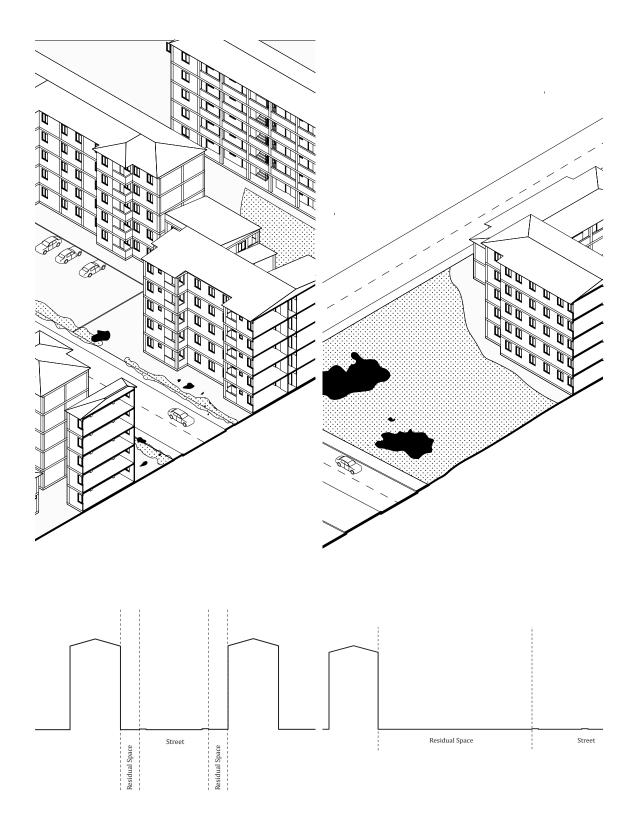
Furthermore, the scale at which the communal areas operates is unable to relate to people. The dimension of these spaces and their spatial in-definition prompts their abandonment. Similarly, communal buildings are also abandoned, as the scale of community at which they operate does not resonate with the activities they cater for.



Point-based Design Approach



Condominium Blocks Abacus



Leftover Spaces between Buildings and Streets

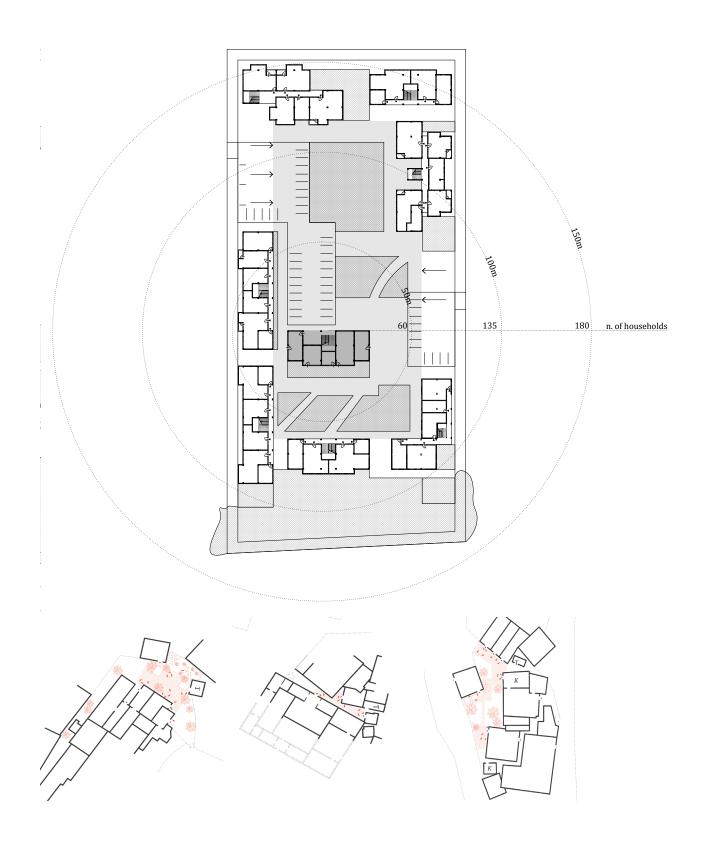
Street section analysis





Leftover Spaces between Buildings and Streets

Dump Sites



Courtyards and Collective Spaces

Comparative analysis with traditional courtyard spaces in informal settlements







Courtyards and Collective Spaces

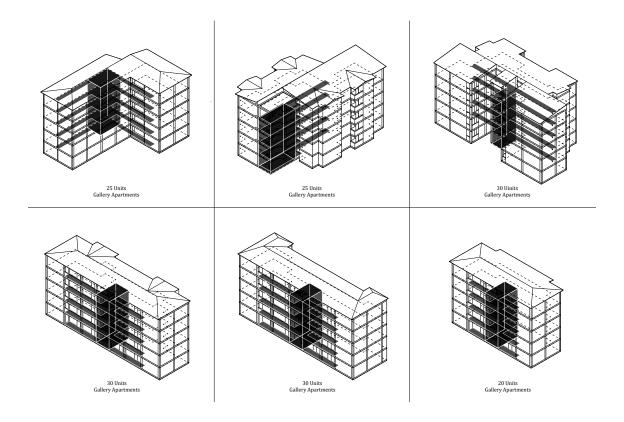
Gated communities, improper use and abandonment

Typological Incompatibility

Alienation and lack of outdoor spaces

Typological decisions can be explained in regard to the efficiency-oriented approach driving the IHDP as a whole. Gallery apartments were chosen as the main and only housing typology. All the different housing blocks rely on the same system. Housing blocks of four to five storeyhigh did not require elevators for vertical distribution, thus allowing for a reduction of construction costs. Circulation is therefore defined, vertically, by a communal staircase and, horizontally, by narrow galleries. However, multistorey construction is not common in Addis Ababa, especially when it comes to low-income population. The distance from the ground caused two main problems: the first concerns the alienation that living on the fifth floor can provoke to the inhabitants, that were used to have direct physical and visual contact with the

ground; the second concerns the accessibility of outdoor spaces. The latter is also much influenced by the spatial definition of the dwelling units. If these present some variety in terms of size, ranging from studio to three-bedroom apartments, they all share a common feature, the absence of outdoor private spaces. As analysed in the next page, small balconies were first provided for the biggest units, however in newer construction they were not included in the design. Having an livable outdoor space in proximity to the house is somehow fundamental for low-income Ethiopian families, since many of their daily activities take place outside. The 'improper' use of galleries and their appropriation highly testifies the need for an alternative to the ground.



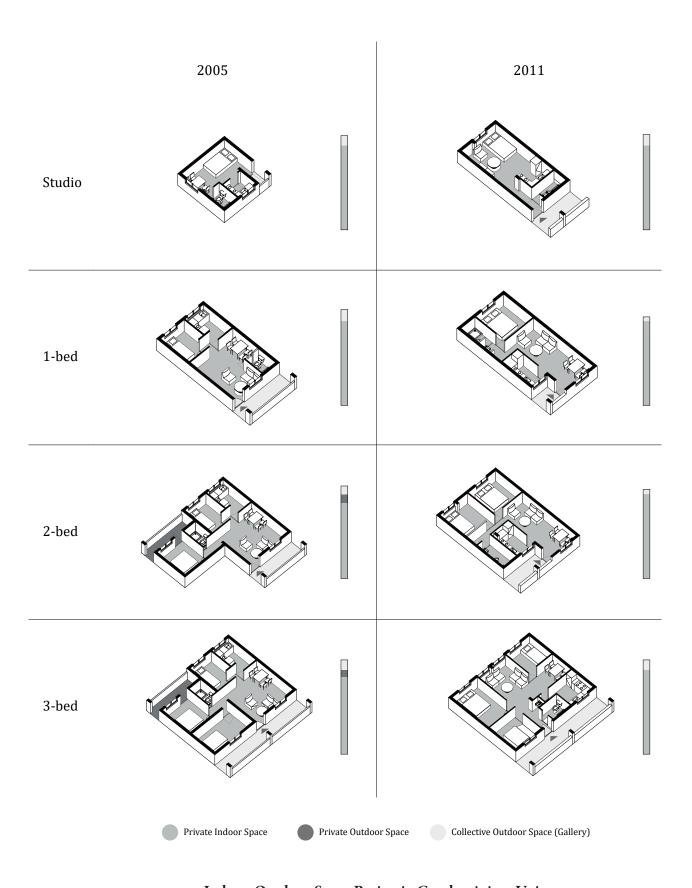
Building Typology Abacus

Distribution and circulation



Alienation from the Ground

Section through a typical Condominium courtyard



Indoor-Outdoor Space Ration in Condominium Units

Development through time





Use of Shared Galleries

Severe need of outside appropriable spaces

(in-)Afforbability

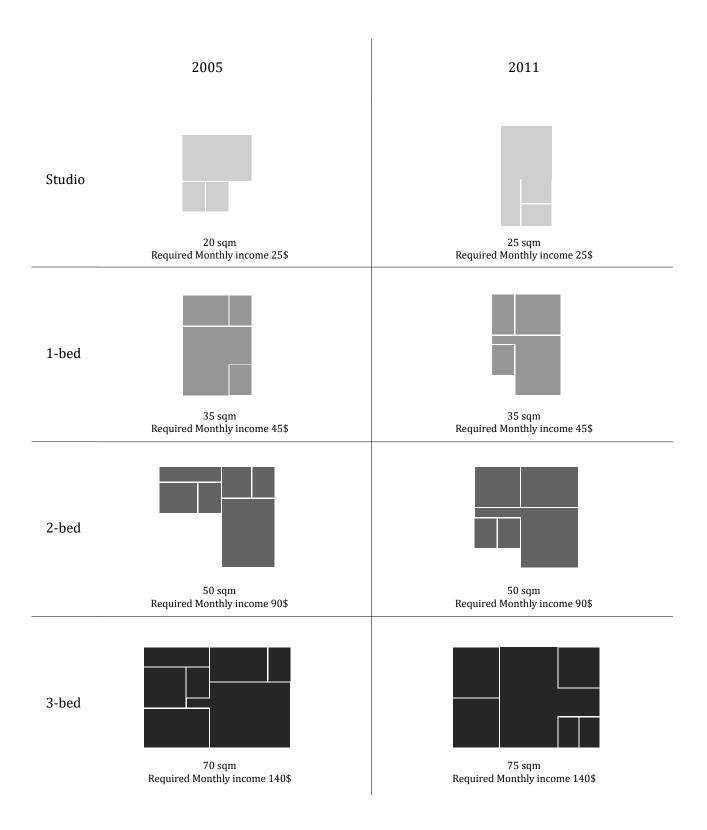
Homeownership & dimensions

With the new housing policy by the IHDP, came the question of financing the new housing notion. While the most policies were historically characterized by rental occupation, the concept of the housing policy was to transform this into one based on private homeownership. With the financial aid by public resources and a system of mortgages in collaboration with the Central Bank of Ethiopia (CBE) this was possible.

However, the planned policies were proved sometimes to be ineffective. First, the system forces people to become homeowners or leave the place where they were living. Indeed, in order to enter the condo and receive the loans from the bank, each dweller has to pay a down payment which is not affordable for all. Hence, the low-low income people are forced to move directly or to rent the units to wealthier groups.

Finally, regarding affordability, the fact that low-income families can be numerous was overseen by a policy which has been making more affordable the smaller apartments.

In a housing market like Ethiopia where there are no standards in measuring the afford-ability of housing, UN-Habitat explores the household monthly mortgage expenditure as a proportion of household income to determine affordability. Out of the 992 condominium owners who were surveyed, almost half of the respondents pay less than 25% of their income on housing costs. On the other hand, 41.3% of the respondents spend more than 30% of their income on mortgage loans. Given the prevalence of low incomes and depressed wages in the context of developing countries, even spending 30% of income on housing, let alone a higher share, is not sustainable. From the survey 44% households consider condominium housing schemes to be unaffordable. This point is further illustrated by the rise of monthly mortgage payments for different types of condominium housing. In the Low Cost Housing program (LCH), a predecessor of the Grand Housing program, condominium projects gradually increase the monthly mortgage unit prices.⁴³



Typical Unit Sizes and Relative Costs

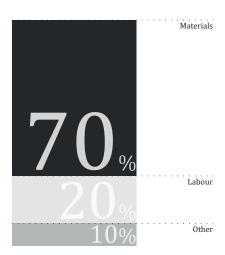
(in-)Afforbability

Materiality

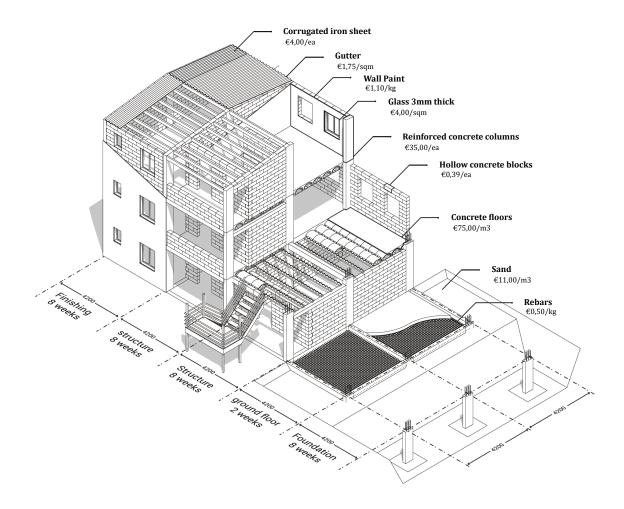
The construction phase of condominium buildings is organized by the IHDO, which is in charge of assigning building sites to local construction contractors and specific finishing works to MSE (micro and small enterprises). In fact, one of the main goals of the IHDP was to provide new job opportunities and stimulate local economy. However, since the construction method relies almost entirely on concrete, and local labour force did not have the skills needed to handle the construction, foreign workers were used instead, causing a high increase in construction costs. Moreover, cement, one of the main and indispensable ingredients of concrete, is not available in Ethiopia, and must, therefore, be

imported, thus causing another sharp rise in construction costs. When analyzing construction costs, it emerges that materials count for 70% of the total. This is very likely due to the fact that concrete is not only used for structural purposes, but is operated as an infill materials too, in the form of concrete hallow blocks.

Several studies on efficient construction systems were carried out by GTZ in collaboration with the Ethiopian Government. Concrete as a building materials surely guarantees an efficient construction in terms of time, however, it does not provide the most cost-efficient solution.⁴⁴



Construction Costs Analysis



Construction Components and Phasing

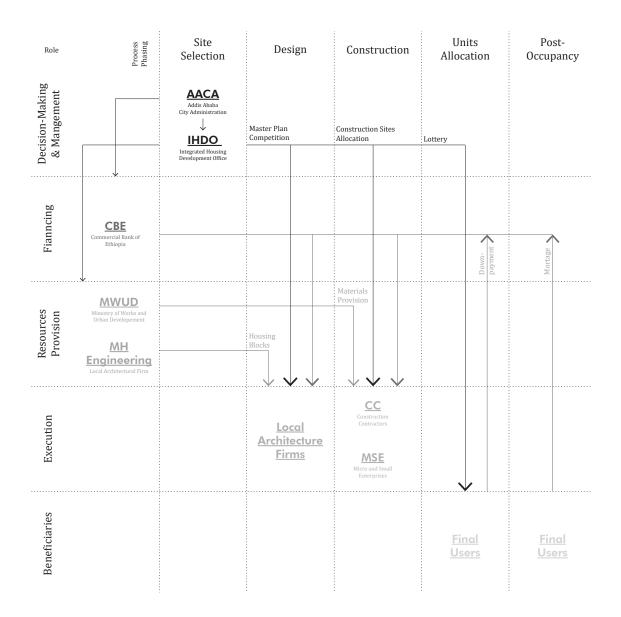
Top-down Approach to Housing Production

Stakeholder Analysis

As previously mentioned, the IHDP is a government-initiated housing program. The main authority is represented, locally, by the IHDO (Integrated Housing Development Office) which takes care of the site selection, material provisions (through the MWUD), of running the competitions for the site materplans, of assessing and selecting construction contractors and local enterprises, and finally of running the lottery to allocate the units. In turn, new residents are nothing more than the final users, and are in no way involved in the process.

However, once the keys are given to the beneficiaries, the involvement of the IHDO ceased, and post-occupancy is left completely in the hands of the residents, without providing any managerial institution, but mere behavioral guidelines inhabitants are required to adhere to.

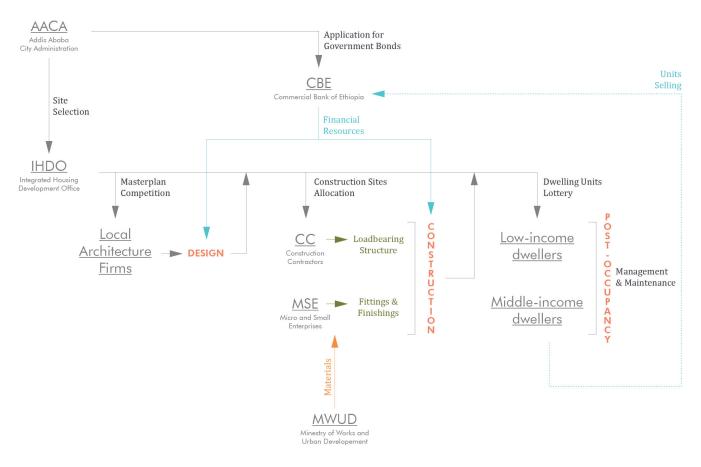
The design process has, thus, a clear temporal definition: it starts with the site selection and ends with the allocation of the dwelling units.

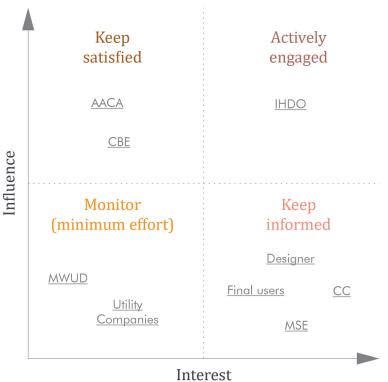


Overview of IHDP Process

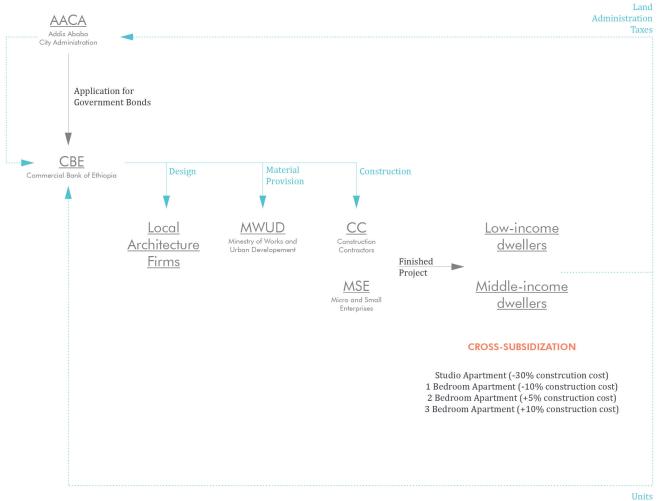
From site selection to final users

S		MWUD Minestry of Works and	AACA Addis Ababa	IHDO Integrated Housing
Р		Urban Developement	City Administration	Development Office
0	Frustrations	- National Housing Deficit	- City's Housing Deficit	- City's Housing Deficit
N		- "Slummification" of country's image - Unberable living standards of low-income pupulation	- "Slummification" of city's image - Unberable living standards of low-income pupulation	
S	Aspirations	Increase of housing supply for low-income population -Regenerate country's image	Increase of housing supply for low-income population Regenerate inner city's slums and city's image	- Meet IHDP goals
0	Aspirations	 Create job opportunities for micro and small enterprises and unskilled labour through construction 	Promote homeownership Create job opportunities for micro and small	
R		sector	enterprises and unskilled labour through construction sector	
Н	Offer	= Material provision/import + Financial support through CBE	-Land and sites selection -Financial support through CBE	Designers selection Project Management (financial and legal support)
P		Construction companies grading	- Infrastrucutre and services provision	Construction supervision Housing transfer and compensation
Г				Condominium code of conduct and maintenance guide
F		CBE Central Bank of Ethiopia		
\bigcup		Central Bank of Entropia		
Ν	Frustrations	- Lack of Access to low-income population		
D	Aspirations	- Money revenue from interest rates - Acquisition of new clients		
Ν				
G	Offer	- Financial resources		
S				
J				
D		GTZ German Technical	MH/ Engineering	Local Architecture
F		Corporation	Engineering	<u>Firms</u>
_	Frustrations		- Unberable living standards of country's low-income	- Very few job opportunities - Low control on design's quality
S			population	- Low control on design's quality - Stigma on housing for the poor
	Aspirations	- Money revenue from bilateral collaboration - Research on low-cost & affordable housing	Money revenue Involvment in long lasting programme	- Money revenue - Visibility
		construction niethods	Remove the stigma of housing for the poor - Make residents feel proud of their living environment	 Gaining experience Remove the stigma of housing for the poor
0	Offer			
G		- Research skills and resources - Design Expertise (LCH -MH System)	Open and accessible desing resources and solutions Design of affordable housing blocks Design supervision for new projects	 Design skills Site Masterplan (site design, blocks layout, communal buildings, open spaces design)
Ν			besign apports on the projects	
С				
0		Construction Contractors	MSE Micro and Small	
Ν		Communications	Enterprises	
S	Frustrations	- Very few job opportunities - Too high requirments imposed by IHDO	- Very few job opportunities - Too high requirments imposed by IHDO	
T R				
U	Aspirations	- Money revenue - Gaining experience for construction companies'	Money revenue - Gaining experience for construction companies'	
С		rankings	rankings	
T	Offer	- Structural construction	- Fittings and finishings realization	
0		- Labour force - Job apportunities	- Labour force - Job opportunities	
Ν				
Р		Middle-income	Low-income	
O S		groups	groups	
5 T	Equation -	Lack of housing	Lack of affordable housing	
-	Frustrations	Lack of housing Lack of possibilities to improve living conditions Lack of possibilities to improve economic conditions	- Lack of affordable housing - Lack of possibilities to improve living conditions - Lack of possibilities to improve economic conditions	
C		- Unberable living conditions	- Unberable living conditions	
C	Aspirations	- Have acess to housing - Improve living condition and economic situation	- Have acess to affordable housing - Improve living condition and economic situation	
Р		- Have access to homeownership	- Security of tenure - Possibility to continue traditional ways of living	
A N	Offer	- Units payment - financial revenues - Building mantainance	Units payment - financial revenues - Building mantainance	
C		- Cross-subsidization of low-income units		
V				



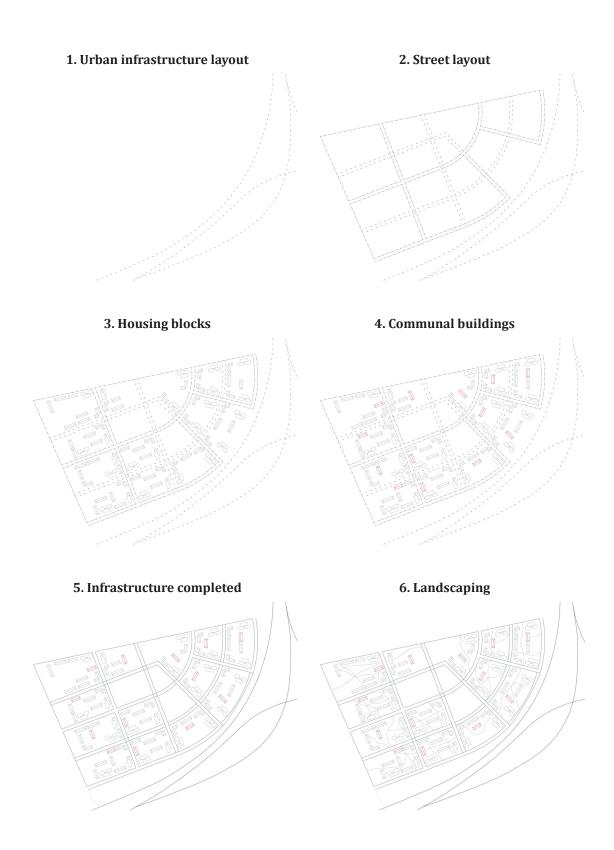


Overview of Decisional Process



Units Selling

Financial Model



Project Phasing

Condominium Greenfield Development

Housing Standards Comparative Analysis

Ayat Condominium

Completed in 2011



 Area (ha)
 38.6

 N. of Dwellings
 3195

 Density (dw/ha)
 82.7

 GSI
 0.09

 FSI
 0.62

Tafo Condominium

Completed in 2013



 Area (ha)
 106

 N. of Dwellings
 9300

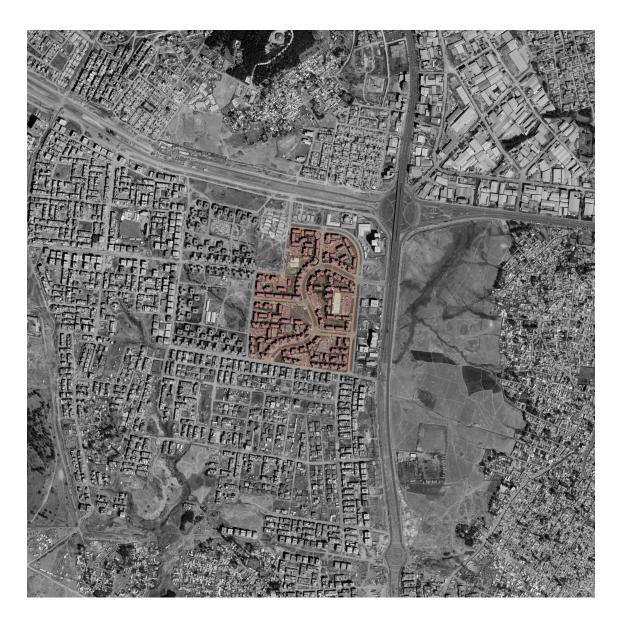
 Density (dw/ha)
 87.7

 GSI
 0.14

 FSI
 0.62

Haile Garment Condominium

Completed in 2014



Area (ha) 21.3

N. of Dwellings -

Density (dw/ha) 149

GSI 0.19

FSI 1.06

Tulu Dimtu Condominium

Completed in 2014



Area (ha) 81.4
N. of Dwellings 9190
Density (dw/ha) 112.9
GSI 0.18

FSI 0.82

Akaky Kality Condominium

Completed in 2014



 Area (ha)
 18.3

 N. of Dwellings
 1985

 Density (dw/ha)
 108.5

 GSI
 0.17

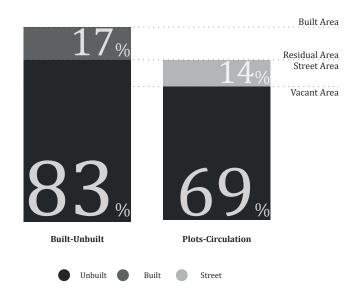
 FSI
 0.77

Conclusions

In the previous pages five peripheral condominium sites have been analysed. Basic data regarding density, ground floor occupation (GSI) and ground to overall built area ratio (FSI), provide a simple overview of the conditions in which and towards which these kind of developments operate. Firstly, there seems to be no correlation between the size of the site and the final density, however the average density indicated in dwellings/hectare is not particularly high, especially due to the great amount of vacant space and empty plots. In fact, due to the use of the same building blocks in all the sites, all consisting of 5 storeys, the density

becomes directly function of the ground surface index. The average GSI value is 0,15. This indicates that 85% of the site area is left vacant. In this regard one could argue that the urbanization costs necessary to develop this site could be better amortized by increasing the density. Furthermore the correlation between GSI and FSI is indicative of the amount of communal buildings in the area, which consists of only two floors: with comparable GSI values, higher FSI values indicate scarcity of collective resources in the area.

	Area (ha)	n. of dwellings	density (dw/ha)	GSI	FSI
Ayat	38.6	3195	82.7	0.09	0.62
Tafo	106	9300	87.7	0.14	0.62
Haile Garmen	21.3		149	0.19	1.06
Tulu Dimtu	81.4	9190	112.9	0.18	0.82
Akaky Kality	48.3	1985	108.5	0.17	0.77
Average			108.18	0.15	0.78



Ground Use Analysis

Towards an Open Condominium

"It isn't necessary to start from a blank slate, but rather, to focus on integrating a capacity for permanent adaptation within the existing structure. This, in turn, is inseparable to the use defined by the people who inhabit the space. We cannot talk about architecture if we do not bring people and program into the discussion."

Lacaton & Vassal

As analysed in the previous pages the condominium system used in Addis Ababa to address the housing shortage and, more in particular, the poor living conditions of low-income dwellers in the city, has caused a great number of downsides. However, it is necessary to recognize the great effort undertaken by the Ethiopian government in addressing the cause. But, it is also necessary to recognize the social capital that has been invested in the process, as well as the ecological and the economic ones. People that have been housed in these condominiums, and have since then seen an impoverishment of their living conditions cannot be ignored, at the same time the amount of land occupied and the infrastructural investment cannot be ignored.

The "Open Condominium" idea begins right here, in recognizing value in the people and resources involved in the process. It sees an opportunity in the vacancy of meaning of open spaces, or better leftover spaces, for readdressing the housing shortage, and, at the same time improve the urban qualities, or inequalities, created by the current system.

The focus of the research and following design is posed on condominium greenfield developments, since it is where the consequences of a closed system are felt the most. The vacancy of meaning of open spaces becomes a premises for re-defining spatial relations through a densification strategy that operates in a trade-off framework. The space that is taken away, or occupied, is given back. Bringing in more people, more social value, while taking advantage of the already existing infrastructure, thus cutting construction costs. But also re-defining the urban complexity through a programmatic approach, that involves the entire neighbourhood, but that is also able to cater for the surrounding areas, so that the benefits of the requalification of one condominium site can extend beyond the mere physical limits of the intervention and provide a new urban nucleus for peripheral urbanization. And, finally, project aims to re-define the notion of efficiency, by incorporating the temporal dimension to it, by considering it as part of a process, not as a moment frozen in time. In this sense, the notion of efficiency is replaced by that of 'long-term affordability', or 'long-term efficiency', one that takes time into consideration and evaluates efficiency as part of the moving and always evolving process that is the urban environment.

The research an design will be presented in the following pages, first as a set of strategies and principles that can be applied in the re-qualification of different neighbourhoods, secondly these strategies will be illustrated on an actual condominium site in the periphery of Addis Ababa: the Akaky Kality Condominium Site.

Bringing People into the Picture

The Open Condominium Process

To bring people into the picture a complete revision of the current 'condominium process' is required. Re-defining the balance between the current top-down approach, and a more inclusive bottom-up approach is the first step to forward. This balance can be defined in all the different stages of the process, from the site survey to the post-occupancy stage. Here, an overview of the proposed process will be presented and further discussed in the following pages.

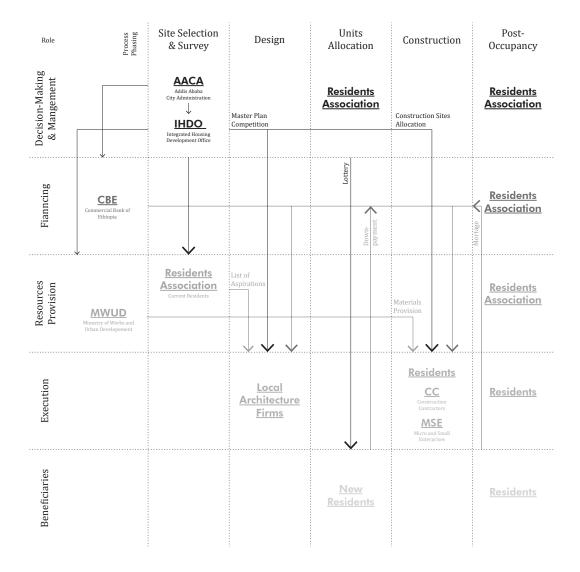
In first instance, and since the aim of this research project is to improve the living conditions of the current inhabitants, these should become the focus of the survey phase. Once a site is selected for re-qualification, the residents must have a say in the future of their homes. However, in order to be able to have an actually representative overview of the needs and lacks if the site, residents need to come together in association. From here onwards, this will be referred to as 'residents association'. This will operate as an interface

between the designer of the future masterplan and all the inhabitants.

Secondly, the allocation of the new units will happen before the construction phase, and will be organized differently. By doing so, new residents will be able to take part in the construction phase, and , therefore, to pay part of their units with labour. Moreover, by implementing the lottery system, and by recognizing the significant value of social connections, people will be able to participate not only as individuals, but as groups as well.

Lastly, a plan for a long-term managerial system is set in place through the residents association.

In this way, old and new residents will be able to take part in the process, not just as final users, but as proactive participants.



Open Condominium Process Overview

Residents Association

It is necessary to define what this residents association is, what is its role in the various phases and how it operates on the site.

The 'residents association' is a managerial device through which residents can cooperate to take care of communal problems, resources and spaces. It is elected democratically by the residents themselves. A monthly fee is required, however, job opportunities will be created through the associations, giving the possibility to people to choose how to contribute the community.

In order to better organize the area of influence of the association, two operational scales have been defined: the first acts at the level of the compound, the second manages the entire neighbourhood. They act respectively as interfaces with the neighbourhood and with AACA (Addis Ababa City Administration).

In the first stage of the process, the site survey based on which the program brief will be drawn, is coordinated at the compound level in first hand, and later communicated and discussed with the AACA and the urban designer/architects by the neighbourhood representatives. At this stage, the inhabitants will be able to actively contribute to the program brief - choice of amenities - and in the redefinition of their dwellings.

Units allocation will still be carried out via a lottery, to guarantee fairness to everyone. However, residents and locals will have a priority in the selection process. Current residents will be, in fact, able to re-unite with precondominium social networks if so they desire.

During the construction phase, the residents association will set up workshops for old and new residents that intend to take part in the process. These workshops will be used later on for the maintenance of the site.

Finally, in the post occupancy, it arranges rent collections, maintenance of communal areas and facilities and represents the inhabitants is all city's matters.

Operational Scale	Compound	Neighbourhood
1	interface with Neighbourhood Administration	Interface with Municipal Administration
	Hires maintenance workers (from the compound for the compound)	Runs the Lottery for units allocation
	Collects Monthly Association Fees	Manages Compounds Associations
	Collects Monthly Rent	Manages Public Facilities & Hires maintenance workers (from the neghbourhood or elsewhere if needed)

Residents Association Overview

(re-)Program

Public and collective amenities

Public and communal amenities are at the core of the reprogramming of the site. To turn these neighbourhoods in active parts of the city, it is, indeed, necessary to provide other and diversified facilities. The program brief will be, as mentioned previously, discussed and defined in accordance with the condominium residents. In order to simplify the conversation, a table with different types of amenities, and the relative operational scales is provided.

The table on the right is the result of the contextual research carried out throughout the year.

Operati	onal Scale Neighbourhood	Compound	Cluster
Education	Schools	Daycare	
Religion	(kindegarden to high school depending on neighbourhood size) Whorship Places		
Recreation	Sport Facilities	Playgrounds	Courtyards (playgrounds, meeting places)
Services	Bus Station Medical Centre (banks, post offices, others)		Courtyards Roofs (laundry, etc) (laundry, etc)
Administration	Offices (Neighbourhood administration)	Communal Blocks (Compound administration)	Courtyards (Meeting places)
Commercial/ Productive	Market Shops/workshops	Market	Courtyards Roofs (cooking, drying seeds, etc.)

Amenities Toolbox

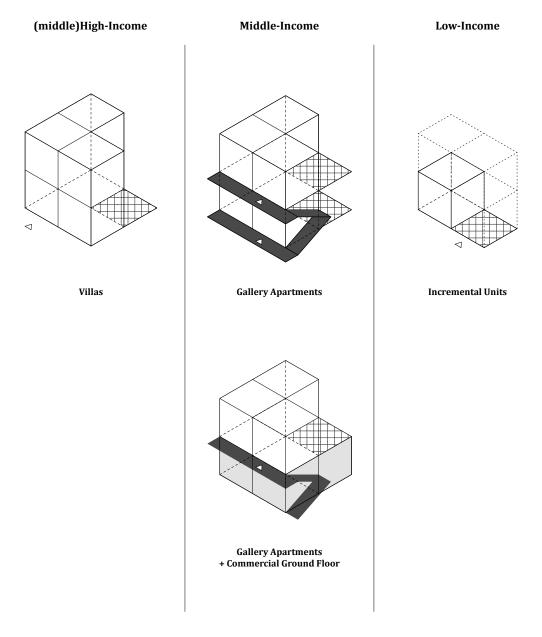
(re-)Program

Social mix and housing typologies

To enhance the formation of a social mixed community, as per Addis Ababa's tradition, the design toolbox implements the current typological offer by introducing three other housing typologies. As mentioned previously, housing typologies in Addis Ababa are very much related to the socio-economic groups of their inhabitants, thus the three typologies will address three main socio-economic groups: an incremental typology for low-income groups, a mixed typology with a commercial ground floor and gallery

apartments on top for the middle-income, and finally row houses for middle-high income groups.

The typologies are not to be intended as independent entities or object, but as part of a system of relations. They are the basic units that one can assemble to define the space around them.



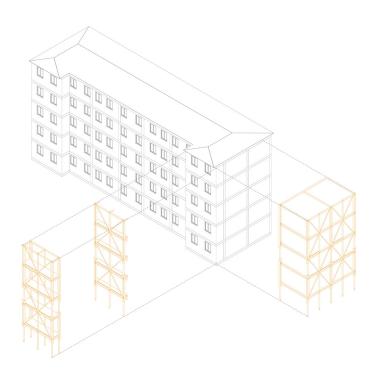
Typological Toolbox

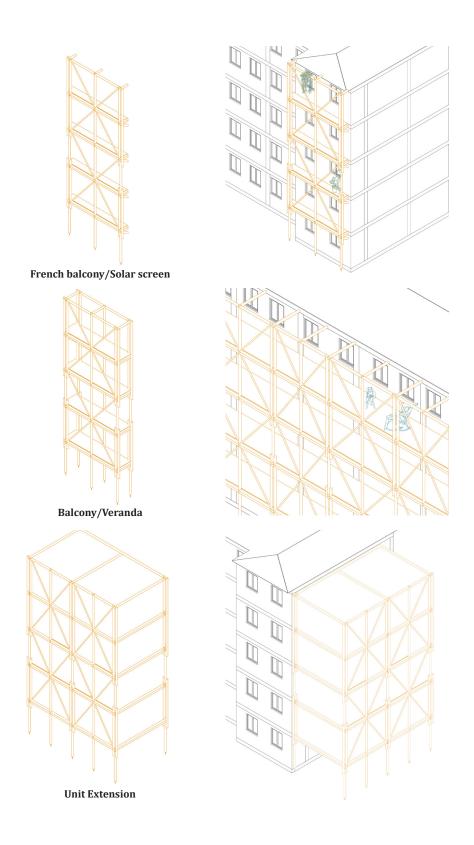
(re-)Program

Condominium Add-ons

Condominium residents will also have the possibility to modify their dwellings if they wish so. Three possible extension solutions have been researched to improve the current living conditions of the inhabitants. The three types are as follow: solar screens/French balconies to protect the dwelling from solar radiation and/or guarantee more privacy; balconies/verandas to have direct access to an

outdoor space from each unit, and, finally, units extensions, these can be located on the blind sides of the buildings and can provide space for additional rooms. The residents will, therefore, have the possibility to choose for each building whether they want or not the extension, and in case of a positive response the specific kind will be suggested in regard to solar exposition and other factors.

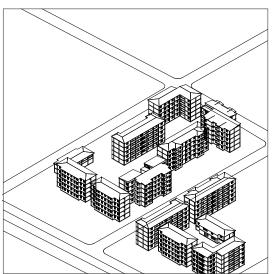


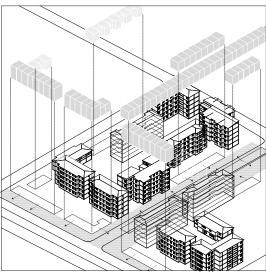


Condominium Add-ons Abacus

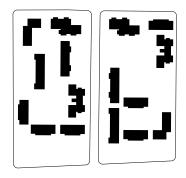
(re-)Definition of Open Spaces

Programmatic Toolbox in Action

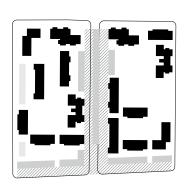




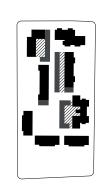






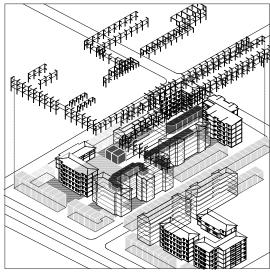


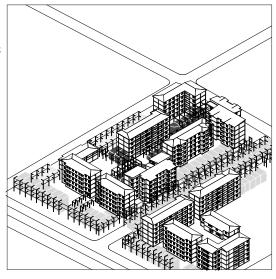
Re-definition of borders through densifcation and activation of the street level

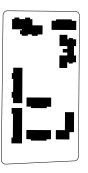


Re-definition of con through densifcation rooftops a

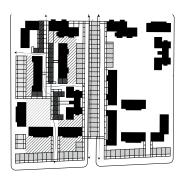




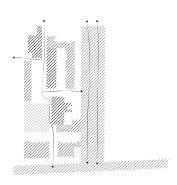




apounds' courtyards and activation of the s trade-off



Unification of space though the introduction of a shared urban infrastructure



Final diversified space and circulation

Operational Conditions

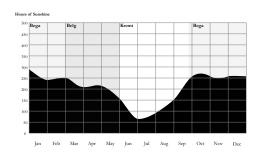
In order to define a sustainable approach to the use of resources, it is necessary to define the climatic conditions in which we are operating.

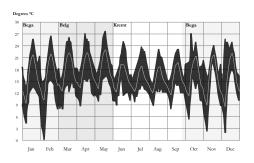
Addis Ababa is located 2355 metres above sea level, in close proximity to the equator. It is, thus, exposed to very intense solar radiations, which hit the ground almost perpendicularly, however, because of its elevation, temperatures are never too high or too low.

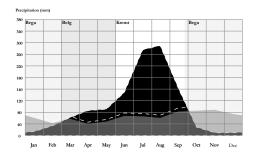
Water is also an extremely important resource, as much as an extremely dangerous hazard. Two main season can be recognized, a dray season that goes from November to March, and a rainy season in between December and February.

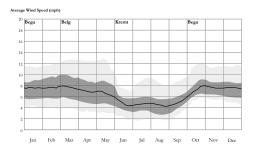
However, climate is not the only condition to consider: building in a lived environment requires a construction process that is quick and as little disruptive as possible.

Economic conditions and affordability issues are also a factor. The intervention should have a positive impact of economy, both by boosting local enterprises, and by creating solutions affordable even for the low-income groups, both at the time of allocation and in the long-run.









Temperatures, Sunshine Hours, Rain and Wind in Addis Ababa

Vernacular Lessons

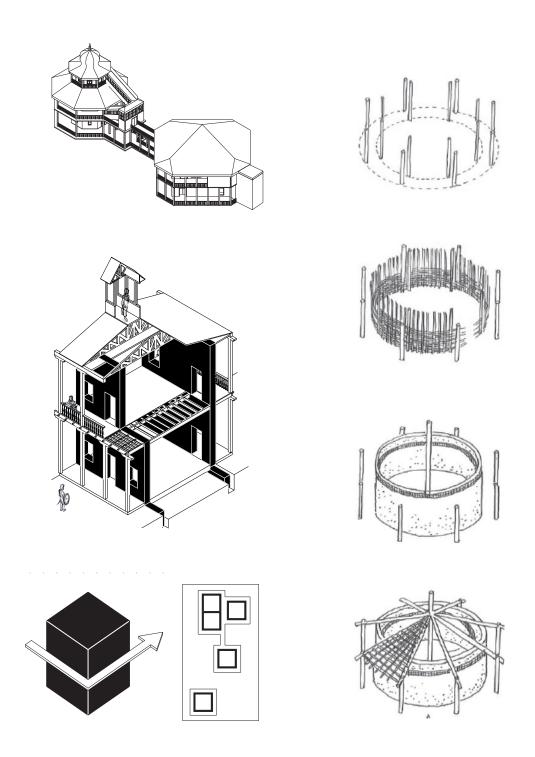
Vernacular Architecture and construction methods are very much influenced by the specific climatic and social context in which and for which they operate. They are characterized by efficient use of resources, both in terms of construction materials, and in terms of natural resources offered by the climate. Moreover, they rely on local skills and materials, which can at the same time be a booster for local economy and reduce the dependency on foreign materials and expertise.

Two vernacular examples from Addis Ababa will be analysed and discussed: the Ras Palace and the more popular chicka house.

Ras Palaces were built by nobility and kings and were the nucleus around which the city has developed. In general they are characterized by a common construction solution: and heavy core and a light wooden structure that runs above it. This system performs greatly in several ways. First of all the light timber structure, often enclosed with

glass elements, accumulate the heath during the day and release it in the core at night, so that the core is kept cool during the day and heated up at night when temperatures drop. Moreover, this light structure provides the circulation spaces around the building, so that moving around one is protected from both sun and rain.

Chicka houses take their name from a particular form of construction: the chicka wall. This is made mostly out of soil materials in combination with a timber structure. The construction is usually terminated with a generous roof overhanging, so that the earth walls are protected from the rain. However, this construction method does not guarantee sound and durable structural and thermal properties.



Addis Ababa's Vernacular Architecture

The Ras Palace (on the left) and a traditional chicka house (on the right)

Adobe to re-think vernacular solutions

Adobe, a mix of sand, silt, clay, straw and water, can represent a more systematic implementation of the chicka wall. The basic materials are similar, however, since adobe is used in the form of bricks or blocks, its performances in terms of stability and durability and much greater. Moreover, since it does not require the use of any additional timber structure, it can also have a positive impact of the deforestation problems affecting Ethiopia.

Properties:

CO2 footprint: 0,033 MJ/kg

Regenerative Capacity: -

Compression (soil only): 0,4-1,5 MPa (2); 1,9 Mpa

Compression (soil+straw): 2,2 MPa

Tensile (soil only): 0.44 MPa

Tensile (soil + straw): 0.36 MPa

Shear: 0.1 MPa

Density: 1400-2200 kg/m3 (high density), 800 kg/m3 (low

density)

U-value: 0.24 W/mK

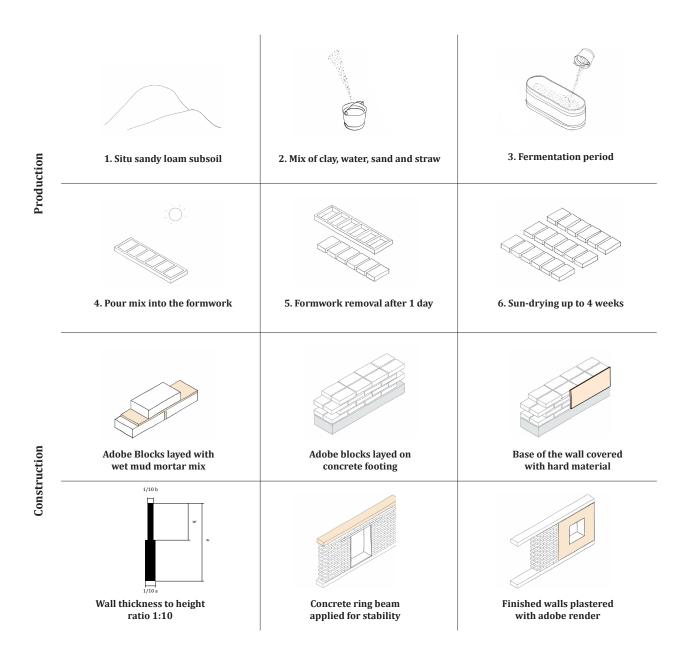
Acoustic Insulation: Good Noise reduction coeff.: 50-55

dB

Fire Resistance: Fireproof (for density > 1700 kg/m3)

Keeps the relative humidity of indoor air between 40-60% (the optimum range for human health)

Durability: Excellent, can last hundreds of years if properly maintained (and designed)



Adobe Construction Overview

Process and Principles

Advantages

Great thermal performance: Great Thermal Inertia heat accumulated during daytime is released at night-time

Humidity control: Keeps the relative humidity of indoor air between 40-60% (the optimum range for human health)

Great Acoustic performance: Low sound transmission/ Good sound absorption

Simple Maintenance: in case of erosion it is possible to add a new layer of plaster made of the same mixture of the adobe blocks

Extremely high durability (if well maintained and well designed)

No toxic emission

Entirely Circular material (if not stabilized): low energy input and low energy output

High flexibility/adaptability (allows for an extremely high variety of shapes)

Local techniques: Used for thousands of years in Ethiopia (chika).

Local material, does not need transportation

Local empowerment: Encourages community self-reliance as it makes self-building possible. Earth reduces the economic dependence on the construction materials market, preventing indebtedness. Stimulates local activity

Low cost: local materials, labour intensive, can be produced in loco

Can have a positive impact on Ethiopia's deforestation problem

Disadvantages

Low insulation capacity

Can be used for buildings with usually no more than two storey high

Water Sensitivity

Brittleness (can cause problems in case of seismic events)

Low Tensile Strength

Very High Shrinkage/Swelling Ratio: major structural cracks can occur when the material is exposed to changing weather conditions

Poor Abrasion Resistance

Manufacturing Requires Water

Thermal Mass

Wall Thickness Calculation based on Thermal Displacement Value (R)

Adobe

$\mathbf{C}_{\mathbf{F}}$	• [J/(Kg°C)]	900
ρ	$[Kg/m^3]$	1400
λ	[W/(mK)]	0.46

 $R = (82.76/3600)*sqrt(s*Cp*\rho/U)$

from Fourier Formula

 $R=0.023*sqrt(s*Cp*\rho/U)$

 \mathbf{R} Delay [h] optimal > 12 h

s Wall thickness [m]

 ${f U}$ Thermal transmittance $[{f W}/m^2K]$

Since $U = \lambda/s$

 $R{=}0.023^* sqrt(S2^*Cp^*\rho/\lambda)$

Therefore, to find the value of **s**

 $s=R/(0.023*sqrt(Cp*\rho/\lambda))$

If **R=12** h

 $s=(12/0.023)^*(1/sqrt(Cp^*\rho/\lambda)$ $s=0.315 \ m$ for R>12 [h], s > 31.5 [cm]

Bamboo to re-think vernacular solutions

The basic construction principle of the Ras Palace consists of a heavy core and a light timber structure. However Ethiopia is dealing with a problem of deforestation.

Bamboo could be use as an alternative to traditional wood in light of the many advantages it can bring. Moreover, Ethiopia has one of the biggest bamboo resources in the entire world. However the use of this material in the construction sector is limited, especially in the formal sector. This is mostly due to the lack of proper regulation of the material.

Using bamboo as for secondary structure can prompt more articulated research into the material for structural purposes, and into its regularization, so that it could be used as an alternative to concrete framework construction.

Advantages

Locally Sourced

Good resistance to earthquakes (flexible and light)

Good constructional properties

Ensures a good indoor climate

Low weight

Easy to edit with simple tools

Easily replaceable and reusable

It is the fastest growing woody plant on this planet; some species can grow up to 1 meter per day. Regrowing speed: 5 times as soon as another type of wood

CO₂ Positive

Disadvantages

Vulnerable to fungi and insects

High Flammability



Nut-Bolt-Threaded Stud 12mm



Threaded Hook Stud



Galvanized Post Bracket





Hardwood Bars

(same diametre as bamboo culm)

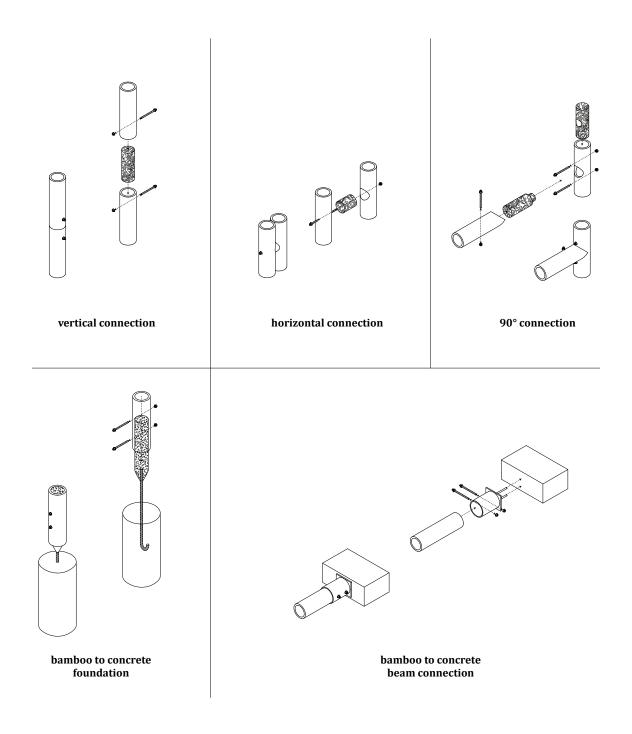


Concrete

(pured on site)



Plastic Bottle Cone



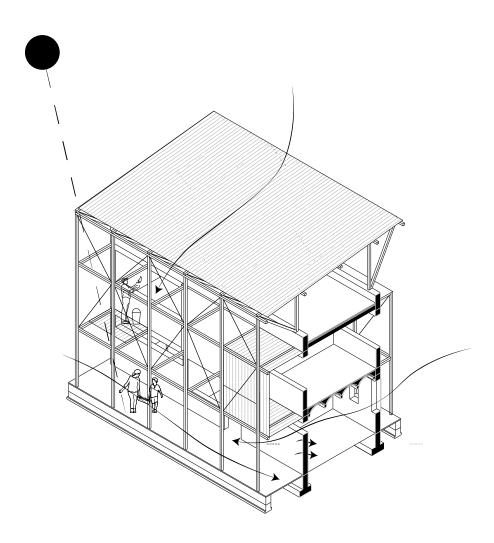
Bamboo Connections Overview

Toolbox

Re-thinking vernacular solutions

The proposed system relies on the combination of vernacular principles and alternative materials. The resulting system consists, thus, of a heavy core in adobe, which acts as a thermal mass storing heat during the day and releasing it at night, and a light bamboo structure, that acts as a membrane, protecting the building from sun and rain, while also providing protected distribution spaces.

Additionally, the light membrane also allows for incrementality, offering additional space. Moreover, due to the need for frequent maintenance of adobe walls, the structure provide a permanent scaffolding.



Proposed Construction Solution

Climate Performance

Construction

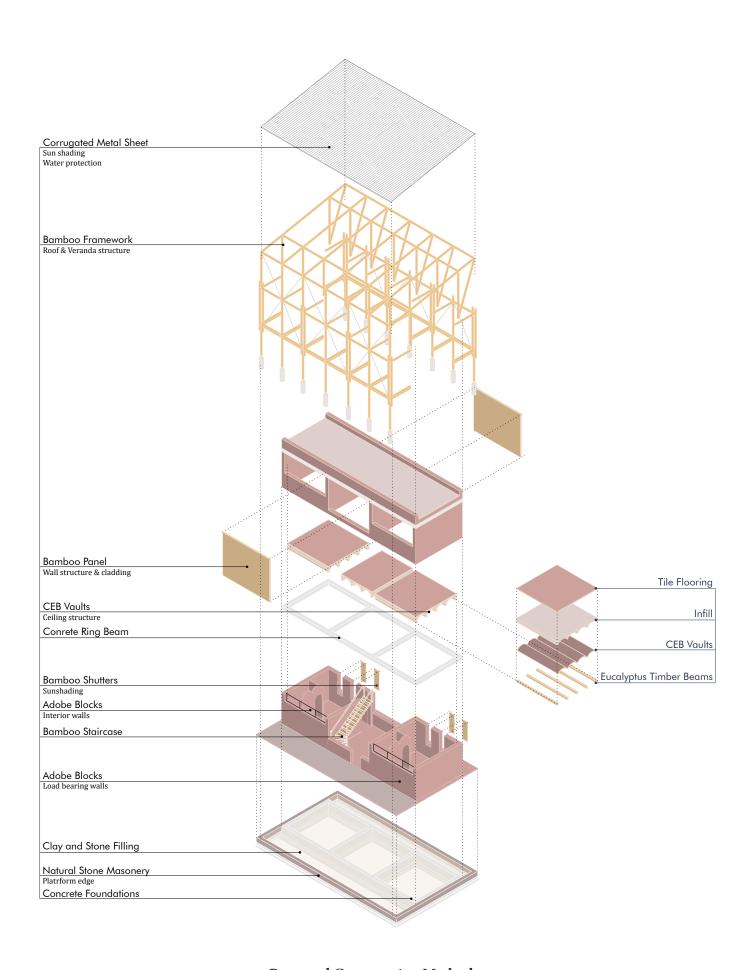
The construction principles applied to define this system, try to address multiple issues at the same time. First of all, the methods are designed to be simple and realizable even in cases of self-building initiatives. The constructed structures are, indeed used to showcase the construction principles and the possible variations.

The construction elements are also thought to serve more than one purposes. The foundations, for instance, are realized as part of a continuous plinth. This is due to different reasons, the first being the need to protect the adobe from ground humidity and from splashing water, the second concerns the creation of raingarderns and temporary ponds for stormwater management, as will be further elaborated in the next pages. Ceiling construction follows the same principle, on the one hand the CEB vaults

do not allow fire to spread vertically, on the other, being these modular, on can be removed to create additional vertical connection if needed. Moreover, they also avoid the use of timber structures, which, as explained before, constitute a scarce resource. Bamboo panels are also designed to be re-purposable, if one intends to extend the dwelling space into the membrane, the panel can simply be detached and repositioned within the bamboo frame.

Finally, concrete is limited to the necessary elements, for foundations and ring-beams.

An overview of different construction details will be presented in the following pages.



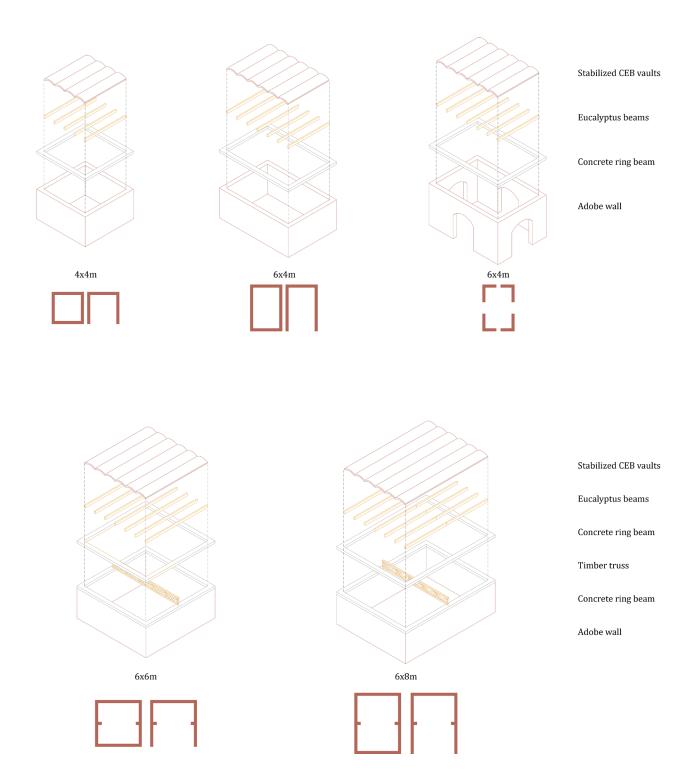
Proposed Construction Methods

Toolbox

Flexibility

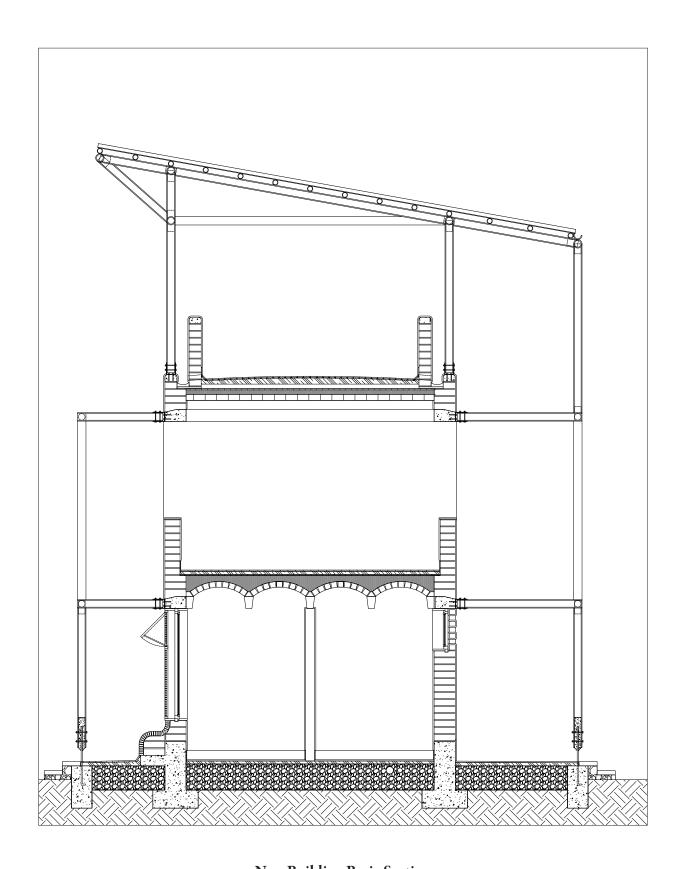
When thinking about flexible structure, adobe, and in general, masonry walls, do not come to mind, as they are usually associated with massive construction and little transformable potential. However, it is possible to conceive massive structure that can also be flexible and

host different functions. In the following page an overview of possible variations of adobe modular construction is illustrated. The image intends to show possible approaches to the issue, however, more combinations and variations are possible following similar principles.

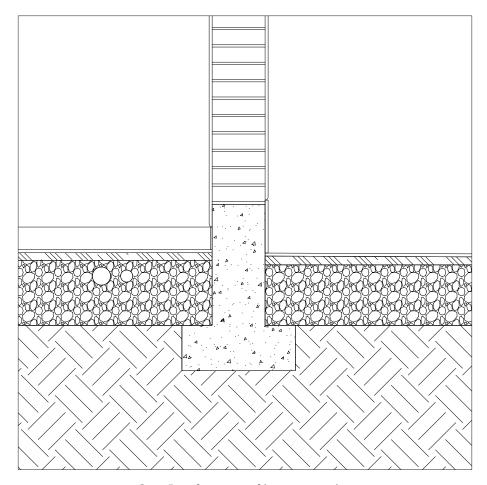


Adobe Modules Variations

Toolbox

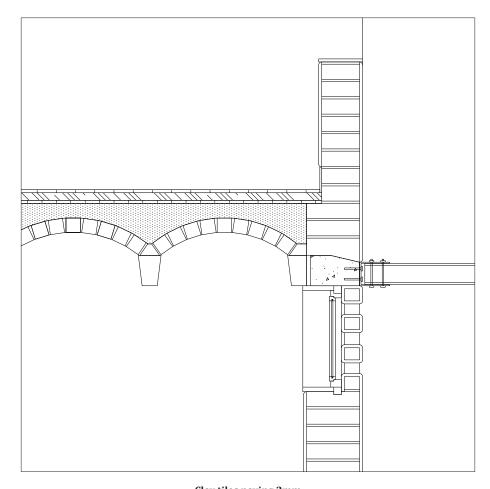


New Building Basic Section



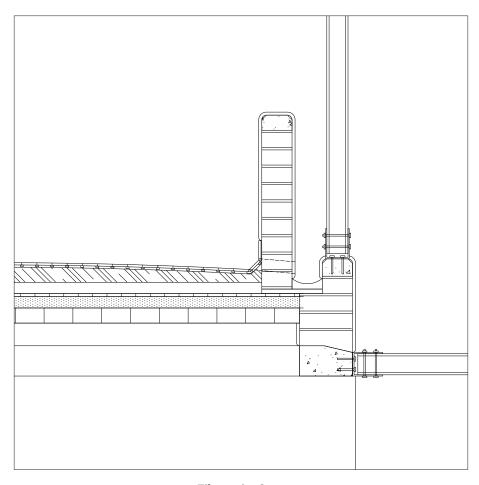
Stone Pane for water and impact protection Adobe Masonry Dump Course Concrete Footing

Foundations Detailing



Clay tiles paving 2mm
Clay Screed 5mm
Timber board 2mm
Sand infill
CEB Vaults 100mm
Eucalyptus beams (anchored to concrete ring-beam)

Ceiling/Flooring Detailing



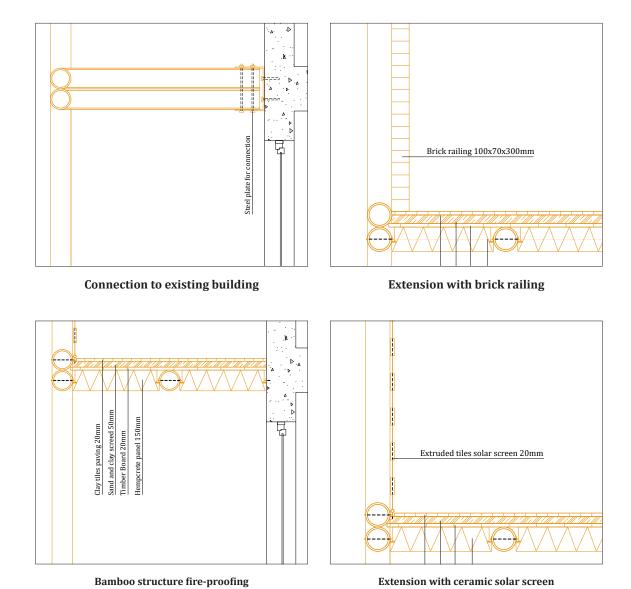
Tiles paving 2mm

Anti-impact patches made of recycled tires (for floatin paving structure)
Clay Screed 5mm
Hempcrete insulation layer 5mm
Timber board 2mm
Sand infill
Vaulted structure

Roof Detailing



Condominium Add-ons Bamboo Framework



Condominium Add-ons Detailing

Water and Rainwater

Water is an extremely valuable resource in Ethiopia. Access to clean water is still a problem Addis Ababa is struggling with. A undersized sewage system, and the lack thereof, is polluting rivers all over the city. However, Addis Ababa gets 1189 mm of rain every year, and this is causing even more problems with frequent flooding. Thus, if on the one hand clean water is lacking, on the other there is an overabundance of rainwater.

By designing a system that is able to deal with rainwater, so that it does not constitute a safety hazard with flooding, and is also able to store it and make it available to inhabitants when needed, not one, but two great issues Addis Ababa is affected from would be solved in one go.

The proposed system relies on three main strategies: Stormwater Management, Rainwater Collection, Wastewater Depuration

Stormwater Management

To deal with stormwater, raingarderns and temporary ponds can be used as urban features. These would allow rainwater to be store and realise into the ground slowly, avoiding floods.

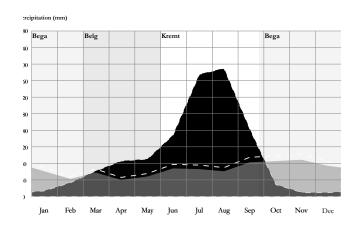
Rainwater Collection

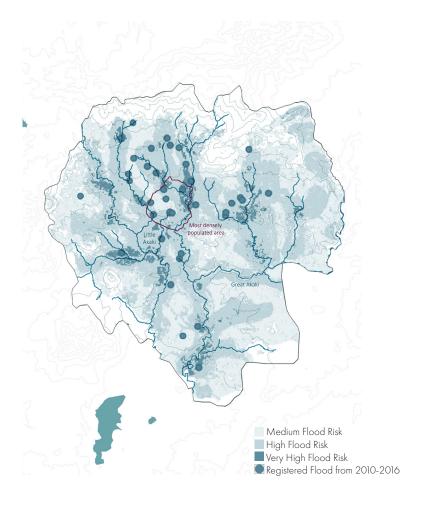
The roofs of the new buildings are designed to harvest rainwater, this is then led to a series of tanks and cisterns incorporated in the structure.

Wastewater Depuration

Considering the low and already overloaded capacity of Addis Ababa's municipal sewage system, an alternative could be represented by a phytodepuration system. This relies on the use of plants and natural layers to depurate wastewater. Even though the final product cannot guarantee standards for drinking water, it can still be used for a series of other purposes in households' activities.

A phytodepuration plant usually requires a great amount of space, but in condominiums ensable this is almost always available in great quantity. It also requires maintenance, however this can be taken care as part of the collective facilities of the neighbourhood.





Rain and Flood Risk in Addis Ababa

Water harvesting

Annual Collection Calculation

 $\begin{array}{ll} \textbf{Annual Rainfall } [m] & 1.089 \\ \textbf{Roof Area (single unit) } [m^2] & 38 \end{array}$

Collectable Rainwater (per year) [m³] 41.382 or 41'382 l

Phytodepuration Plant

Area Dimension Calculation (A)

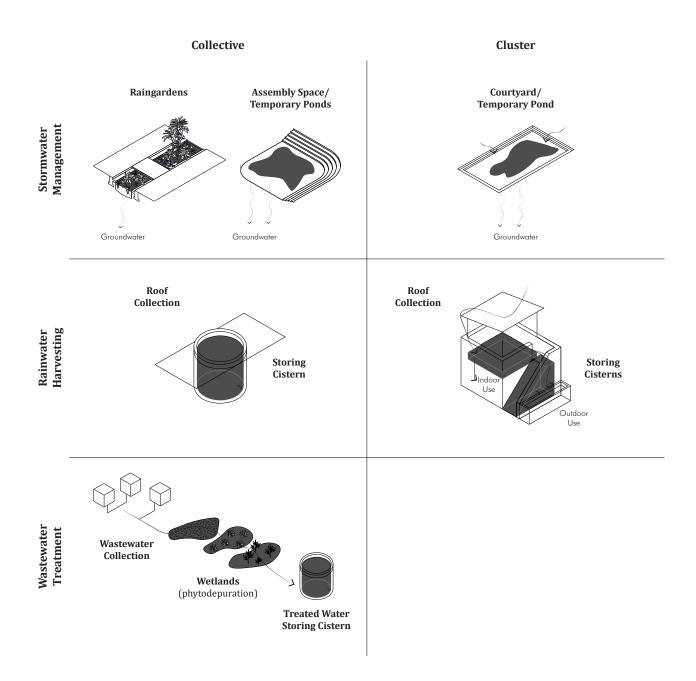
A= Depuration Area per person * n. of persons

Depuration Area per person [m ²]	5
Average household size [pp]	4.8
Dwelling Units (new dwellings)	500

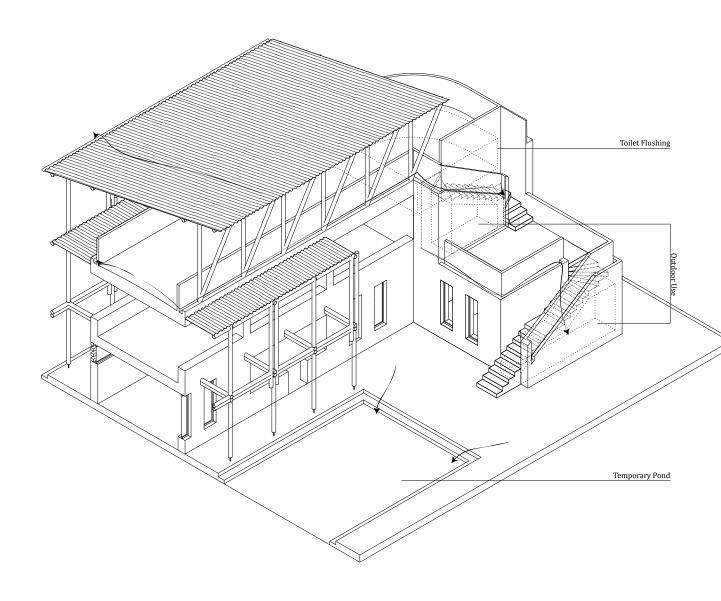
A= 5 * (4.8*500)

A=12'000 m²

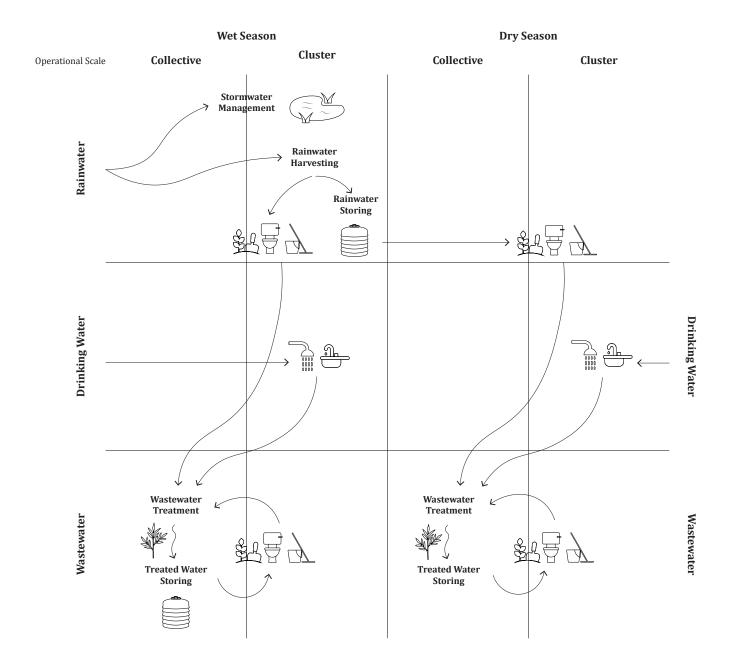
 $\begin{array}{lll} \textbf{Available Empty Area on Site} \ [m^2] & 17'000 \\ \textbf{Residual Area} \ [m^2] & 5'000 \\ \textbf{Existing Dwelling Units that can benefit} & 210 \\ \end{array}$



Water Management Strategies

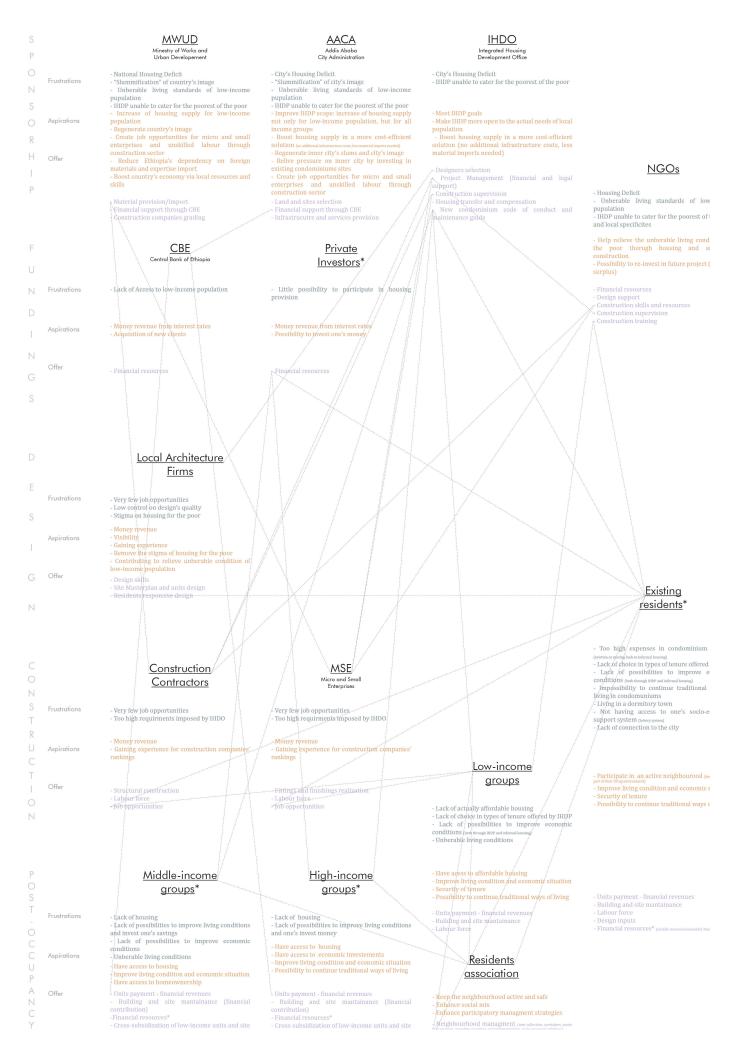


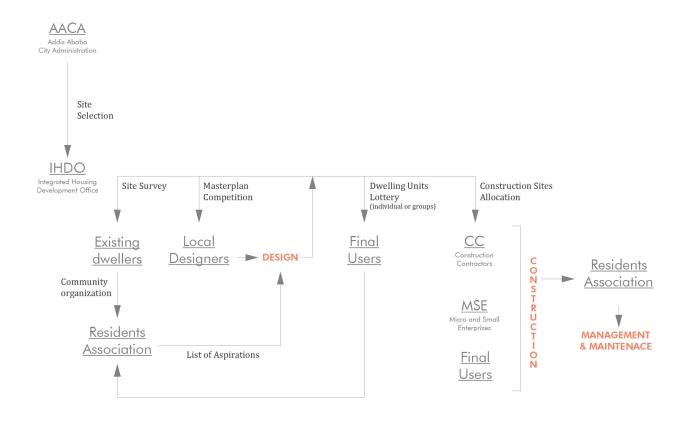
Water Strategy Applied on a New Building

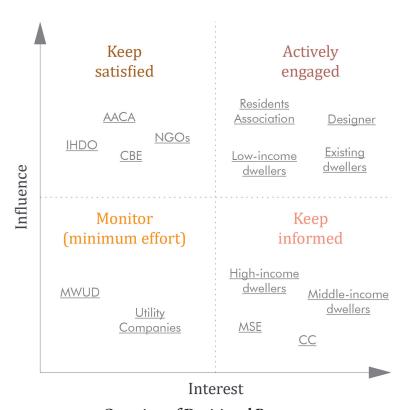


Water Cycle

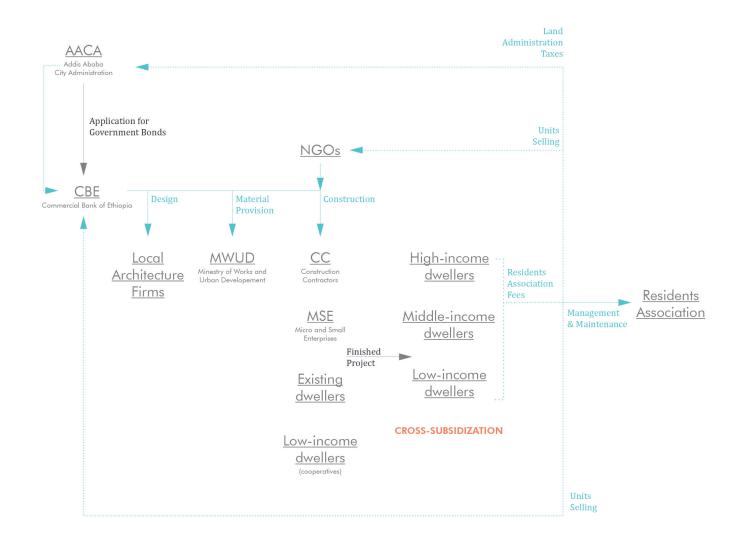
Stakeholder Analysis and Managerial Scheme



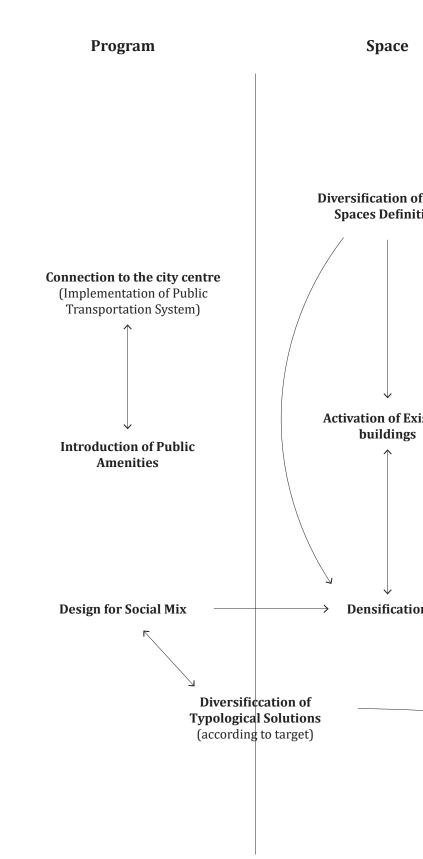


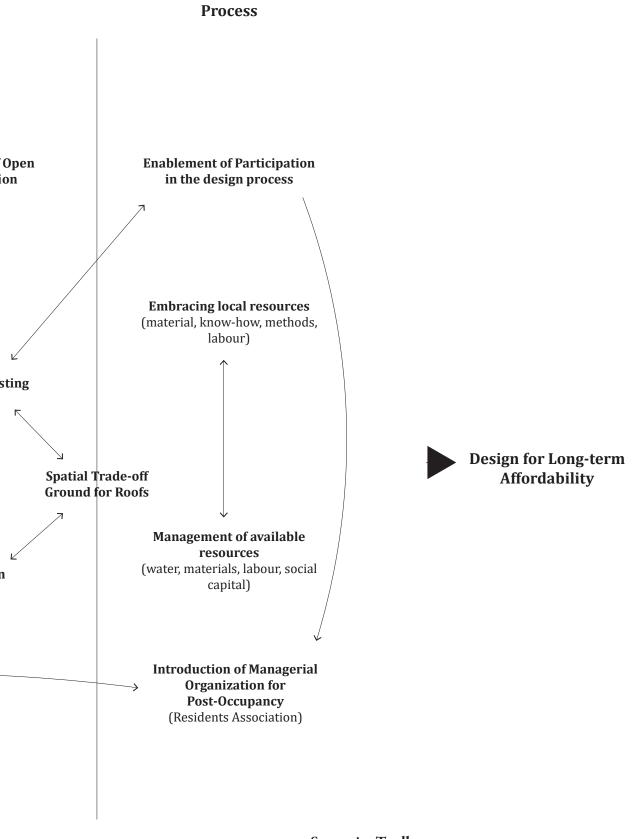


Overview of Decisional Process



Financial Model





Strategies Toolbox

Akaky Kality Testing Ground



Akaky Kality Condominium Site

Bird-eye view





2003 2008

Tabula Rasa Approach

Site Development



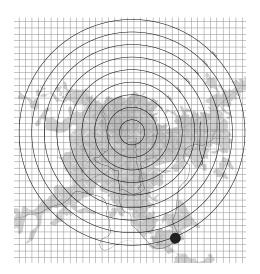


2015 2020

The Akaky Kality Condominium Site is located right along the administrative border of Addis Ababa, along the south edge about 18 km away from the city centre.

Previously farmland, this area is now sharply divided by a high intensity road into two distinct entities: on the north side, urbanization has taken over, whereas the south side still presents traditional Ethiopian agglomeration spread in the farmland.

Constructed between 2012 and 2015, now the area houses almost 2'000 households. Even though the site consists of mainly residential units, thirteen communal buildings are also provided, along with several commercial units.



Site Location

Distance from the city centre

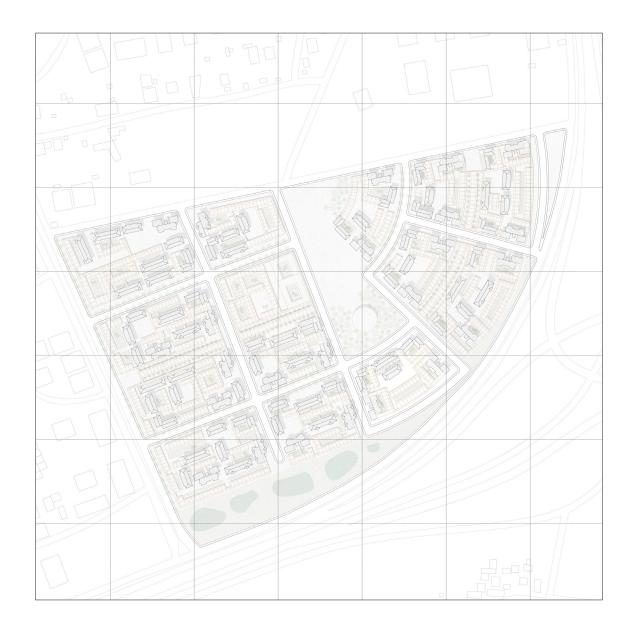


Edge Condition

Site Situation Map



Current Situation



Proposed Masterplan

FSI 0,78 1,02 0,17 0,25 **GSI** N. of Dwellings 1925 2410 + 485(+25%)105,2 131,7 +26,5(+25%) Density (dw/ha) Commercial Communal Educational Commercial 5100 sqm ca. Religious Communal 4550 sqm ca. Sport/Recreational Е Natural Public Transportation Hub Low-income 50% ™ Middle-low-income 45% ca. 30% Middle-income Middle-income 55% ca. High-middle-income 20% Incremental units Gallery Apartments + commercial GF: Gallery Apartments: Studio Apartment 1-Bedoom Apartment Studio 2-Bedroom Apartment 1-Bedroom 3-Bedroom Apartment 2-Bedrooms 3-Bedrooms Row Houses: 2-Bedroom Row house 3-Bedroom Row house

Proposed Program

Current Situation

Site Program





Situation Plan Comparison

Current at the top, proposed at the bottom

The site is re-defined and implemented through the use of complementary strategies, as discussed in the previous section. At this scale we can distinguish two types of interventions: infrastructural and programmatic.

Firstly, the street layout is re-defined, to create humancentred open spaces, rather than car-oriented ones. Moreover, the existing green, mostly present as leftover spaces, is substituted by a green and water infrastructure, performing both as a means to define and characterize space, but also as a water-management device.

In terms of program, the intervention acts in two directions: the first concerns with the introduction of public facilities and the diversification of functions. The second addresses the issue of social mix by introducing new typologies in the area.



Socio/Typological Mix Typologies distribution



Program Public facilities distribution



Green and Water Infrastructure

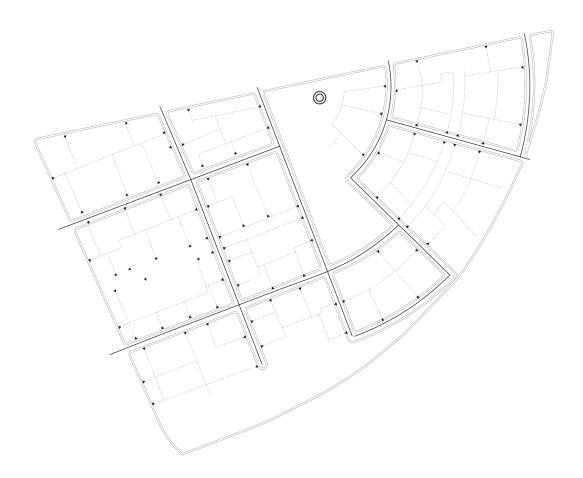


Accessibility and Circulation Infrastructure

Layers of Intervention

Infrastructure

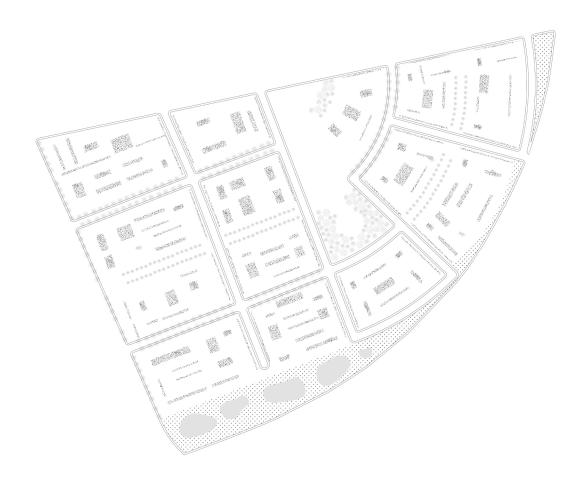
Accessibility and circulation



The original street layout is redefined to create a hierarchy of circulation spaces. Vehicular traffic is limited around the plots, where parking spaces are also provided, whereas within the plots pedestrian circulation is favoured to enhance social and economic interaction. Circulation within the plots takes also into consideration safety routes, in event of fires or other emergencies all the building can be accessed.

Infrastructure

Green and water

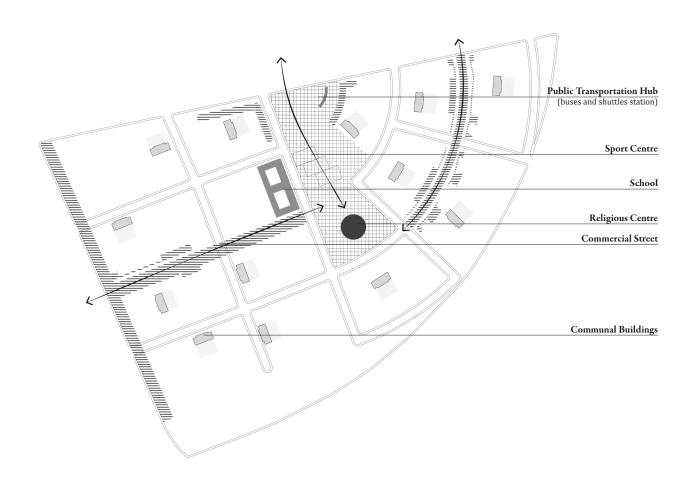


The green infrastructure is completely re-defined in order to combine multiple benefits deriving from it. Tree lanes and raingardens run along the streets (both vehicular and pedestrian) to create shaded spaces for circulation and manage rainwater overloads. Additionally, courtyards and other communal open spaces can perform as

temporary ponds in case of rainwater overloads, thus avoid flooding. Finally, a water depuration site (phytodepuration) is located along the south edge, in order to create a filter between the neighbourhood and the highway, while also providing clean water and taking some loads off the municipal sewage system.

Program

Amenities



Even though the program' specificities are hypothetical (as they should be the result of interviews with the actual residents), amenities and communal facilities are organized on the site. The edges become more porous and engage with the surroundings with a commercial ground floor, which continues into a market street that activates also the inner neighbourhood. A public transportation hub is also located along the north border,

providing space for a bus stop, car sharing and shuttle services. The main public amenities, those which act at the neighbourhood scale, are located along the central spine, creating a mingling spot for the entire community. At the scale of the compounds communal buildings are reprogrammed as administrative centres for the inhabitants. Other, smaller, amenities are distributed within the compounds.

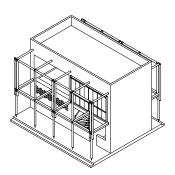
Program

Social mix and typologies



The three main typologies are organized in the site according the needs and aspirations of the target groups they cater for. The mixed typology (commercial ground floor and gallery apartments) are located along the site's edges and along the active inner streets to generate

porosity. Row houses are positioned in more introverted streets, with direct access to parking areas. Incremental housing is located within the existing compounds, protected from vehicular traffic, redefining and activating open spaces.

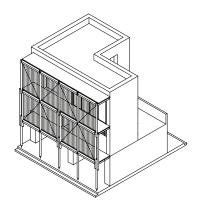


Incremental

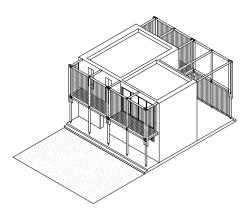


Middle-income

(middle)High-income

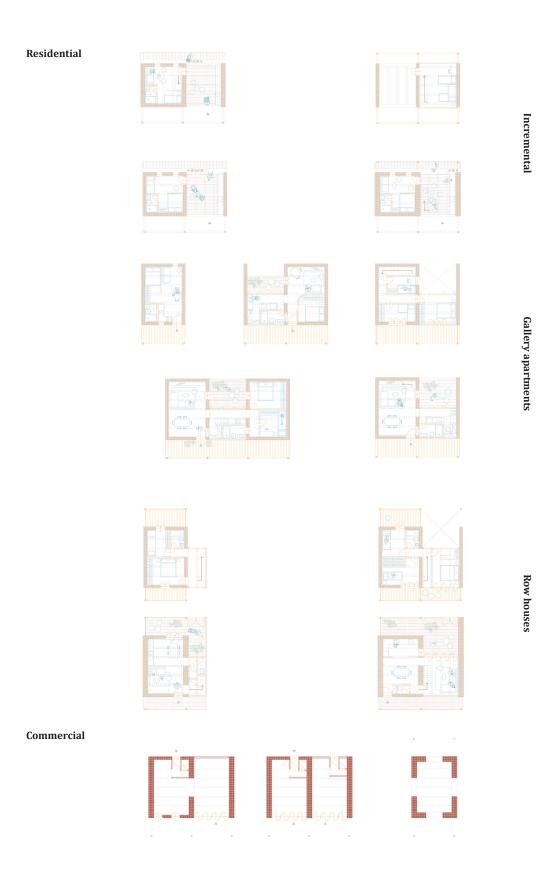


Mixed Commercial GF + gallery apartments



Row houses

Typologies Overview



Typologies Floor Plans Abacus

Incremental Typology

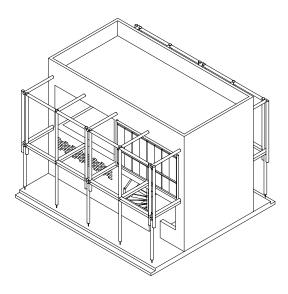
Low income

The incremental typology is designed in response to the needs and lifestyles of Addis Ababa's low-income groups. Incrementally, indeed, allows them to extend their space when economic resources can allow the intervention.

The basic unit layout is also designed in response to their lifestyles. It consists of $32~\text{m}^2$ equally divided between indoor and outdoor spaces, where most of the household activities take place. The Indoor unit is provided with a bathroom, and can be used for multiple purposes during the day. No other internal partitions are provided. The windows towards courtyards provide daylight, while the high window towards the street entrance guarantees ventilation, while also maintaining privacy and safety from intrusions. The entrance to the dwelling is via the outdoor unit, which also provides the connection with

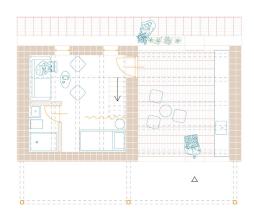
private or shared courtyards. The outdoor space is also equipped with a basic outdoor kitchen and water access. The vertical connection for double storey units, is located outside providing an additional layer of flexibility. Being independent from the rest of the space, it allows the separate use of the upper floor, which can be also rented out.

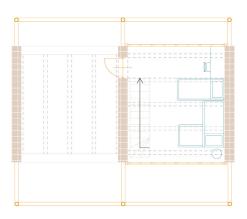
The maximum appropriable space for these units defined by their very structure. The roof is already provided (as a private or shared roof), as well as the space for the develop-able units, these, too, are provided without any finishing, nor any internal arrangements. In this sense, incrementality performs as an inherent feature of the typology, and is, therefore, already embedded in its conception.



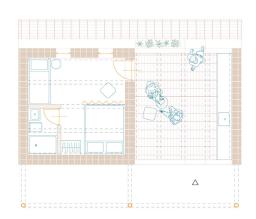
Basic Unit with mezzanine 44 m^2

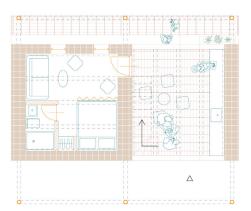
Basic Unit + 2 64m²(+25)





Basic Unit 32m²

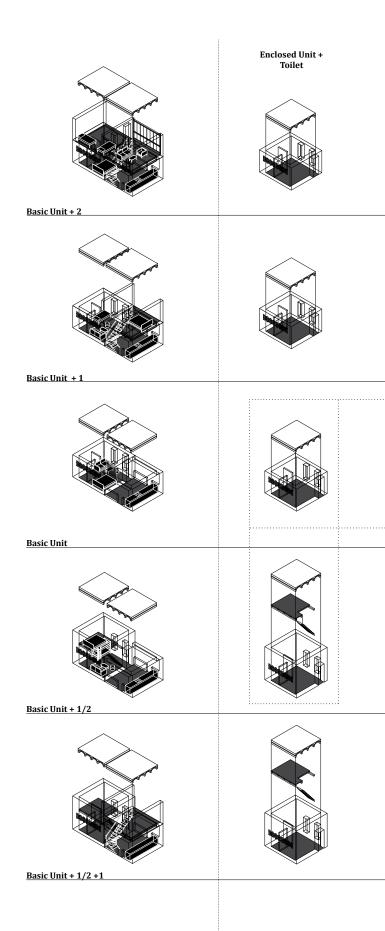


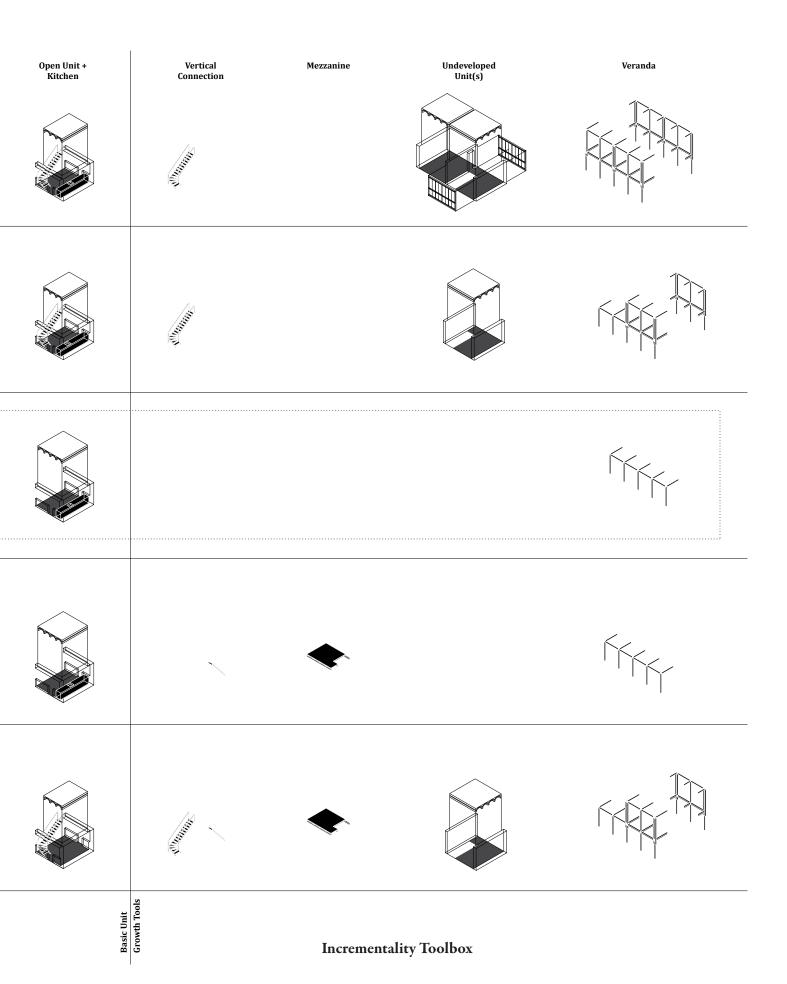


Incremental Units

Units Variations

Incremental units results from the combination of basic elements. A basic unit, which can vary in size (one-storey or with an additional mezzanine), can be combined with other simple elements: undeveloped units (up to two), vertical connections, and additional external structures (verandas). From their combination units of different sizes can be arranged. Starting from the basic units of 32 m², to a final unit of 64 m² interior space plus 25 m² of verandas, generating a diversified pool of possibilities, that can cater for small nucleus to bigger households.





Mixed Typology (Commercial + Apartments)

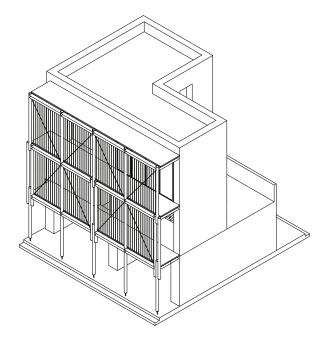
Middle income

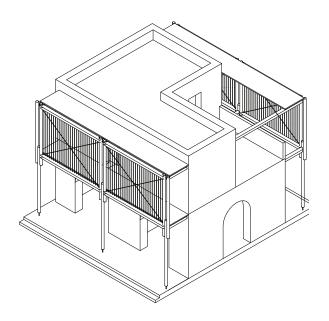
The mixed typology consists of a ground floor dedicated to public program and the upper storeys to residential units, in the form of gallery apartments. This typology is designed to cater for the needs of middle-income groups. Different sizes cover the range from studios to three-bedroom apartments, following the standards of the condominium. However, each unit is equipped with a private outdoor space towards the more intimate side of the house, while the distribution gallery defines the most public side of the building.

The bathroom and the kitchen are organized as a service core, with the first being always directly connected to the private terrace through a completely open-able wall.

Commercial units also vary in sizes and spatial connotations. Smaller units of 24m² can cater for kiosks and small workshops, or they can be combined to create bigger spaces that could be used for small offices, or shops. Other dimensions can be obtained by introducing additional structural elements, as shown in the previous section.

Additionally, commercial units and the dwellings above can be combined if so needed.





Residential



Gallery Apartments + Commercial Units

Units Variations

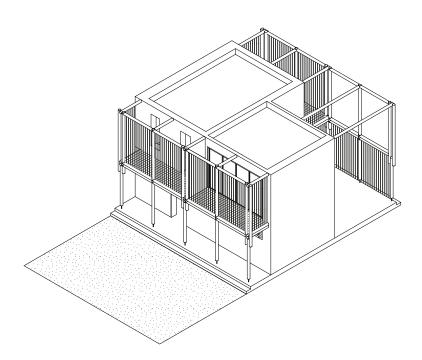
Row Houses

Middle-high income

Row houses are designed to cater for the needs of middle-to-high income families. Each house works independently form the others, with its own private access directly from the street. To guarantee more privacy and enclosure, both the sides not connected to other units are wrapped with a bamboo structure. This performs both as a veranda, but also as the definition of bigger outside spaces. In fact, a private garden in located in the back of the units.

The entrance is filtered by the bamboo structure, which defines a portico in the front of the house. Besides offering more spacious rooms and an independent status, this typology differs form the apartments also in the number of services and in the access to private outdoor spaces from each room.

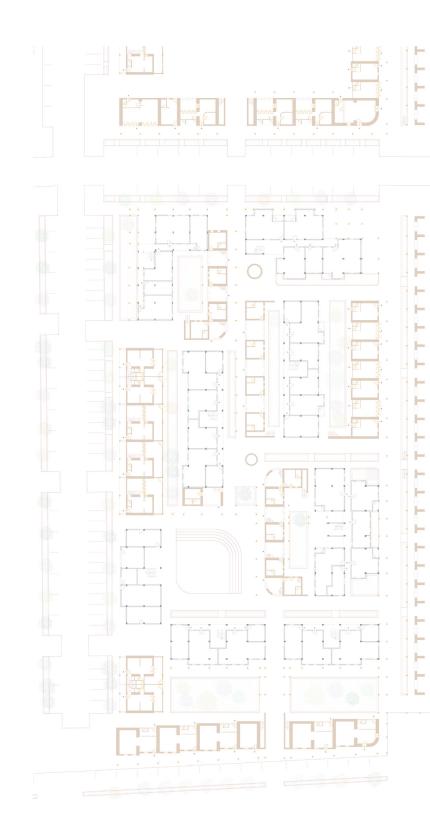
Two sizes are proposed, however, bigger units can also be realized combining more modules, or using bigger ones.



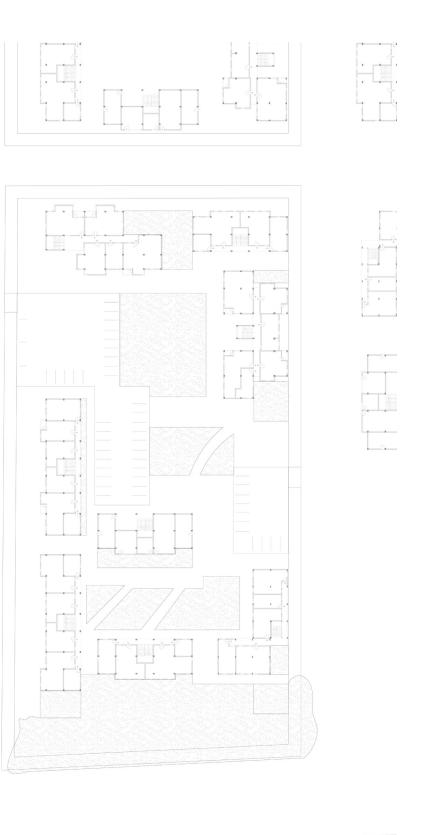


Row Houses

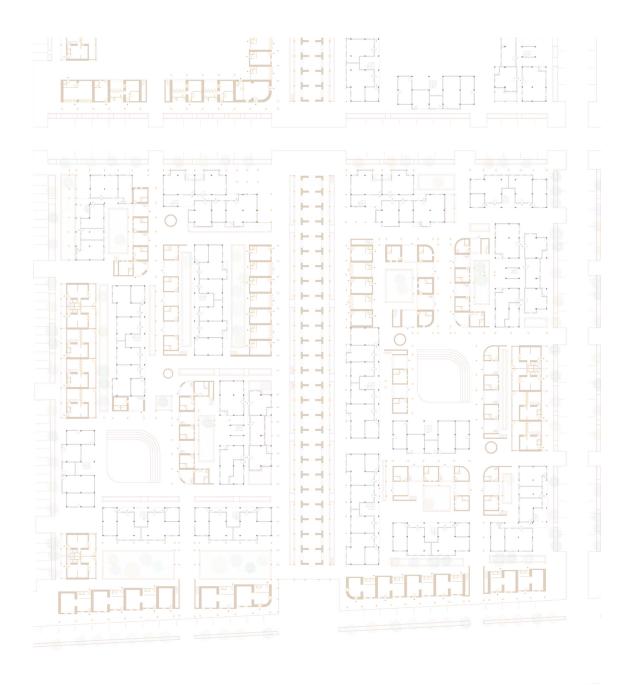
Units Variations



Urban Arrangement After the Intervention



Urban Arrangement in the Current State



Urban Arrangement After the Intervention

- Index of Spaces-

Around_Bordering Spaces

Edges
Internal Active Streets
Internal Introverted Streets

Between_Spaces for Exchange

Market

Inside_Aggregation Spaces
Communal Plaza
Shared Courtyards

Around

Bordering Spaces

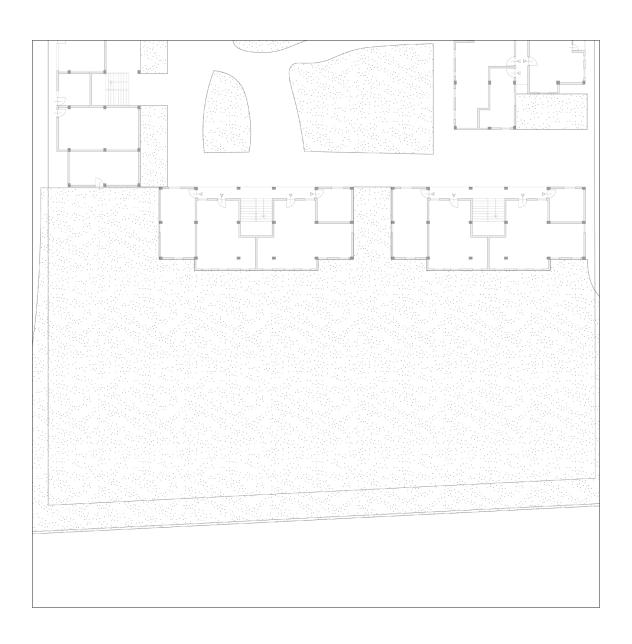
Street space acts as a border around and within the neighbourhood, if desired it can enhance exchange and interaction, or it can be offer a more introverted environment as well. These spaces are the result of the combination of the different elements presented in the previous section.

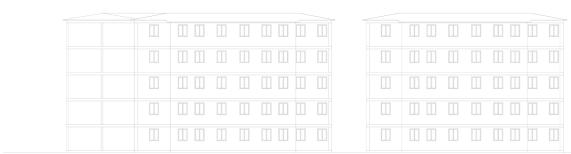
Mobility, green, water and bamboo frameworks define the urban infrastructure, and create, together with new buildings, particular spatial conditions. In this sense, three types of bordering spaces have been defined: edges, internal active streets, and internal introvert streets. In terms of typology the first two are defined by the mixed typology, whereas the last by row houses.



Internal Active Streets Mingling

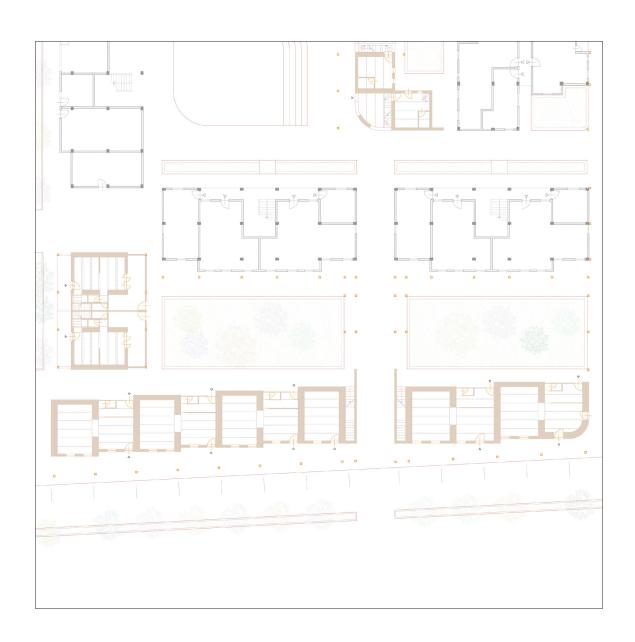
Edges

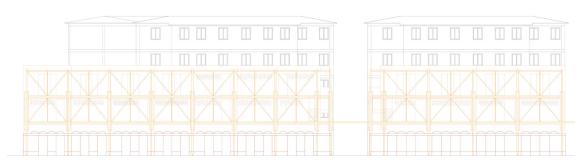




Current Edges

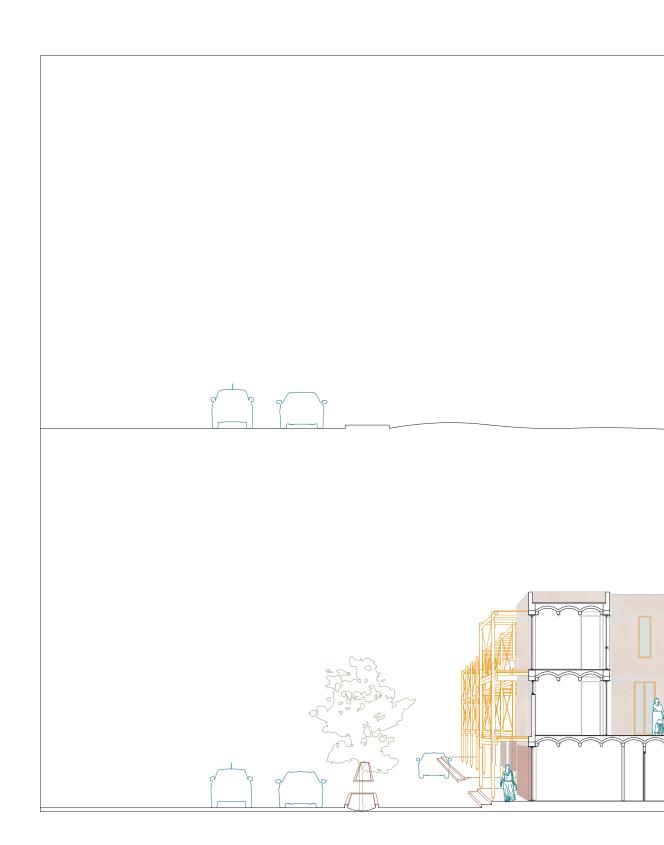
Floor plan and elevation





Re-defined Edges

Floor plan and elevation



Current Edges

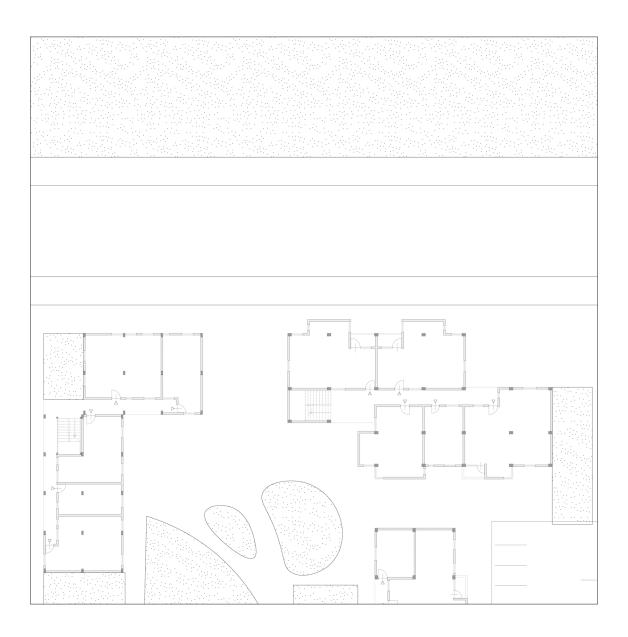
Street Section



Re-defined Edges

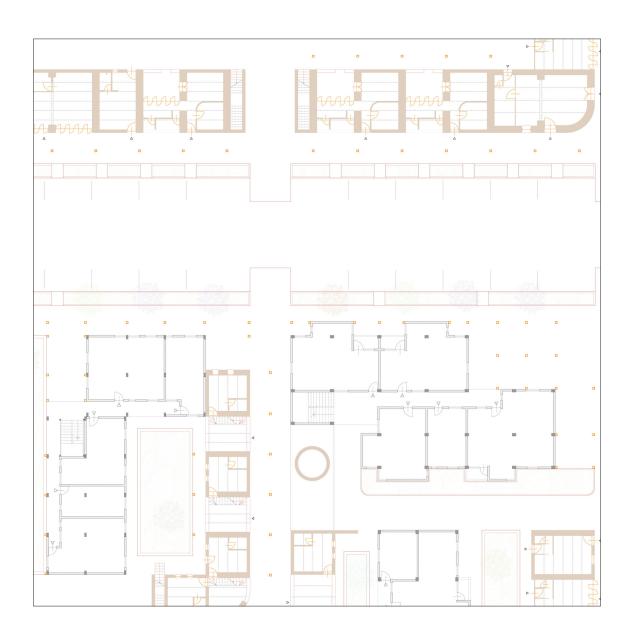
Street Section

Internal Active Streets



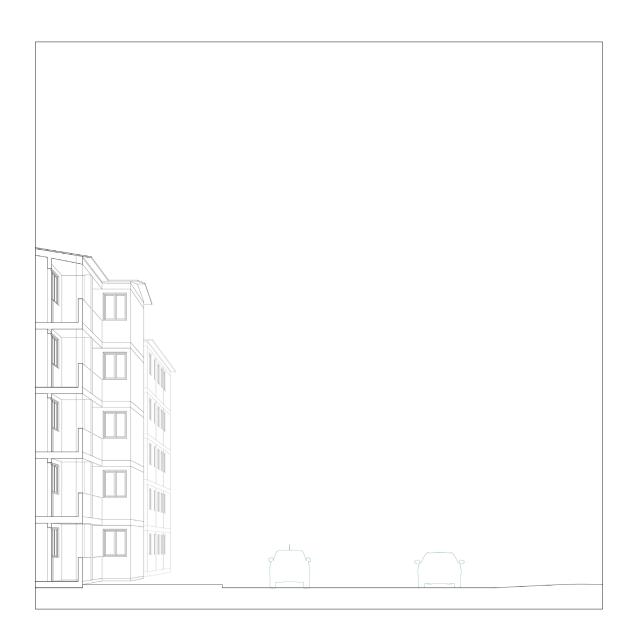
Current Inner Street

Floor plan



Re-defined Active Street

Floor plan



Current Inner Street

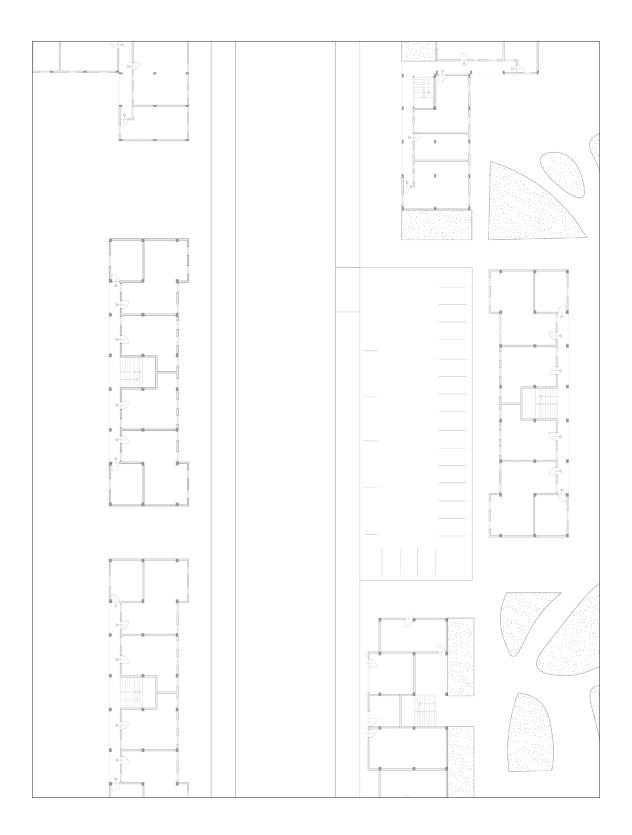
Street Section



Re-defined Active Street

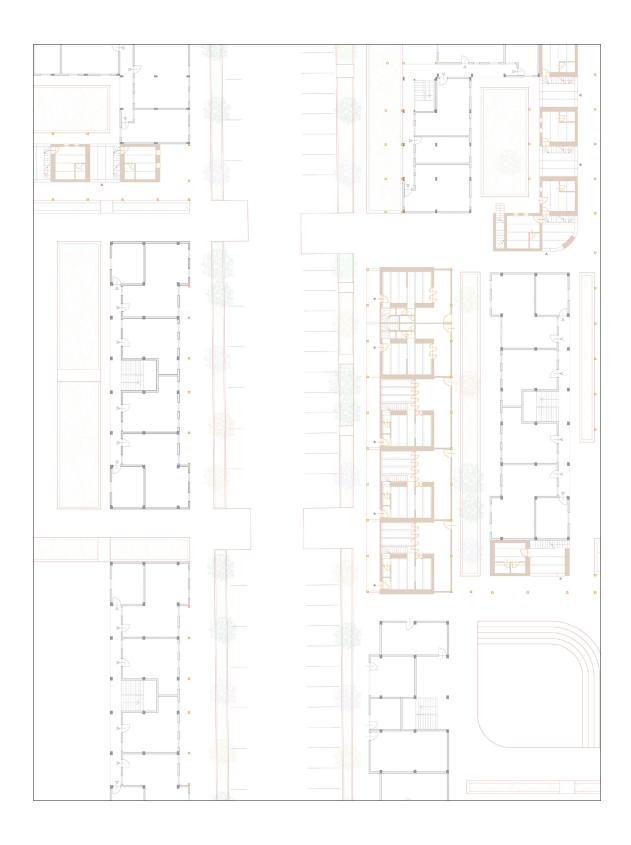
Street Section

Internal Introvert Streets



Current Inner Street

Floor plan



Re-defined Residential Street

Floor plan



Current Inner Street

Street Section



Re-defined Residential Street

Street Section

Between

Spaces for exchange

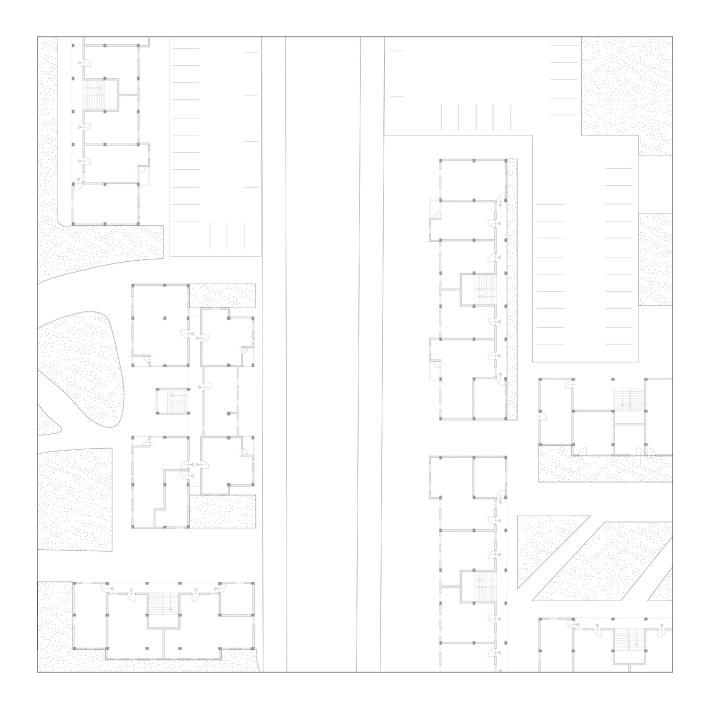
Taking the place of a previous street, the covered market activates the neighbourhood from the inside, providing a place for exchange within the community, while also engaging with the surrounding areas.

While on the ground floor a multitude of activities takes place simultaneously, the upper floor are quieter, and filtered by the bamboo veranda.

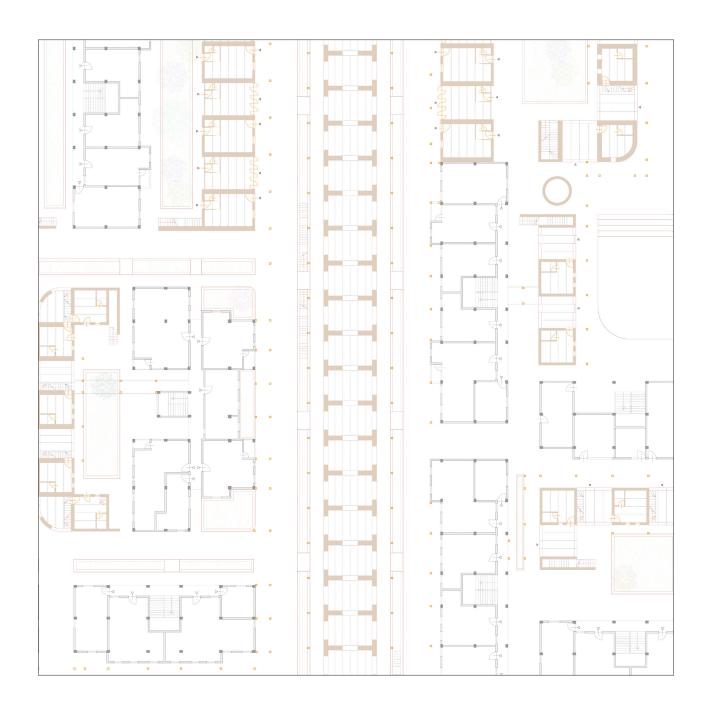
The new market is extends into the existing buildings, where window shops or stores can be opened, while the upper floors, alike the ones on top of the commercial units, remain quieter, filtered by the secondary, addedon, bamboo façades, if so desired by the inhabitants.



Market Space



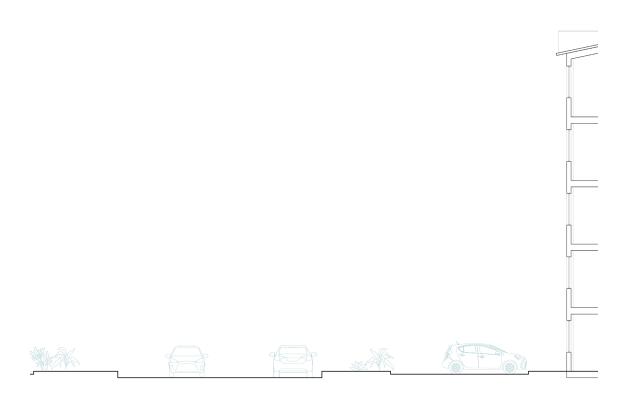
Current Inner Street

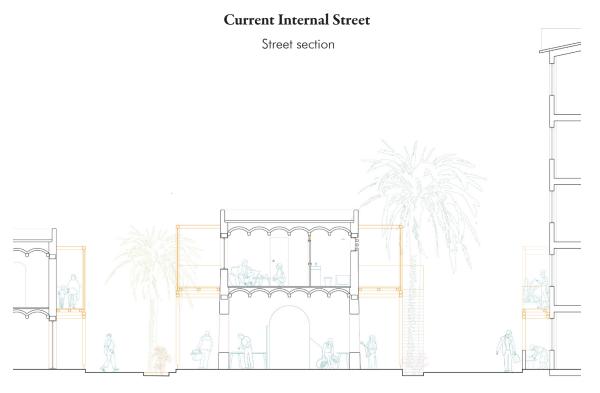


Re-defined Market Street



Space Flexibility





Re-defined Market Street

Street section



Current Internal Street

Street view



Re-defined Market Street

Street view

Inside

Aggregation Spaces

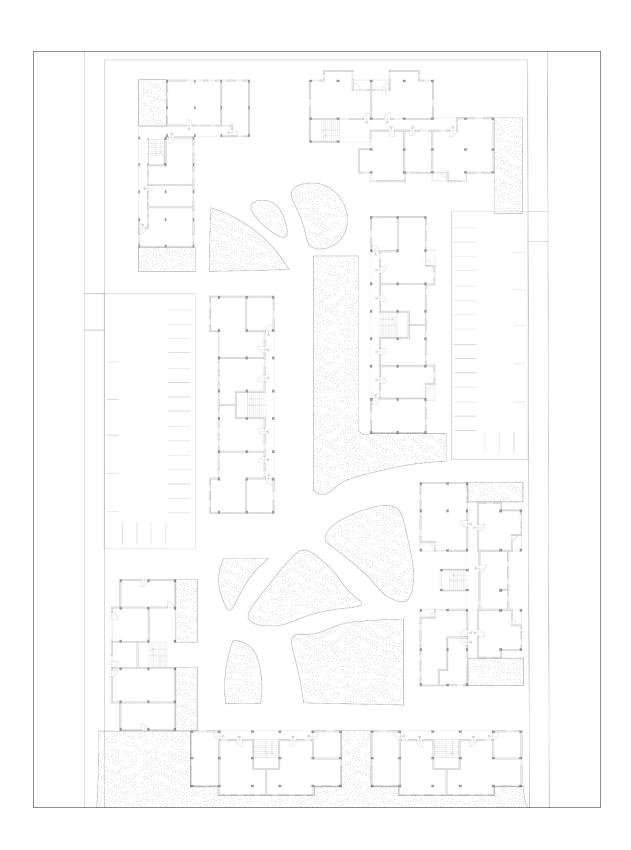
The inside of existing compounds is activated by multiple elements. Here two, circulation spaces and green infrastructure are re-defined generating new relations between the existing building and the new additions. Here, the incremental typology questions the existing

relations between buildings and open spaces, by defining patterns of voids able to interact with the human scale. Two main types of spaces can be found in inside the compounds: communal spaces, and shared-private courtyards.

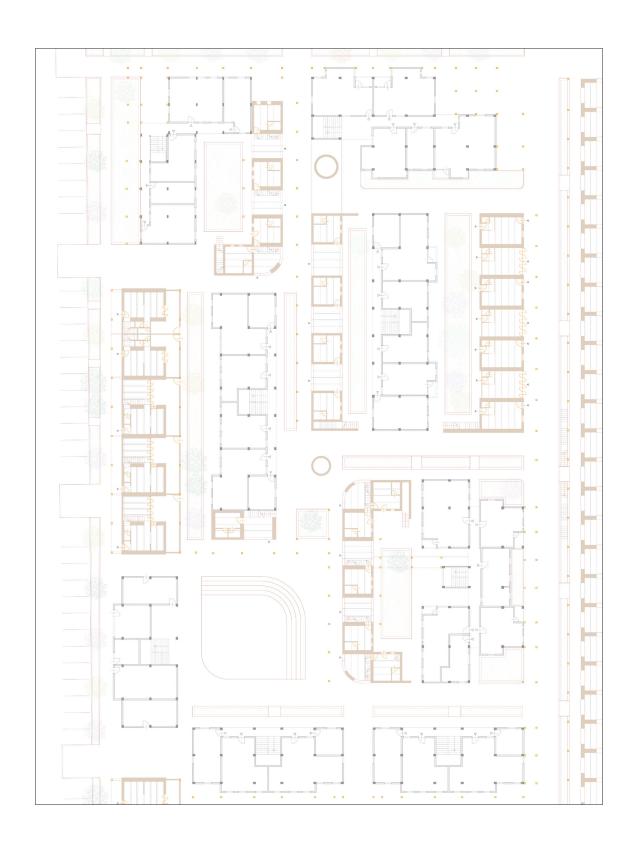


Inside the Compound

Living/socializing/producing



Current Courtyard



Re-defined Courtyard(s)

Inside

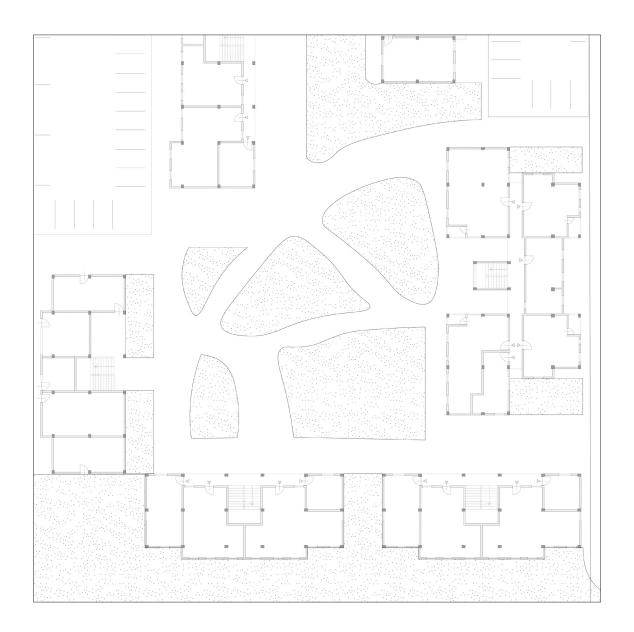
Plazas

Located in proximity to the existing communal building, the plaza acts both as a space for community, and as a device for water management. It activates the communal building, giving it a new role, while as an excavated spaces it is able to collect water during the rainy season. The bamboo framework of the new building gives it spatial definition, creating a portico-like structure all around it.

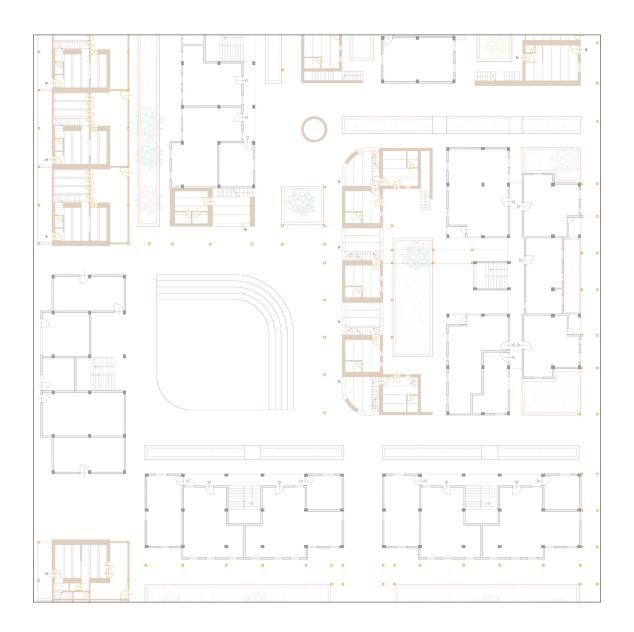


Simultaneity in the Communal Plaza

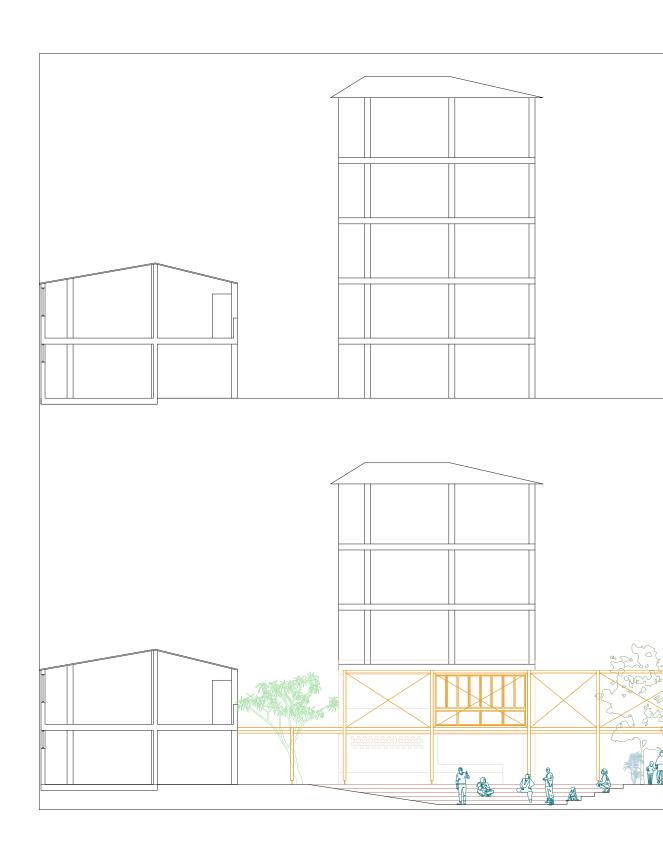
Living/socializing/moving/resting



Current Courtyard

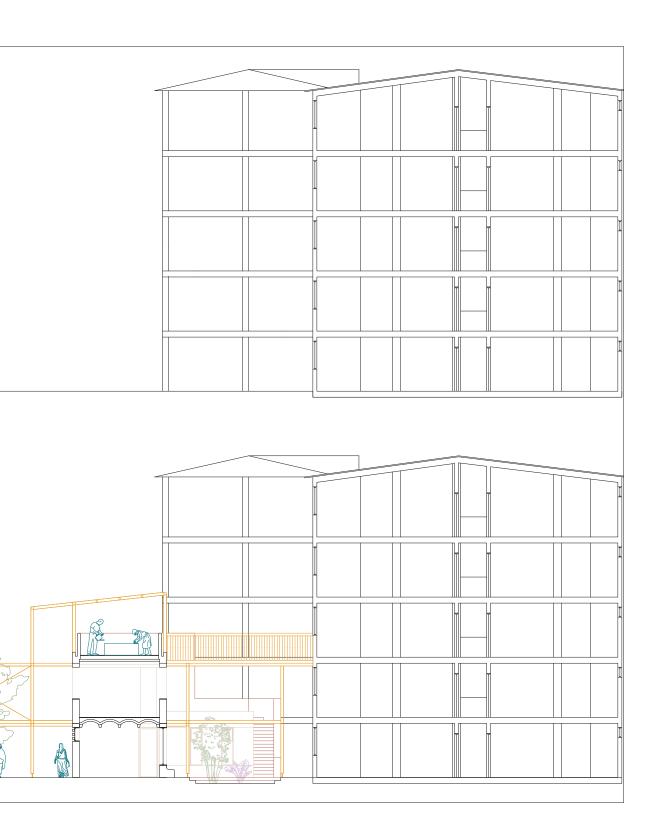


Re-defined Community Space



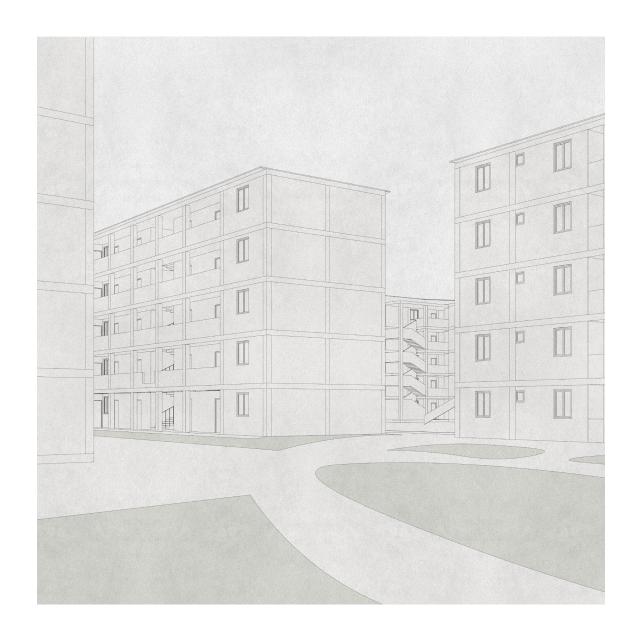
Current Courtyard

Section



Re-defined Communal Plaza

Section



Current Courtyard



Re-defined Communal Plaza

Inside

Shared Courtyards

Shared Courtyards represents the most intimate and introvert space, and the most interesting actualization of the trade-off between densification and re-qualification. The central space on the ground floor is excavated to perform as a water pond during the rainy season, and as a productive space during the rest of the year. In fact, water access is provided for all the residents, as well as places for cooking, gardening and doing laundry.

However, the shared courtyard extends to the rooftop of the new buildings, creating a multilayered and multi-levelled space, able to create a new physical and visual connection to the upper floors of the condominiums.



Simultaneity in a Shared Courtyard

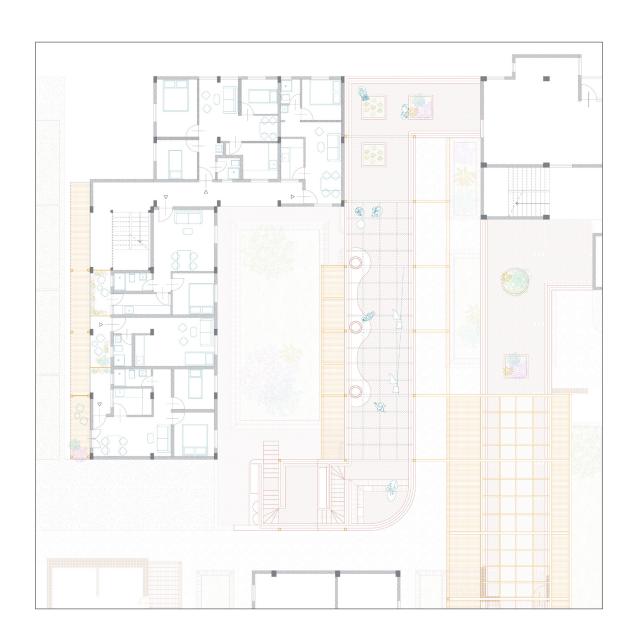
Living/producing/socializing/resting



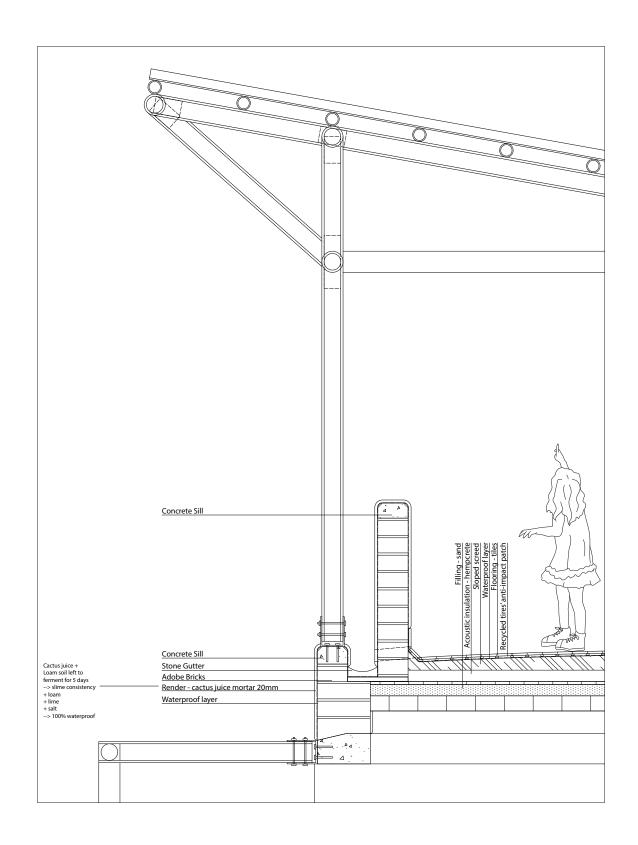
Current Courtyard



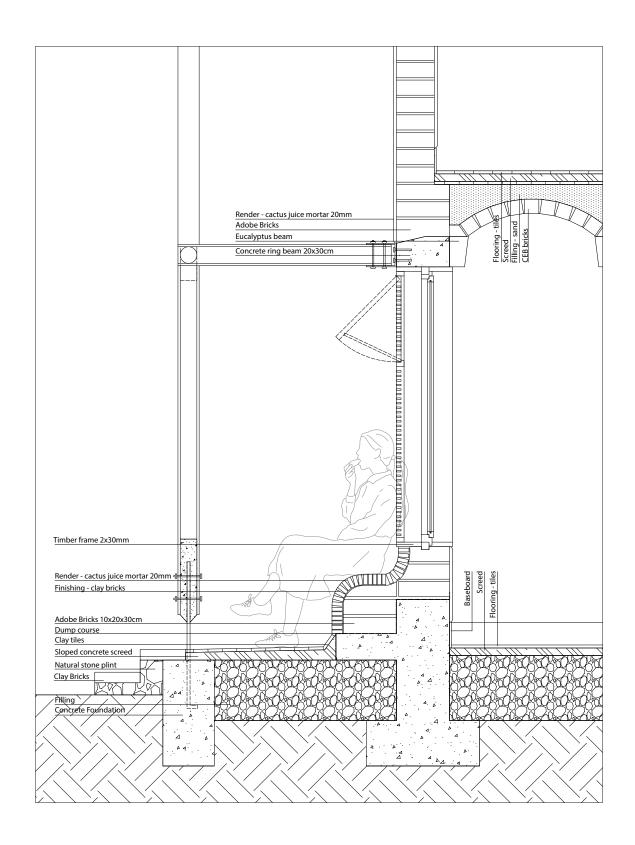
Re-defined Shared Courtyard



Re-defined Shared Rooftop



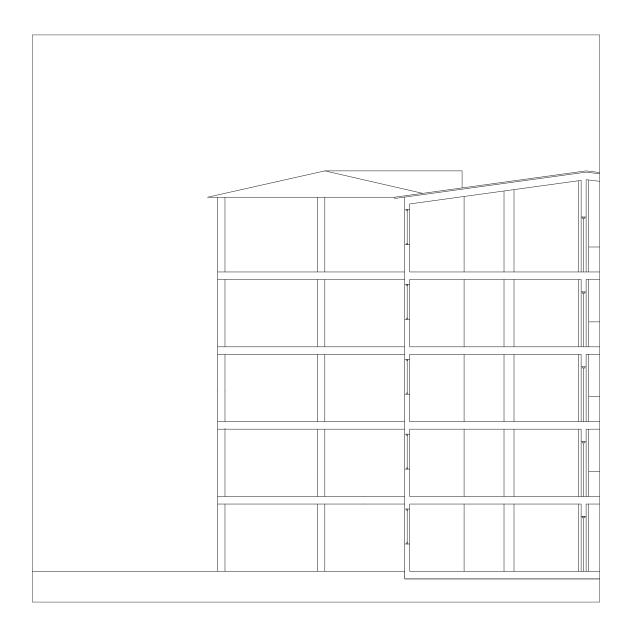
Rooftop Detailing



Bench Base Detailing

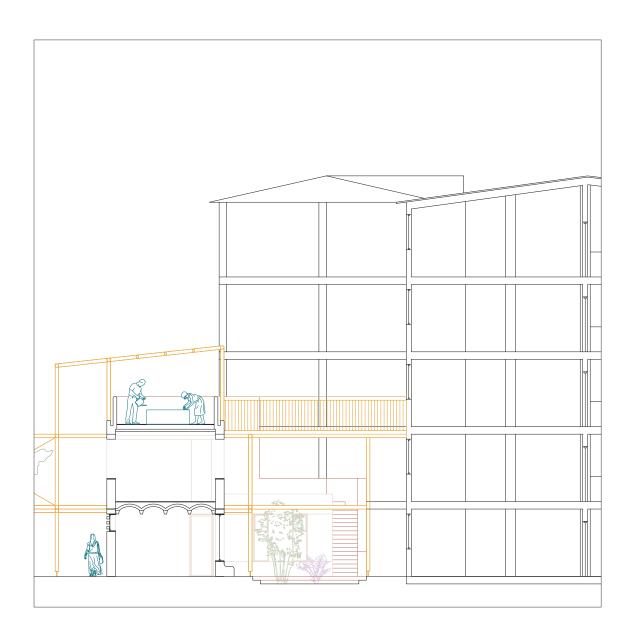


New Units as Means to Create Spatial Qualities



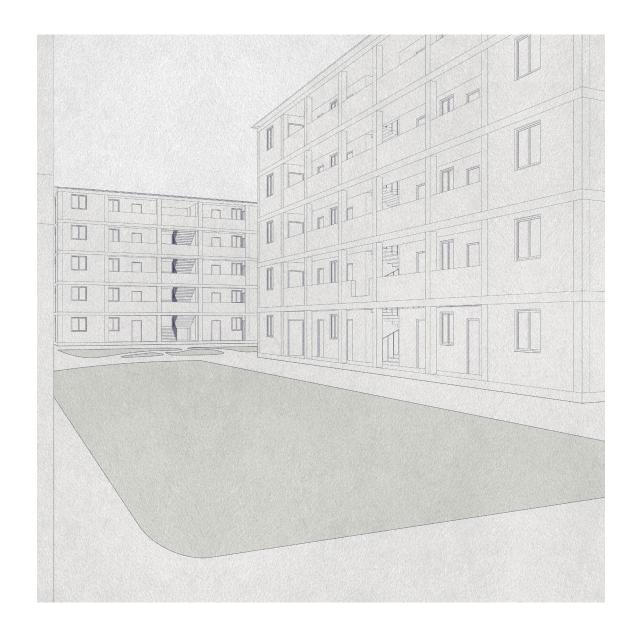
Current Courtyard

Section

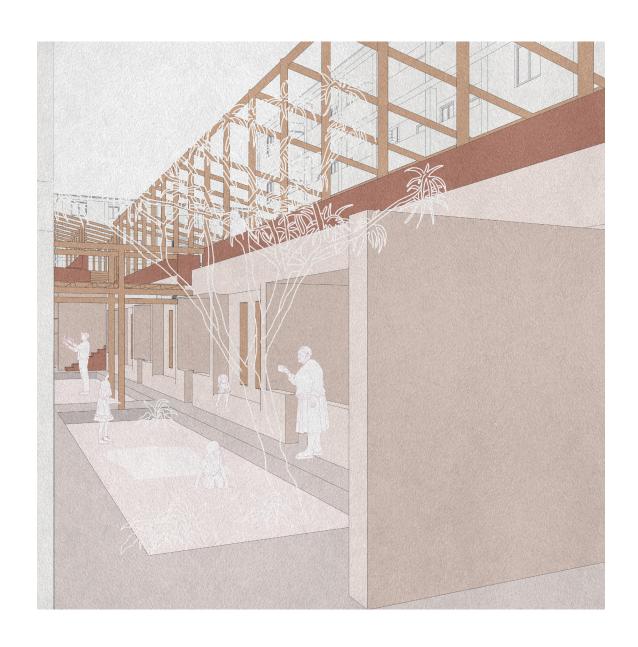


Re-defined Shared Courtyard

Section



Current Courtyard



Re-defined Shared Courtyard

Reflection

Relation Graduation topic – Studio topic – Master Track – Master Programme

The Global Housing Studio "Addis Ababa Living Lab: new ideals for contemporary living" investigates the quest of housing in its multiple dimensions as part of the complex system that is the built environment. Indeed, if it is undoubtedly true that housing represents a significant part of our cities and our lives, it surely does not stand alone.

The housing shortage currently affecting many countries in our world, from North to South, is an urgent issue to which, as architects, we must respond, yet, it also highlights a much more complex urban problem: the quest is never to design just housing but to make cities, and thus, to stimulate relations between parts: spaces, people, knowledge, values and technique. Accordingly, Open Vernacular stresses the need for a more encompassing approach to the housing quest, by recognizing the limitations of housing as an independent discipline and reposition it in the broader context of the built environment.

Research and design

Reflecting upon the work of the past several months I have come to realize how research and design cannot go without one another. Addis Ababa and, more in general, the processes at stake in rapidly urbanizing cities in the Global South are defined by a degree of complexity that cannot be comprehended, nor even addressed without an interdisciplinary and integrated approach. Thus, only through thorough research, this complexity can be unpacked.

For instance, operating in a context such as that of Addis Ababa has emphasized even more the limitedness of conceiving housing as an independent field of architectural practice. The intertwined nature of living patterns in the Ethiopian capital is, indeed, an emblematic representation of the aforementioned complexity, which questions by its very nature the notion of housing as we know it and, therefore, the attributes and values we associate with it. Housing in these terms is the result of the western idea of urbanity and living the urban, and should, therefore, be treated as such. This notion had thus to be redefined in light of socioeconomic and cultural factors, proving the necessity that, the end, rather than conceiving housing as mere space, a shift towards its value in this specific context, and therefore towards the specific needs it caters for, is required. Space alone is, in fact, just one of the many features one has to consider and is incapable to solve problems on its own, therefore, it must be backed up by an encompassing approach, able to integrate and address all those aspects that are at stake in the process of city-making: people, governance, finances, resources and time. Eventually, space becomes a powerful means in the hands of the architect to represent all those aspects, to give them physical meaning and place, but yet again, it

does not stand on its own. In 1972 John Turner wrote "[it is a matter of] what housing does for people, rather than merely what it is", and I believe this perfectly illustrates this much-needed shift in approach. It appears then clear that this notion, that would perhaps be better represented by the term 'dwelling' – being this indicative of a more active and relation-based process – must exceed the mere quantitative attitude usually adopted in defining basic human needs, and open towards a more responsive and context-based approach. In the end, if the aim is to provide housing solutions for Addis Ababa, shouldn't we ask ourselves first what dwelling means in this context?

After analysing the living patterns of low-income inhabitants of Addis Ababa's informal settlements, the notion of dwelling acquires new meanings: living, producing, financing, socializing are all activities that take place inside and around the house. This becomes in turn a time-dependent organism, in which spaces are charged with different layers of use at different times. Being also involved in the financial and social activities of the household, its value highly depends on physical location and social proximity. It appears then clear how, in this specific context, housing cannot be addressed as an independent resource, but rather it should be considered as a powerful means to re-define urbanization processes at the scale of the city as a whole. Hence, a new question emerges in regards to what the meaning of urbanity is in the context of Addis Ababa.

Only in light of this information, it is then possible to assess the issues brought about by the IHDP – Integrated Housing Development Program – carried out by the Ethiopian Government in the past fifteen years to cope with a housing shortage of astounding proportions.. Here the complex and intertwined nature of the Ethiopian dwelling is dismantled and discarded in favour of what aims to be a more ordered – but

foreign – urban organization. Yet, in the end, having a roof on one's head is little help if it comes at the price of not being able to provide food for one's family. This mismatch occurring between local cultural values and lifestyles and foreign-imposed standards has prompted the formulation of my research question:

Could a balance between the excess efficiency of the condominium and the excess resilience of informal processes be achieved by introducing the vernacular as a mediator, this being by nature characterized by efficiency and resiliency as its complementary components, in order to turn the condominium into an active participant in an encompassing process of city-making, towards an inclusive and open Addis Ababa?

An open city, as defined by Richard Sennet, is a complex and autopoietic system in which complementary forces – accretion and rapture – take place triggering a continuous and critical confrontation with the existing (Sennett, 2006). Accordingly, the design has been carried out with a similar didactic and critical attitude, as a continuation of the previously initiated research process rather than as its conclusion. On the one hand, the project is a problematization of the existing approach, an active operation to recognize what has deemed its failure, what are its lacks, what has been overdone or overseen, it is a diagnosis of its failure. Yet, it also works towards addressing and solving those issues, thus opening up new imaginary, new possibilities for speculation, and new perspectives for future initiatives. It is both a diagnosis and a prescription. It does not neglect the past, but rather learns from it to trigger a better future.

Method and Approach

In the Global Housing Graduation Studio students are exposed to a series of different methods and approaches, typo-morphological analysis of precedents, architectural ethnography, literature review, and contextual research, among others. Having the possibility to experiment with a rich variety of perspectives has been of great value in defining my individual approach.

Typo-morphological analysis of precedents provided us with an overview of possibilities, and, more importantly, of a set of benchmarks to which we could relate to and confront with. While acting as an architectural ethnographer investigating our own experiences in dealing with the idea of home, provided us with a hybrid approach able to uncover correlations between space and people. During the architectural ethnography assignment "Anatomy of a home", I had the chance to analyse the relationship between spatial and social changes throughout time in the specific context of my personal experience, my house and my family. Eventually, this experience has not only represented a testing ground for this particular type of approach, but also a significant lesson about the importance of responsive and transformable spaces when it comes to the realm of dwelling.

In parallel, the literature review exposed us to new theories dealing with whit the Global South, African cities, and more specifically with the urbanization processes taking place in these particular contexts and was essential to form a context-specific theoretical framework, which enabled us to recognize and identify the issues at stake, hence, to problematize and speculate in regard to the future of Addis Ababa.

Moreover, the collective contextual research has allowed us to pose a solid base for our speculations, providing a multi-dimensional approach to the built environment and the cultural, social, political, and economic factors that influence it. The cross-referencing of hard data analysis, literature reviews and cultural narratives, spatial manifestations of values, processes, ways of living, use of resources allowed us to grasp the complexity of the Ethiopian urban reality and the relations among all the different parts involved, which has proven an indispensable resource due to the impossibility to experience any of it in person. Undoubtedly, not being

able to carry out fieldwork and the lack of visual support from digital sources, has constituted a big limitation to our work.

Based on this collective work, individual research was also carried out to identify a specific theoretical framework in which to operate. In my personal case this has been firstly realized by the means of literature review and case study analysis, through which I have investigated the theme of openness and that of vernacular, and finally their correlation, and later implemented through design. In this later phase, additional research into the IHDP approach and inductive architectural ethnographic methods have allowed me to test and critically assess my design. Reflecting upon the choice of relying on ethnography as a method without the possibility to carry out any fieldwork, I recognize that this might have resulted in a subjective and romanticized projection of my interpretation. Yet, it is also true that an objective position is scientifically unsustainable as well, in the sense that ethnography is by its very nature is subject to subjectivity and partial narratives, and it could not be any other way. Becoming aware of this might perhaps prompt a revision of our evaluation of the scientific approach, based on the recognition of the value of partial narratives and subjective perspectives as a possible enrichment, rather than a casualty or a fault. Nonetheless, I believe that the degree of subjectivity in the project must be acknowledged.

Lastly, I would like to address one of the main challenges that I have faced during the design phase: the coexistence of specificity and replicability. Being the aim of the Studio and my research to investigate an approach that could be replicated, I found myself struggling to balance the need to find feasible solutions for my site that could also be reproduced in other - although similar - contexts. This required a shift in approach from a site-specific design to a design that could accommodate variations and recognized responsiveness as an added value, thus being able to provide a convincing solution for my site as well as others. In this sense, the site I have chosen to operate in became a testing ground of ideas rather than the final goal of my research. Hence, the aim became to investigate a system rather than providing a solution, to investigate relations rather than simple form.

Ethical Dilemmas

Although it was not the first time I have found myself having to operate in a cultural context foreign to me, having to deal with the theme of housing - likely the most representative and intimate expression of culture - in a country in which I have never stepped a foot in, for people I have never had the chance to meet, has proven far more challenging than expected. This has led me questioning my role as a researcher and a designer operating in a foreign context. Indeed, from the very first stages of this process, I found myself questioning whether as an external and foreign researcher I was just taking part in an unfair circle of imposition of western ideals on foreign, and unquestionably very complex, urbanization processes, and what was my right to take any position on subjects that I knew very little about and could hardly grasp or imagine.

In this regard, through in-depth research work we, as a group, managed to consolidate our knowledge, we could form ideas and position ourselves. However, I do recognize a relevant limitation to my research, and consequently to my design proposal, in the impossibility to conduct any fieldwork, to experience in person the

atmosphere, the smells, the sounds, the people, the culture of Addis Ababa. As mentioned before, if the use of an architectural ethnographic inductive approach has surely informed my design, whether the choice of approach was right considering the conditions in which I operated could be questioned.

Similarly, an ethical dilemma was raised in regard to the legitimacy of designing a replicable system. On the one hand, a one-of site-specific design was unquestionably hard to imagine due to the impossibility of gathering the fundamental information and knowledge for such intervention. On the other hand, a replicable approach also requires a significant degree of knowledge and insight yet having to deal with a far more reaching potential and far more reaching consequences.

Nonetheless, I recognize the value of external perspectives and cross-fertilization, especially when it comes to a complex reality such as that of the urban environment. I can without a doubt conclude that this has represented for me an enriching experience, through which I had the opportunity of being exposed to new perspectives and new realities, which will help me better understand the reality that surrounds me.

Relevance and Replicability

The exponential population growth and the resulting rapid urbanization affecting many cities in the Global South stress more than ever the need for new architectural frameworks able to understand and support these unique urban contexts. The issue has been already addressed by many scholars who have worked towards depicting an African urban paradigm, and more in general a new Global South urban paradiam, able to subvert the current tendency of subjugation operated by western ideals and methodologies. However, in practice this subjugation is still very much present, thus the need is now not only that of researching paradigms, but also to research how this knowledge can be translated into proactive strategies to address the future of the urban environment. In this regard, the project addresses the issue in theoretical and practical terms by subverting the current tendency and proposing a system that is the result of local dynamics and that operates to enhance them. The study of local inhabitation patterns and ways of living has informed the design at all the scales it operates, while vernacular materials and know-how became fundamental features to interpret modernity in local terms, while also providing sustainable strategies for a climate-responsive solution and a significant asset for local economies.

Furthermore, this research deals with the consequences that imported foreign standards and values, widely adopted to solve the need for affordable-mass housing in many countries of the so-called Global South, had on urban production. In response to this, a shift from an object-based approach towards a relation-based approach sets the basis for an enriched interpretation of the notion of replicability, as the ability to respond to general and transversal issues while being responsive to specific contexts and needs. A relation-based approach can be defined as a system that, more than on the parts themselves, which can change in form, works on the relations among parts, and therefore how

objects can influence and change one another. Hence a systematic approach based on a set of strategies, a toolbox is what better represents the final result of the research.

Finally, this research work addresses the pressing issues of urban poverty and social inequality, the exclusivity and closure of contemporary urban production and re-development, by counter-proposing an inclusive, transformative and open approach to city-making. However, if alternatives to current modalities and models are unquestionably needed, it is also crucial to critically address them in a constructive perspective, to avoid yet another tabula rasa kind of approach. It might be possible to re-read their role in function of these new contexts. "Only if we accept the city as it is right now, we will be able to plan her future."(Crimson Architectural Historians, 2009) Accordingly, the condominium sites designed by the IHDP have been taken as a starting point for proposing an approach able to provide new keys of interpretation of the existing built environment, recognizing its value as a fundamental resource, being this related to its cultural, social, or ecological value, to conceive new ways to approach sustainable-city design, in the footsteps of the great work carried out by Lacaton & Vassal in France.

Perhaps the most significant conclusion I have come to, as a result of this research project, is that the most important aspect of openness is not that inherent to the system itself, but our ability to see it in what we have and have deemed, until now, as closed. In this regard, working directly on the IHDP in Addis Ababa has made me realize the urgent need for new keys of interpretations for what is already there, of new approaches able to liberate us from the need to discard and erase what we believe has failed, a more constructive attitude which would allow us to re-think and re-evaluate our built environment as a base to build a more inclusive future for our cities.

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