The Inclusive City

GLOBAL HOUSING STUDIO
ADDIS ABABA, LIVING LAB

Towards socio-economic co-existence through the life of children

Graduation booklet
Yasmine Garti

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Addis Ababa Living Lab
July 2021

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Acknowledgements

I would like to express my special thanks of gratitude to my mentors Harald Mooij, Nelson Mota, Vanessa Grossman and Stephan Verkuijlen for providing their invaluable guidance, enthusiasm, feedback and learning opportunities throughout the course of the graduation project.

Secondly I would also like to express my gratitude to my parents for their continued support, encouragement and enthusiasm throughout my graduation period but also during my academic career. My completion of this graduation project could not have been accomplished without their support.

CONTENT

"In its core areas the city has neighbourhoods with mixed housing condition and mix of different income groups where segregation is not seen commonly."

- Hellom Fantahun Yimam

CHAPTER 1

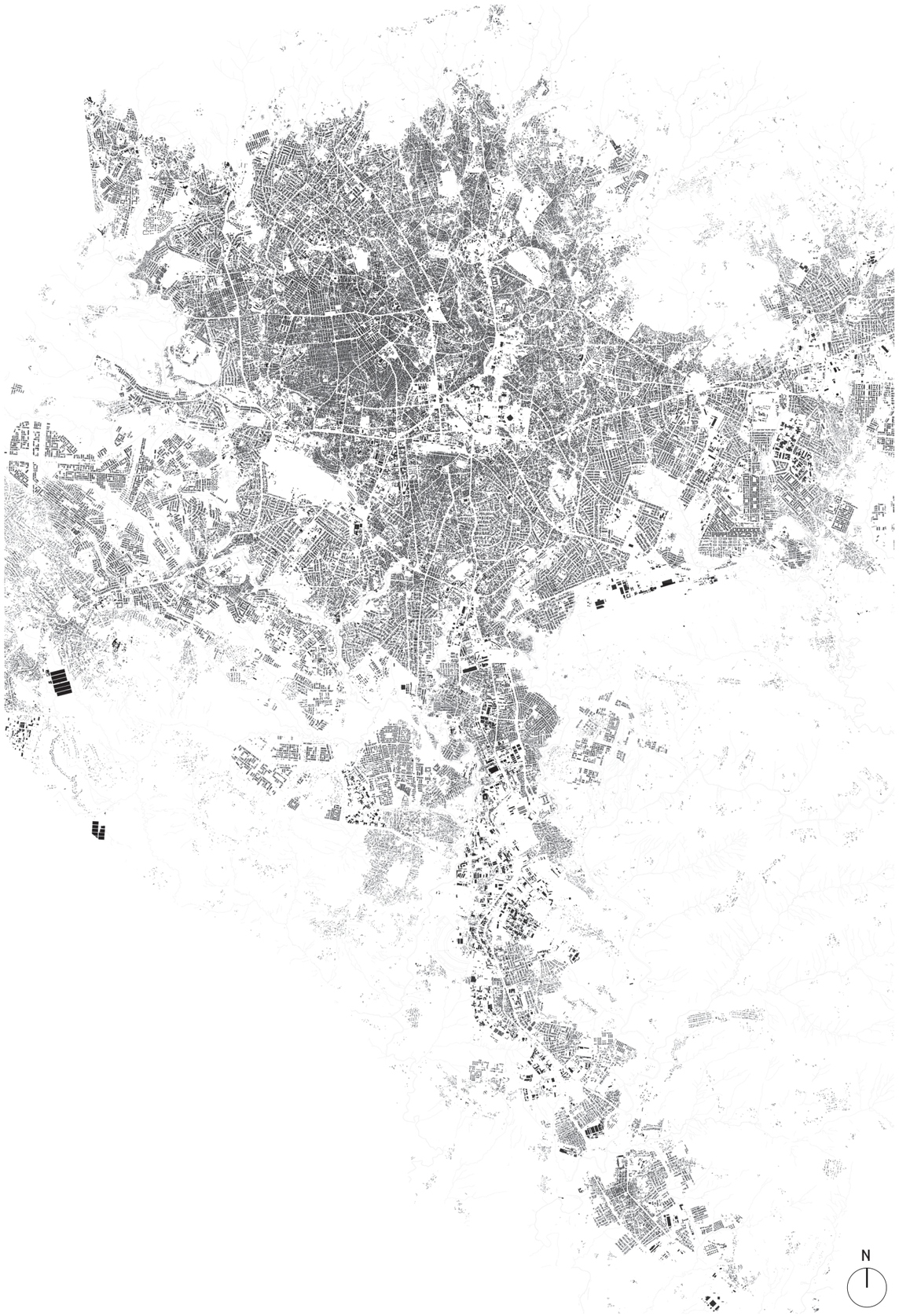
RESEARCH & BACKGROUND

Introduction - Ethiopia

Ethiopia is the largest country on the Horn of Africa. The country is landlocked by 6 countries; Eritrea to the north, Djibouti to the northeast, Somalia to the east, Kenya to the south, and South Sudan and Sudan to the west. With more then 100 million inhabtants, Ethiopia is the most populous country of the Horn of Africa. The capital of Ethiopia is the, centrally located, city of Addis Ababa.

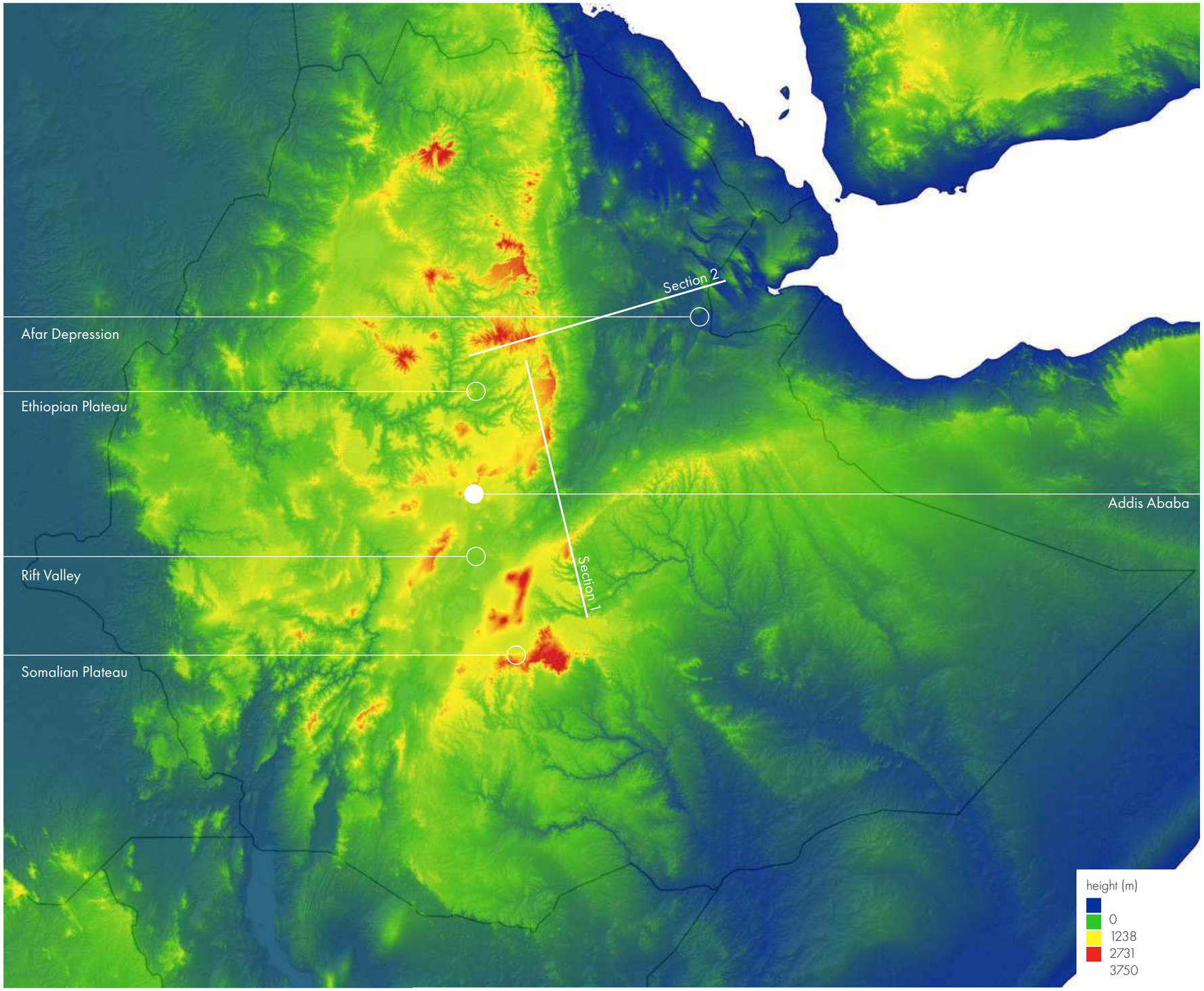
Ethiopia's topography is one of the most rugged in Africa. Five topographic features can be recognized: the Western Highlands, the Western Lowlands, the Eastern Highlands, the Eastern Lowlands & the Rift Valley. The Western Highlands are seen as the most rugged topography of Ethiopia. Here, the Mount Ras Dejen is located, the highest mountain of Ethiopia (4.533 metres). At the same time, rivers like the Blue Nile and Tekeze river are 3.000 metres lower. In this area, a humid subtropical climate can be found.

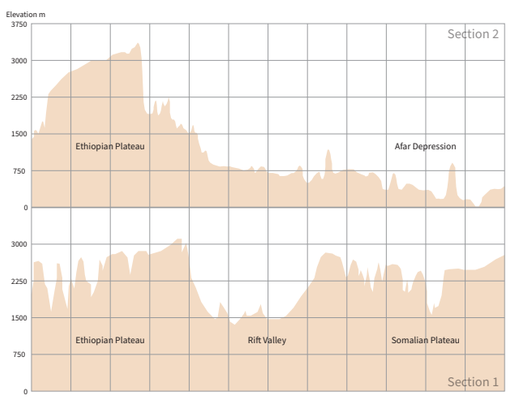
The Eastern and Western Lowlands negotiate the transition from the Highlands to the low Somalian border. The landscape can be defined by "a long train of a bridal gown". These areas are defined by a desert ecology (Tufa, 2008).



Geography - Elevation

The rugged Ethiopian topography can be seen in the following map. The colors indicate the height of the terrain. The blue areas represent the low surfaces and the red areas mark the mountain peaks. The map shows the Ethiopian topography can vary from a sea level up to over 3750m in elevation. Addis Ababa can be found in the middle of the map. With a height of 2355m above sea level, the city is one of the highest located capital cities in the world (NASA, 2014).



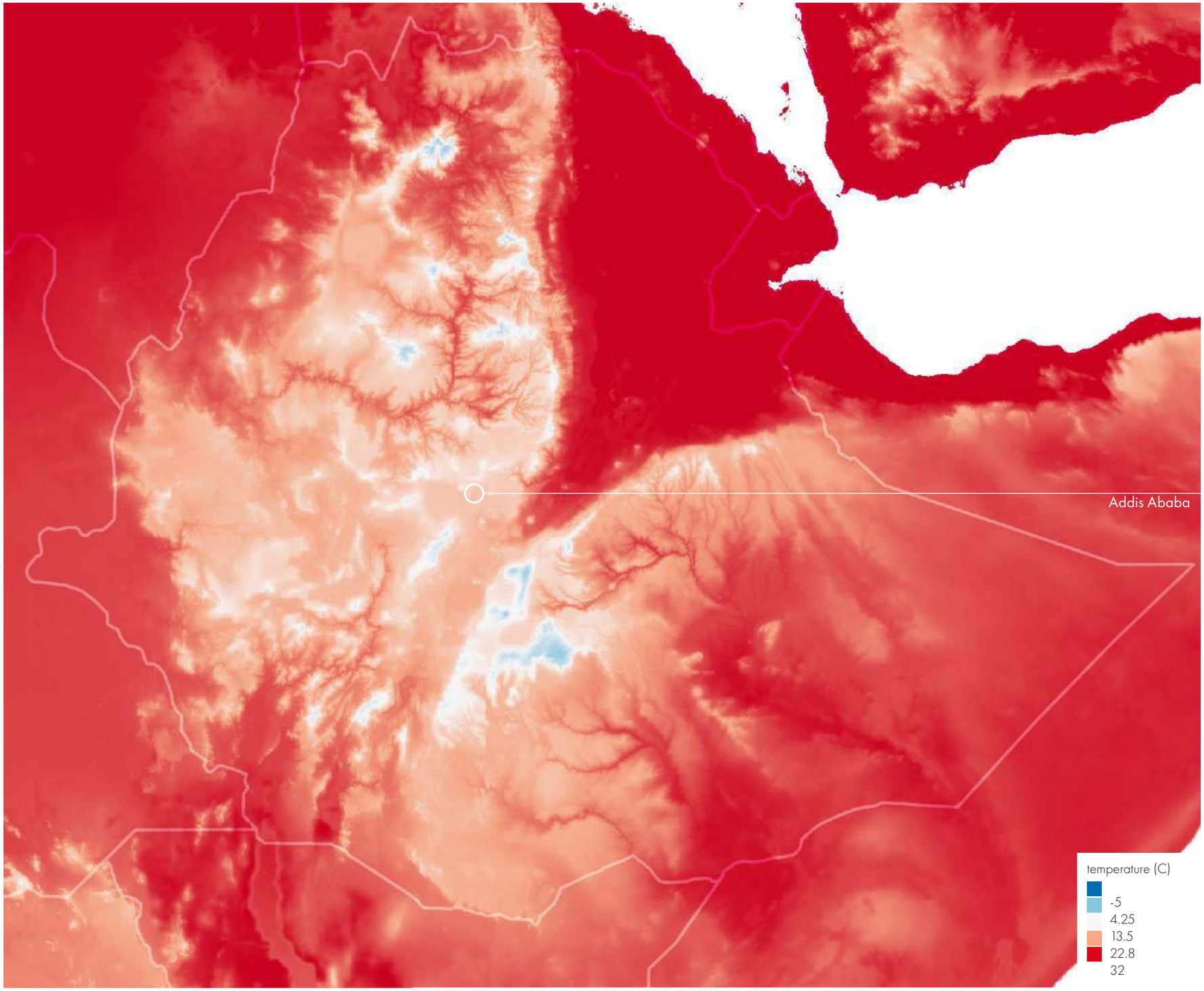


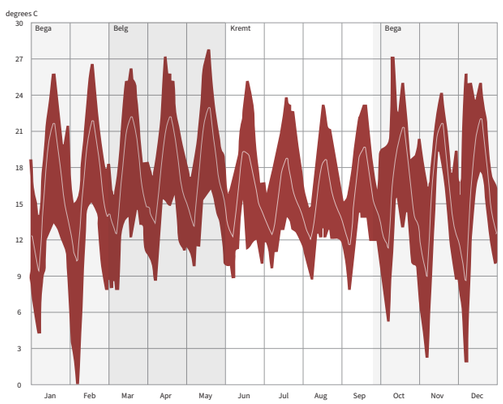
Geography - Temperature

In Ethiopia there are multiple different climatic regions, varying from equatorial desert to a humid subtropical climate. The elevation differences, shown on the previous page, have a major role in these different climatic conditions. Higher elevations experience more tropical weather types, while lower elevations experience climate conditions typical of deserts.

Addis Ababa is located at a height of 2.355 meters. At this height, there is a subtropical highland climate. In the diagram below the climate conditions of Addis Ababa are shown. The white line in the middle is the average temperature. For every month an average 24 hour cycle is plotted.

At the diagram, also three different seasons can be identified: The Bega, The Belg & The Kremt. The Bega is from October to February, The Belg from March to May and The Kremt from June to September (Crumney et al, 2019).



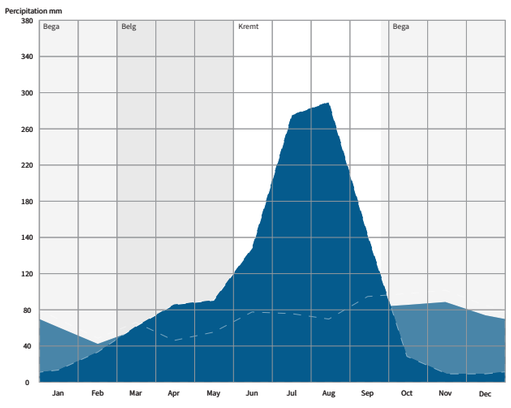


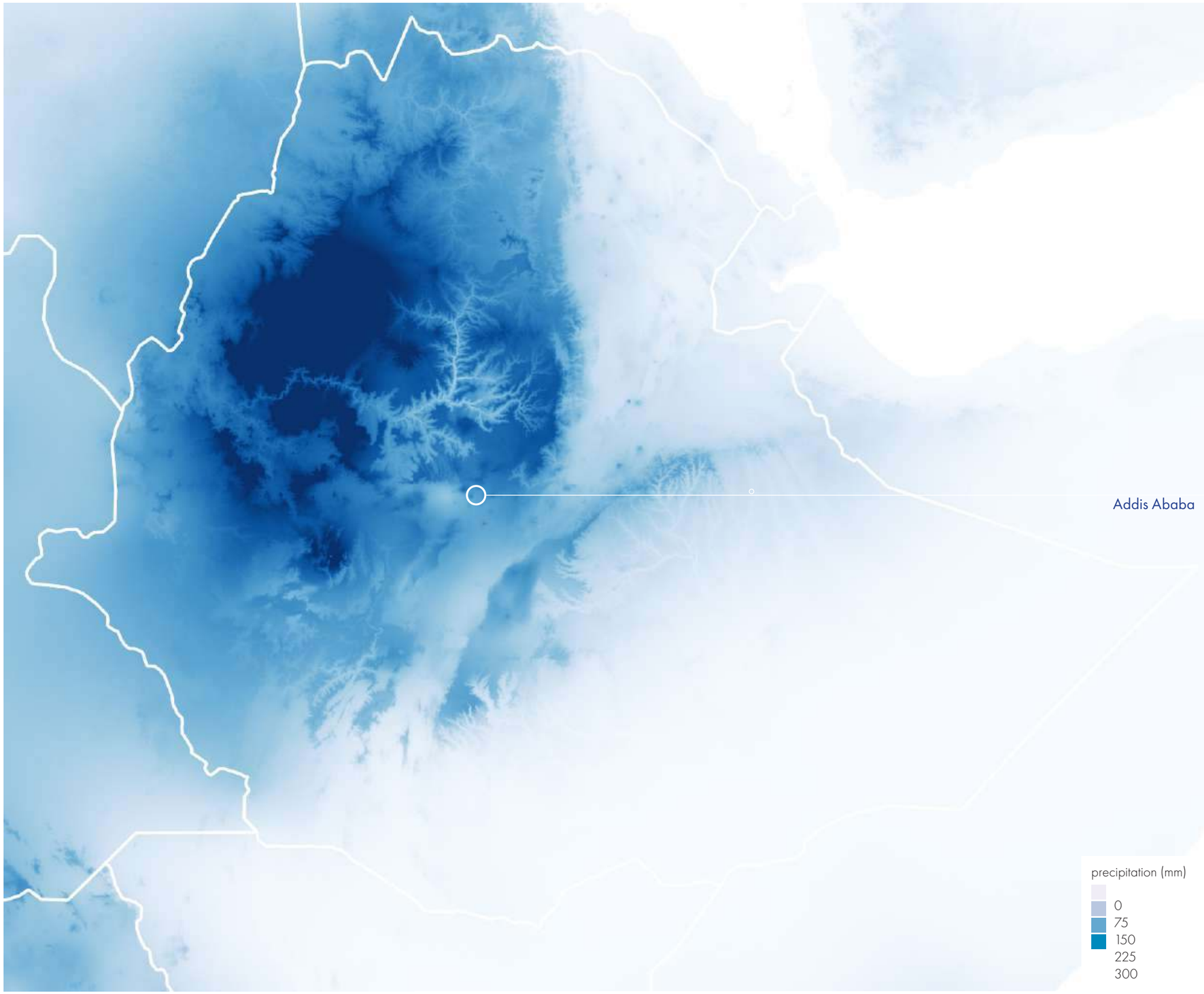
Geography - Precipitation

The three seasons of Addis Ababa can clearly be identified in the diagram below. The diagram shows the monthly precipitation in Addis Ababa (dark blue) in comparison with the monthly precipitation in Amsterdam, the Netherlands (light blue).

The Kremt (June to September) is the long rainy season in Addis Ababa. Per month, up to almost 300 mm rain can fall. The Bega (October to February) is the dry season. The Belg can be seen as the transition between the dry and the rainy season (Hong Kong Observatory, 2020).

The map on the right shows the rainfall in the Kremt (rainy) season. A clear correlation can be found between topography and precipitation. Ethiopia can be defined in four rainfall areas. In the Western Highlands there is year-round rainfall. In the Eastern Highlands (Addis Ababa) there are mostly very rainy summers. The Eastern Lowlands receive rain between April and May and October and November and the driest of all regions is the Denakil Plain (bottom right) (Hong Kong Observatory, 2020).





Demography - Density

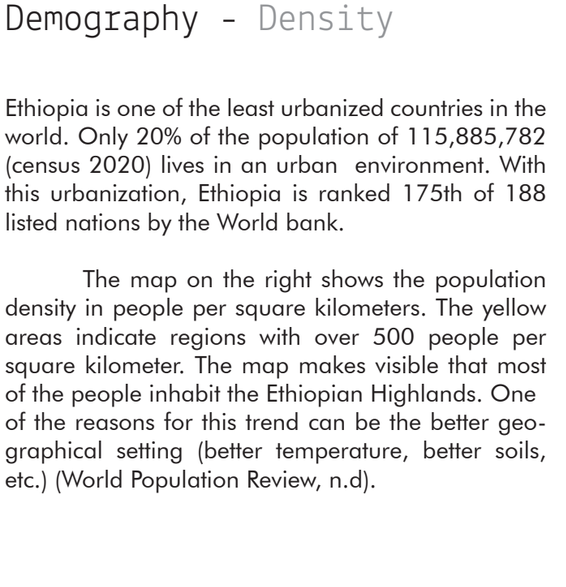
This map of the world shows the Population Density. When the population density is over 500 people per square kilometer the area will show a bright yellow color. How darker the color becomes, the more the density decreases.

As can be seen on the map, Ethiopia is a bright dot on the map. With a density of 214 people per square kilometer Ethiopia on its own is ranked 123rd in the world in density. But when we look at the density of Addis Ababa, almost 5156 people per square kilometer, the bright dot on the map can be explained (World Population Review, n.d.).

Demography - Density

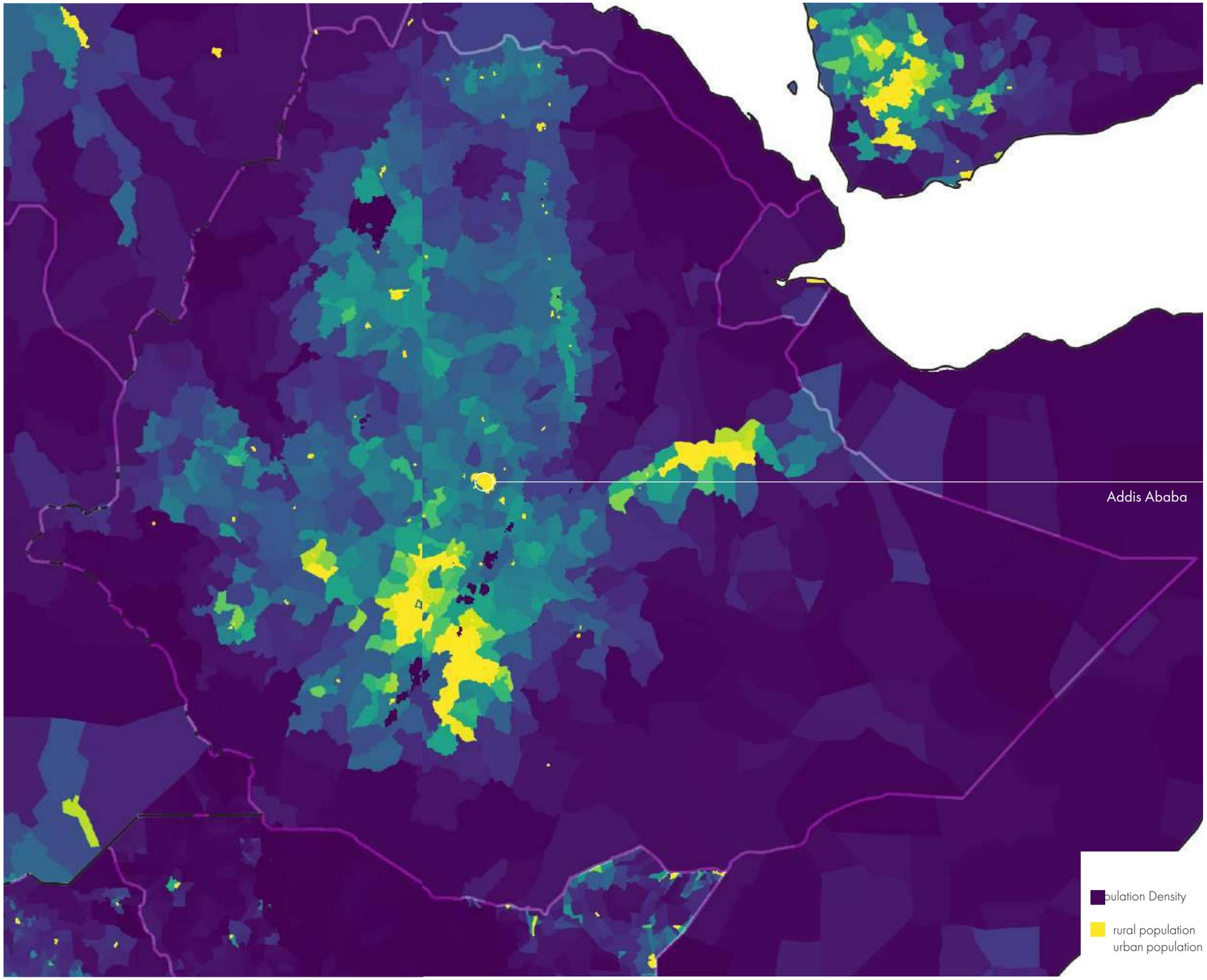
Ethiopia is one of the least urbanized countries in the world. Only 20% of the population of 115,885,782 (census 2020) lives in an urban environment. With this urbanization, Ethiopia is ranked 175th of 188 listed nations by the World bank.

The map on the right shows the population density in people per square kilometers. The yellow areas indicate regions with over 500 people per square kilometer. The map makes visible that most of the people inhabit the Ethiopian Highlands. One of the reasons for this trend can be the better geographical setting (better temperature, better soils, etc.) (World Population Review, n.d).



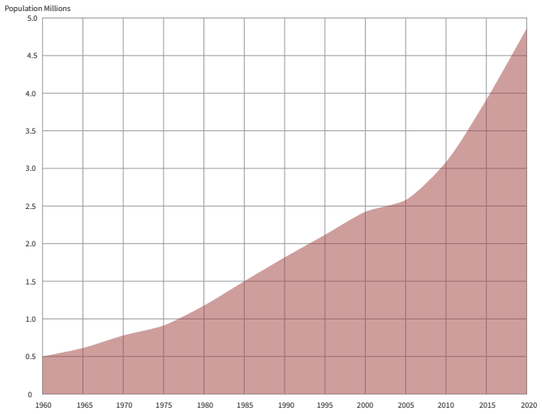
Rural Population

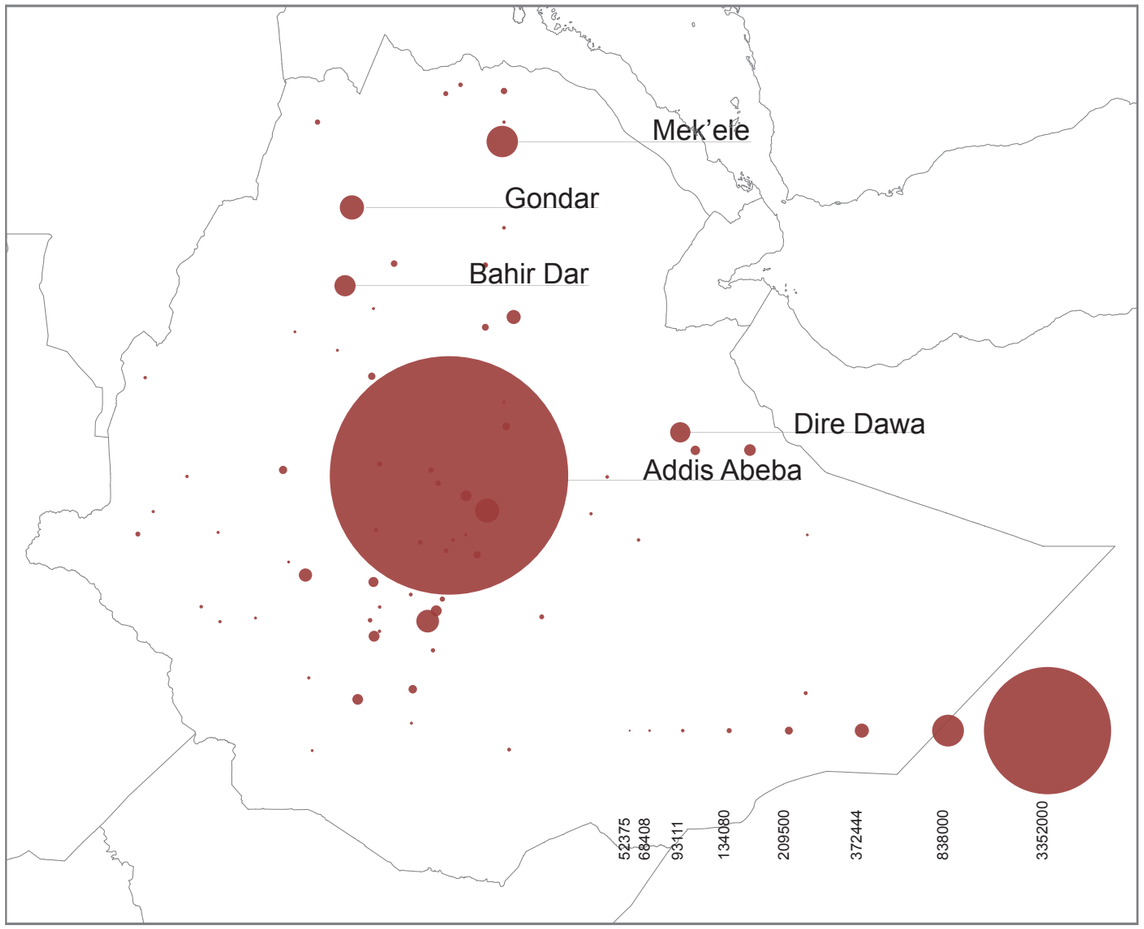
Urban Population

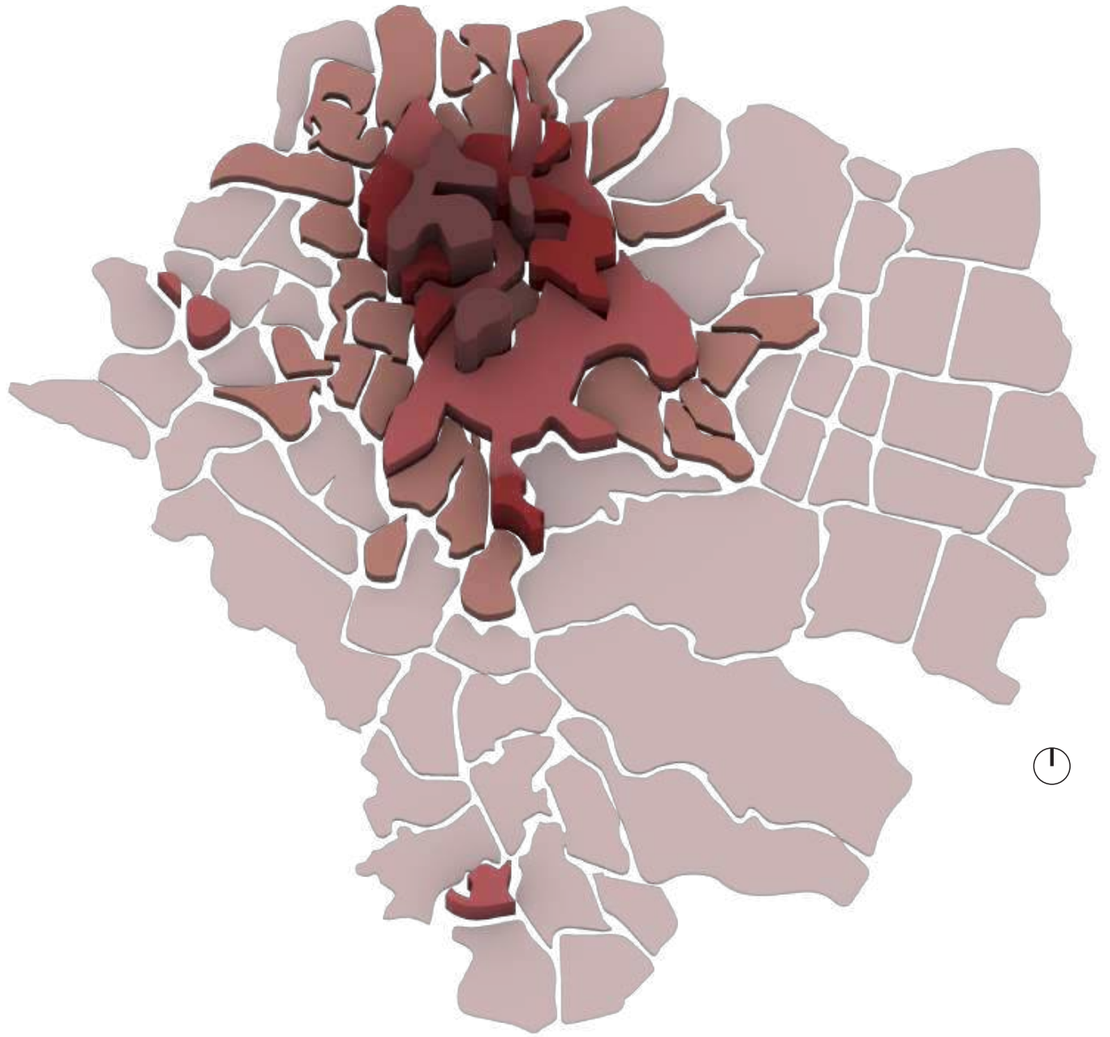


Demography - Density

The distribution of the people living inside urban areas in Ethiopia is very unequal. On the previous page it is stated that 20% of the population lives in an urban environment. From these 20 percent, almost 1/5th is living inside Addis Ababa, as of now (2020) there are 4,793,699 inhabitants, and this amount is rapidly growing. Addis Ababa has a density of 5156 people per square kilometer and is the biggest city of Ethiopia. The second largest city is Mekelle, with 441,991 inhabitants. It's clear that Addis Ababa can beseen as the megapolis of Ethiopia (WeatherSpark, n.d.).





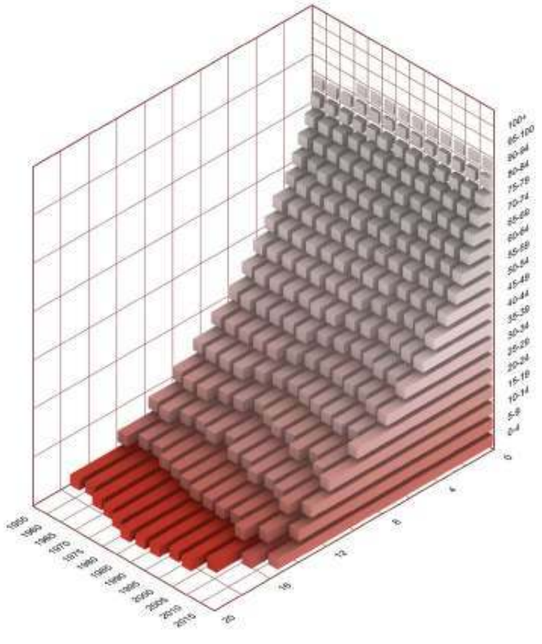


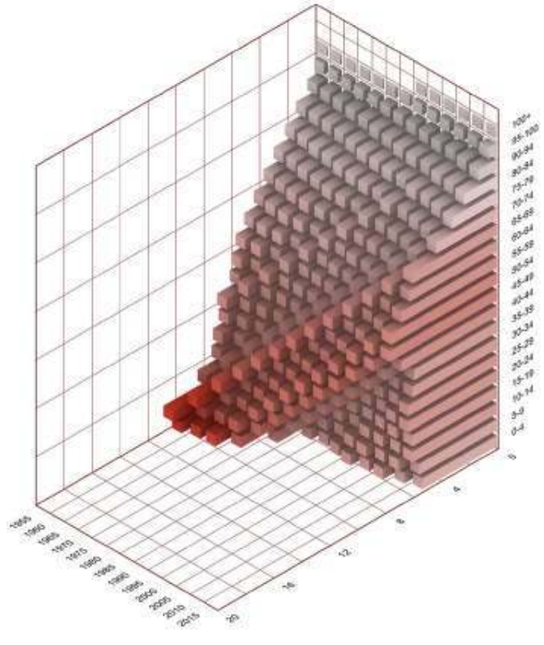
Demography - Age distribution

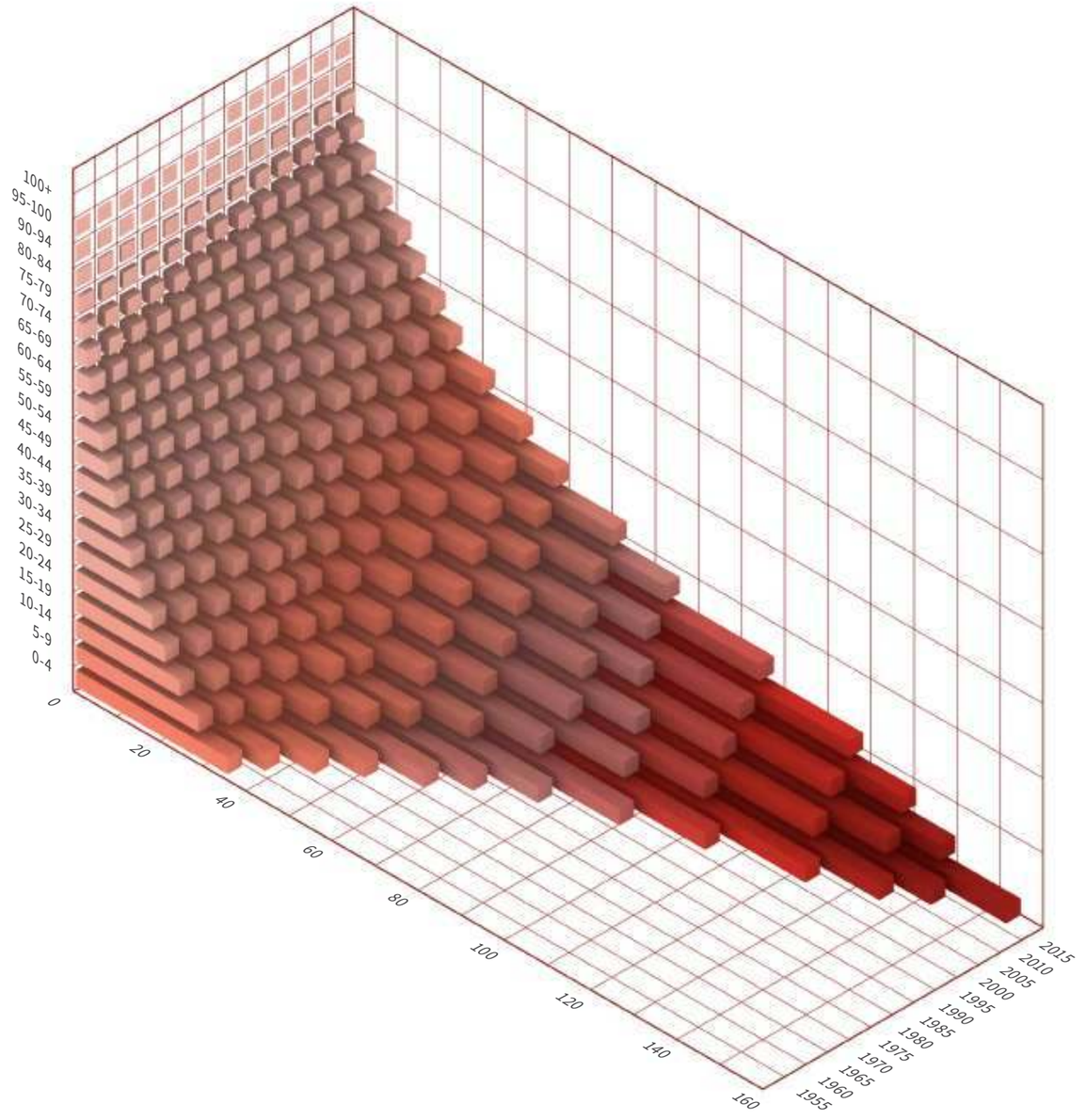
The population of Addis Ababa shows a clear trend. When looking at the age distribution growth it is clear that the population is expanding rapidly. Since 1955, the population quintupled from 20,000,000 to more then 150,000,000 (World Bank, n.d.). This rapid population growth is putting enormous pressure on Ethiopia; on the land resources, environmental degradation, food shortage, etc.

In the figure below a comparison is made between the age distribution in Ethiopia and in the Netherlands as a percentage. It is clear that the Ethiopian population is very young, which means, a lot of babies are born, thus increasing the population rapidly. In the Netherlands you see that the amount of older people is increasing.

Countries with a lot of young people (Ethiopia) face different challenges than countries with an older population (the Netherlands). Countries like Ethiopia need to invest more in schools while countries like the Netherlands need to invest more in the health sector. Ethiopia is predominantly an agricultural country that is in the early stages of demographic transition. The last decade has shown a decrease in ages under 15 and increase in the percentage of the active working sector (15-40). The age structure can also be used to help predict potential political issues. For example, the rapid growth of a young adult population unable to find employment can lead to unrest.



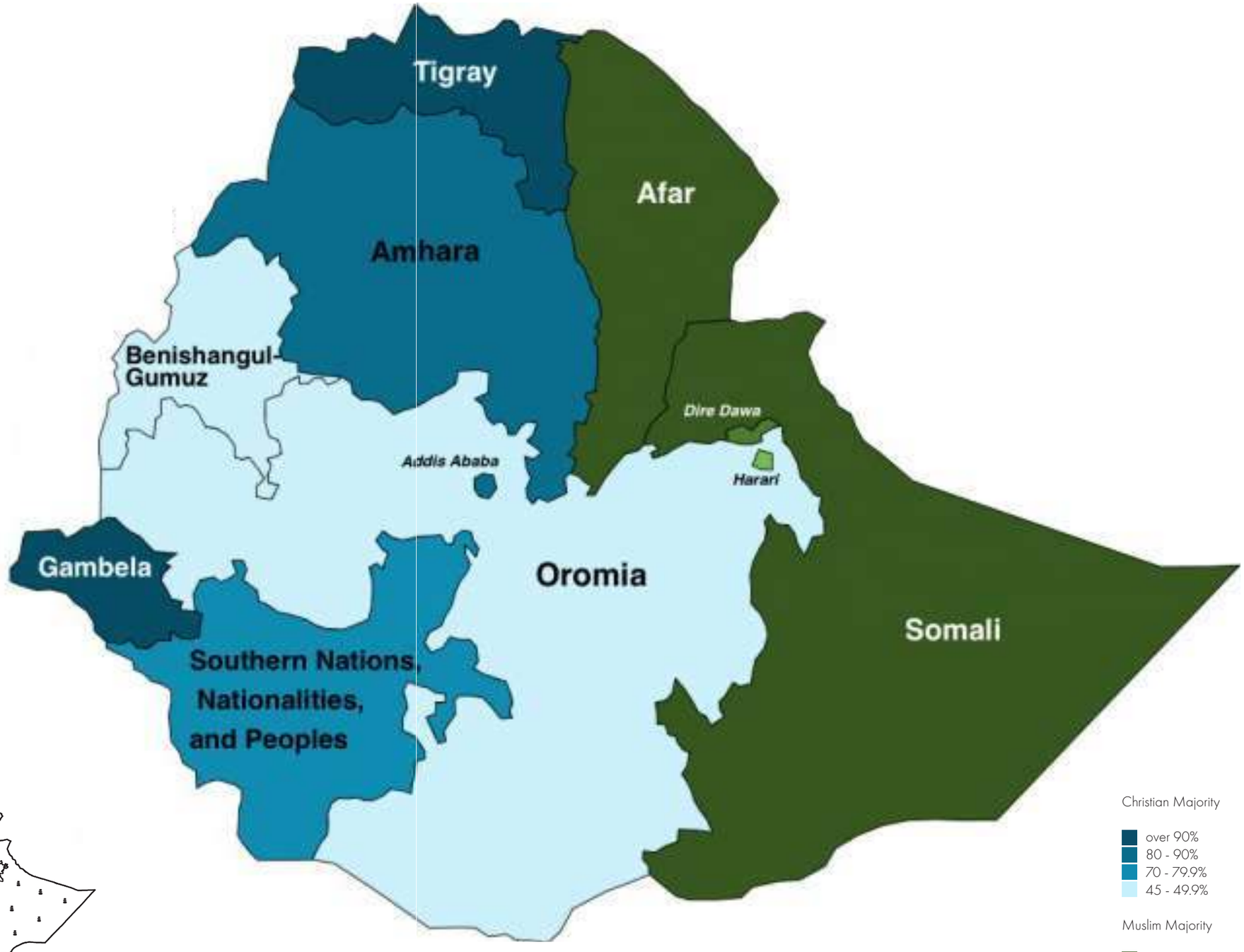




Demography - Ethnic groups & religion

There are currently more than 80 ethnic groups in Ethiopia. The Oromo, Amhara, Somali, Tigri and Afar have the largest populations. The regions are divided according to these groups. Other large ethnic groups are the Welaita, Silt'e, Sidama, Kembata, Kefficho, Hadiya, Guragie, Gedo and Gamo. The ethnic groups are discussed in more detail in the section of Genius Loci - Ethnicity. In Addis Ababa, all ethnic groups are represented, but the most populous are Amhara, Oromo, Guragie, Tigray, Celti (Silt'e) and Gamo. A person's ethnic background does not necessarily play a decisive role in their religion. Although people in certain groups have the same religious beliefs, Tigris and Amharas are usually Orthodox, while Somalis are mainly Muslims. But people in an ethnic group can usually practice different religions (Beall, 1997).

According to the national census (2007) the highest percentage of Ethiopians are Ethiopian Orthodox Christian. Over 32 million people or 43.5% have this religion. 25 million or 33.9% were reported to be Muslim, thereby being the second biggest religion in Ethiopia. 13.7 million or 18.6% are Protestants, and just two million or 2.6% adhered to traditional beliefs (Wikipedia contributors, 2006).



Major ethnic groups

Am	Amhara 26.9%
Or	Oromo 34.4 %
So	Somali 6.2%
Ti	Tigray 6.1%
Af	Affar 1.7%

Religion

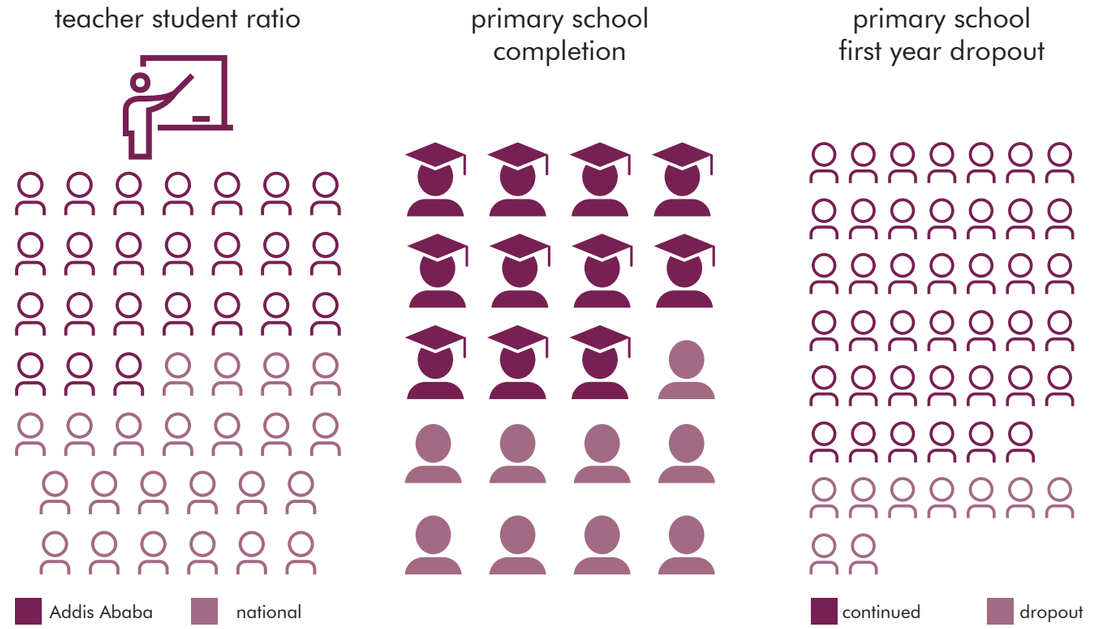
✚	Orthodox 43.5 %
☪	Muslim 33.9%
✝	Protestant 18.6%
웃	Traditionalist 2.6%
✝	Catholic 0.7%

As education is considered a human right, the Ethiopian Government has been improving the quality of education and the coverage along the country over the last decade, despite the lack of teachers especially in rural areas where there is 1 teacher per 104 students (case of Somali). Nationally these figures are much lower (1 teacher per 47 students), and in Addis Ababa the student teacher ratio is 1:20 (Federal Ministry of Education, 2019). In that sense, government expenditure on education (% of GDP) has increased substantially. For instance, in 2012, this reached 5.57% of its GDP, the highest value over the past 31 years23, even though Ethiopia worldwide occupies the 91st place out of 186 countries. The graph was made through information provided by the MoE (Ministry of Education) report 2019, which used the census of 2008 as a basis for making projections to 2016-2017. For that reason, the information is not as accurate due to the old data.

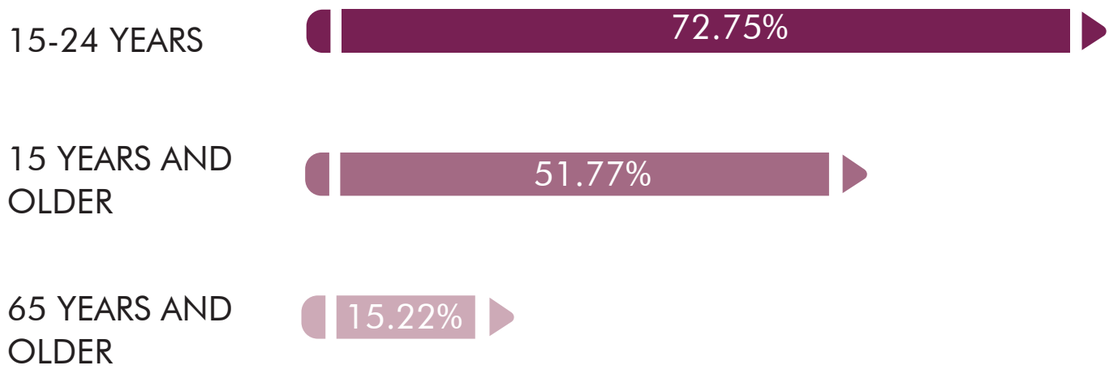
The education system is divided in 4 groups: kindergarten, primary (from 1st to 8th grade), secondary (9th to 12th grade) and tertiary education. In some cases, the number of enrollments by grade do not correspond to the average population age assigned by grade. It might be because children or even adults delay their education process.

As it is evident in the graph, the drop-out rate of school after finishing primary school is high, especially in rural areas, where teenagers start to generate a source of income or help with household chores. An interesting fact is that the number of girls studying in Addis Ababa exceeds the number of boys in the secondary cycle.

On the other hand, the literacy rate in younger generations is much higher than in the older ones due to the following reasons: some years ago, the population was even more rural, therefore people in the countryside had less access to school; meanwhile nowadays, urbanization has forced the population to have access to education.



1.42 Gross Enrollment Ratio (2019)



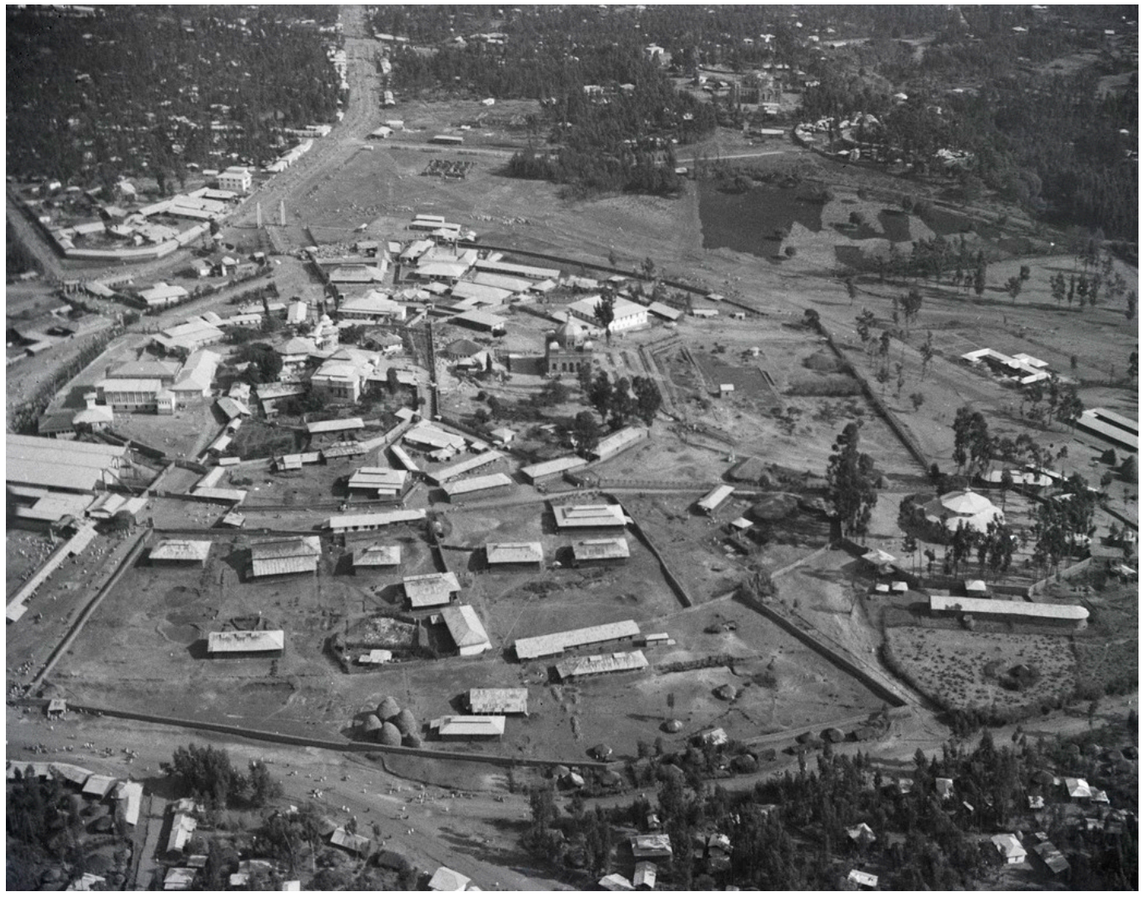
Habitation - City of Palaces

Addis Ababa, today the capital of Ethiopia, is a relatively young city founded by Emperor Menelik II in 1886. During this period, the Ethiopian population consisted mainly of nomadic tribes ruled by Ras or governors, who in turn served the king of the region. Each king usually chooses a higher strategic location as the basis for the camp. He divided the environment into Rases, generals and other nobles, and the latter settled with servants. These Rases and generals receive income from the cultivated land around the compound, which allows them to expand the small villages around them. As a result, this brings together many residents in Addis Ababa villages, but they are scattered over a big area.

Initially, King Menelik established his own city on Entoto Mountain, but during his military expedition to the Italians, his wife Taitu moved the village towards 'pied-à-terre', which was about 100 meters lower and nearby Filwoha hot springs. This place had other advantages in terms of timber resources and climate improvement.

Menelik returned to his hometown after defeating the Italians. It was a feat that consolidated his title. He settled in Addis Ababa (New Flower) with his wife Taitu. This declared peace and prosperity for some decades. Menelik was a progressive king. He liked modern tools such as telegrams, and electric chairs. He also started building a railway from Addis Ababa to the port city of Djibouti.

This continuous expansion required a large amount of wood to build and consumed a lot of energy, resulting in the felling of mountains. However, Addis Ababa is well established, Menelik planned to move the city 40 kilometers, but there was already a solution to the problem. A French planner brought an exotic eucalyptus tree, which was planted according to a decree. This made the location of the city a permanent location and allows it to develop. Slowly, the house also changed from traditional Tukul Chika (a mud-based building material) to masonry, which was also influenced by foreign builders (Kaufman, 2003).



Habitation - Mass housing

At the beginning of the 21st century, Ethiopia was facing an extensive housing shortage, which was affecting all income groups, in Addis Ababa especially. According to UN-Habitat definition of the slum, in 2005 about 80% of Addis Ababa's residential areas were considered "slums". This had to be changed, but how?

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 low- and middle- income housing (Buondonno et al, 2019-2020).

Integrated Housing Development Program

The Integrated Housing Development Program (also known as the grand housing program or the condominium program) is an ambitious government initiated program for low- and middle- income housing in Ethiopia with the main focus on Addis Ababa city. The aim was to construct 300.000 dwelling within a timeframe of 5 years. The IHDP can be seen as the first large scale government led intervention in the housing market. This section provides a brief examination of the IHDP in many of its forms and features (Brobbel et al, 2014-2015).

The ICDP developed six goals they wanted to achieve:

1. Build 300.000 housing units for lowand 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

CHAPTER 2

PROBLEM STATEMENT & RESEARCH QUESTIONS

Background

The Federal Democratic Republic of Ethiopia is a country of sharp contrasts. Ethiopia is one of the fastest growing economies and, at the same time, one of the poorest countries in the world. With the rapid pace of urbanization and population growth, a large number of immigrants poured into the capital city of Addis Ababa over the course of the 21st century (Keller & Mukudi-Omwami, 2017). Over the last twenty years, the city has faced a huge flare-up of its population, with 2.38 million in 2000 rising up to 4.86 million in 2020 (PopulationStat, 2020). The population of Ethiopia is mainly composed of children. The country's population is relatively young, with 43.5% of the population being under the age of 15 (Ozturk, Humanium, 2020). No less than 88% of these children live in poor circumstances and are deprived of basic needs, goods and services.

Besides (child) poverty, Ethiopian cities are facing several housing problems. These problems usually manifest themselves in severe housing shortage, a decline in the existing housing stock, and a lack of basic services and infrastructure for housing development. The housing issue results in a massive demand for serviced, healthy and affordable housing (UN-HABITAT, 2011).

In order to solve these critical poverty and housing problems in Ethiopian cities, the government has launched the Integrated Housing and Development Plan (IHDP) in 2005. In accordance to this plan, the government promoted the construction of hundreds of condominium blocks, mostly in the periphery of the city (UN-HABITAT, 2011). The government developed an architectural standard that lacks a clear understanding of the needs of the different income class recipients, especially that of the lower-income groups. The condominium apartments are often too expensive and, as a result, the dwellings cannot be occupied by the urban poor due to their extremely low incomes (Gilbert & Gugler, 1982; Keller & Mukudi-Omwami, 2017). The urban lower class of Addis Ababa has no integrated place in this plan. Ultimately, this results in (further) segregation between socio-economic groups in the housing and urban context of Addis Ababa.

As a matter of fact, over the course of its history, the capital city has been proud of the healthy mix of income levels in most of its communities. In addition, the mix of people from different cultural and ethnic backgrounds contribute to the existing melting pot of Ethiopians (Yimam, 2014). Mixed land use and mixed socio-economic groups have been common, and in most areas of the city, this has even been the standard. The city is still fond of a lifestyle in which different ethnic groups co-exist. This specificity of a melting pot makes Addis Ababa unique in the context of Ethiopia. However, the lifestyle that was once rooted in the history of the city and the way the local people were living, is rapidly disappearing. Within a few years from now, the city may no longer have its unique social mix, unless it is intentionally regulated.

Problem statement

The general problem is the poverty and income inequality in relation to the housing shortage resulting in residential segregation between different socio-economic groups in urban regions.

The capital city of Ethiopia is unique for its co-existence between different ethnic groups and income groups. The aforementioned rapid developments in terms of urbanization and population growth have triggered and aggravated the socio-economic mix that has historically been at stake in Addis Ababa. The developments of the 21st century have entailed new processes and patterns of socio-economic segregation. One of the outcomes of segregation within the urban and housing context of Addis are the so-called sefers. Even though they are open to multi-ethnic groups, the informal sefers are usually segregated from the formal city, since they don't have access to basic goods and services. Another outcome and common phenomenon is the 'gated community', which is shaped and developed in different forms. Because of safety and prestige, there is a growing propensity for the rich to isolate themselves from the outside world, which displays itself through the establishing of gated communities. However, not only the rich, but also the urban poor are starting to isolate themselves for safety reasons. This trend is becoming more and more visible throughout the capital city (Admassie, 2008). Besides the common isolation from the rich and the poor into smaller and safer communities, there also exists a tendency among some of the new condominium complexes to develop into gated communities in their own rights. The condominium complexes that are transformed into gated communities were initially not planned as 'gated communities', but became contingent with the process, meaning that different circumstances had consequences on the processes of isolation. Alemayehu (2018) stated in The Transformation of Addis Ababa: A Multiform African City:

> *'The phenomena of gated communities are intensifying and gradually eroding the legacy of the socio-economically sustainable 'social mix' of the city.'* (p 73.).

The city is heading more towards a 'divided city' due to the (in)visible gated communities and the priority given to traffic infrastructure over the assimilation of the neighbourhoods and communities.

Research questions

The research questions of this studies are based on the concept of **co-existence** within the core areas of Addis Ababa that were historically typified by a mixed ethnic and economic character, and keeping the community as it is, without any form of social segregation. The purpose of this research is to gain a deeper understanding of the different modalities and patterns of both the socio-economic segregations and the socio-economic mixes which are at play in the context of Addis Ababa, from the point of view of housing. An understanding of these phenomena could potentially contribute to renewed housing design and urban strategies. A new housing program could be an opportunity to unify the different socio-economic groups. Among all the groups, children are most prominent. Children could become a catalyst for creating social mixes and promote community bonds among the different groups. An understanding of a child-friendly approach of housing is therefore required as well.

Based on the **mixed-income living concept** and the idea of **children** as a catalyst in overcoming socio-economic segregation, one main and three following sub questions are formulated:

How to restore and maintain the traditional socio-economically mixed neighbourhood character of the city of Addis Ababa through a child-friendly approach?

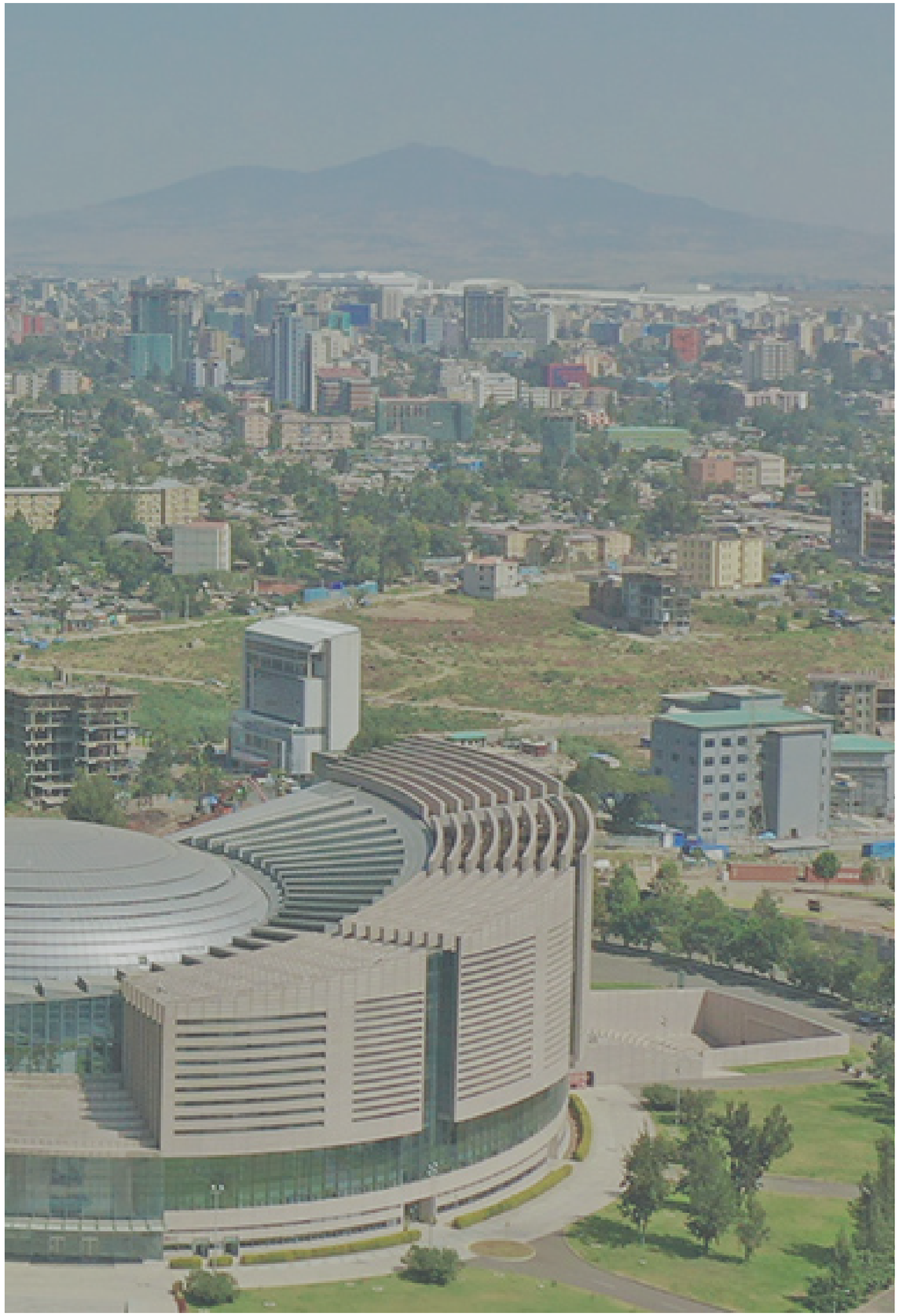
- How did the Mass Housing Scheme become an agent of spatial and social segregation, and how could this tendency be reverted through a new approach to affordable housing that resort to mixing groups of different income levels?

- How can a mixed-income neighbourhood be promoted and which spatial elements are incorporated in socio-economic mixed design? What are the benefits and challenges of these socio-economic mixed environments?

- What are the different lifestyles of the Ethiopian children and how could the needs of the childhood-aged group, growing up in a city, be fulfilled?

Aldo van Eyck - Playgrounds in Amsterdam

Great examples of child-friendly design and integration of children within an urban environment are Aldo van Eyck's playgrounds in Amsterdam, which were developed after World War II. Even though nowadays only 17 out of the hundreds of playgrounds are left, van Eyck's playscapes still have an impact on thinking about the city, architecture, social life, playgrounds and children (Withagen & Caljouw, 2017). His public playgrounds were located in parks, squares and abandoned spaces, and were composed of simple, geometrical and aesthetic play equipment that should stimulate children's creativity. Although the playgrounds were situated in a city, they were never fenced. Van Eyck aimed at integrating the playground in the city. There existed no clear borders separating the playgrounds from the rest of the urban fabric. Furthermore, placing benches on the square were of great importance, since the playgrounds invited the parents to supervise the children and to congregate. The simplistic and 'humane' playgrounds aimed to develop places that promote dialogue and support children's participation in community and street life. Ideas such as these, with the purpose of integrating children in the city life, could potentially increase the quality of life of Ethiopian children.



CHAPTER 3

LOCATION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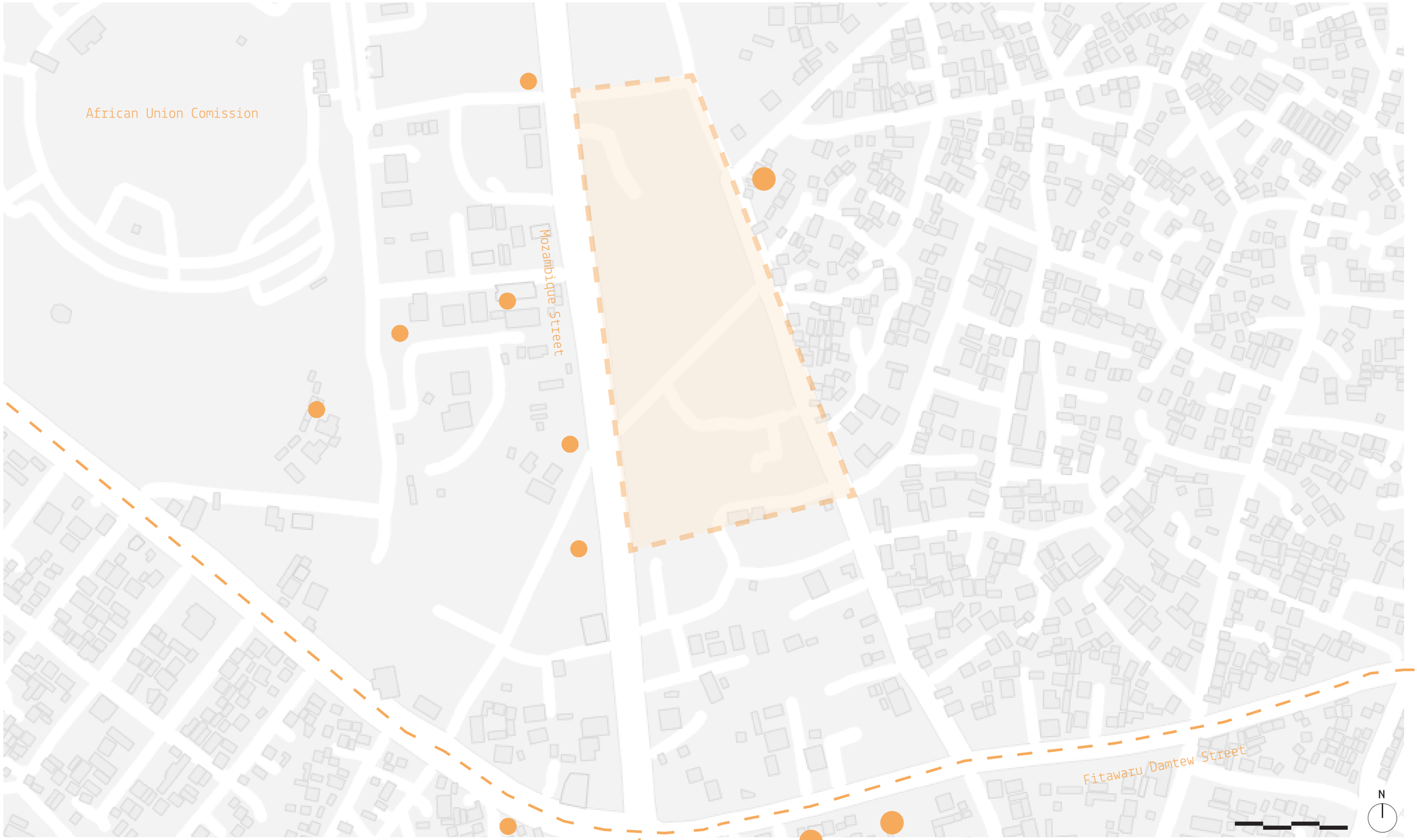
Kera/Kirkos sub-city

In the context of the capital city of Addis Ababa the district of Kera/Kirkos is a quite small district located in the city centre and is easily accesible. The area has borders with the districts of Arada, Yeka, Bole, Nifas Silk-Lafto and Lideta.

Site selection & urban context

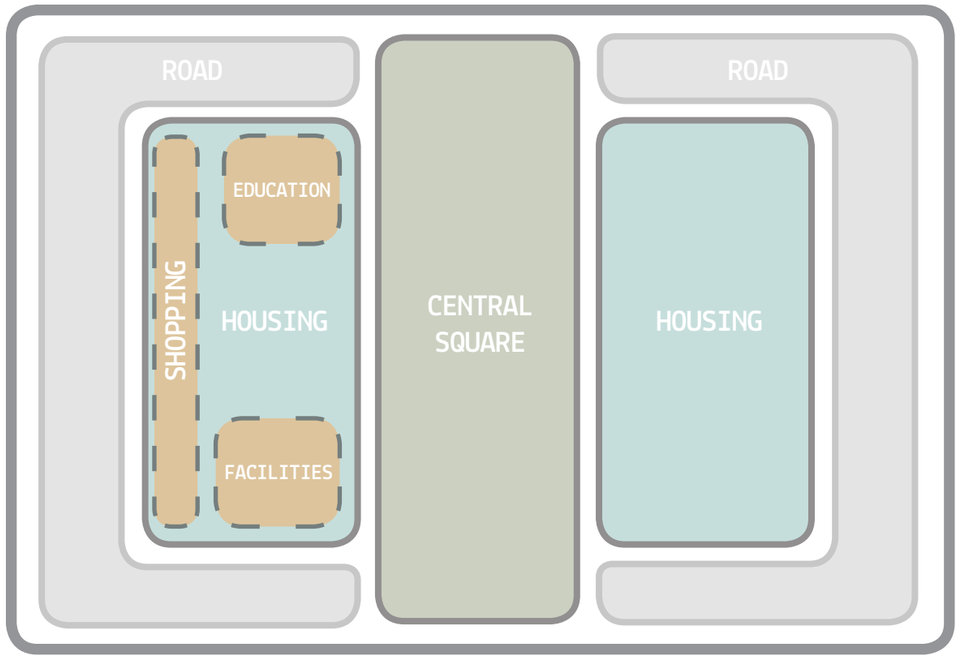
The chosen area in Kera sub city is currently an empty plot of 6 Hectare. In the surroundings there are already quite some commercial activities along the main roads. Because of the location and the activities going on, the chosen plot is an interesting and attractive place for the settlements Ethiopians.



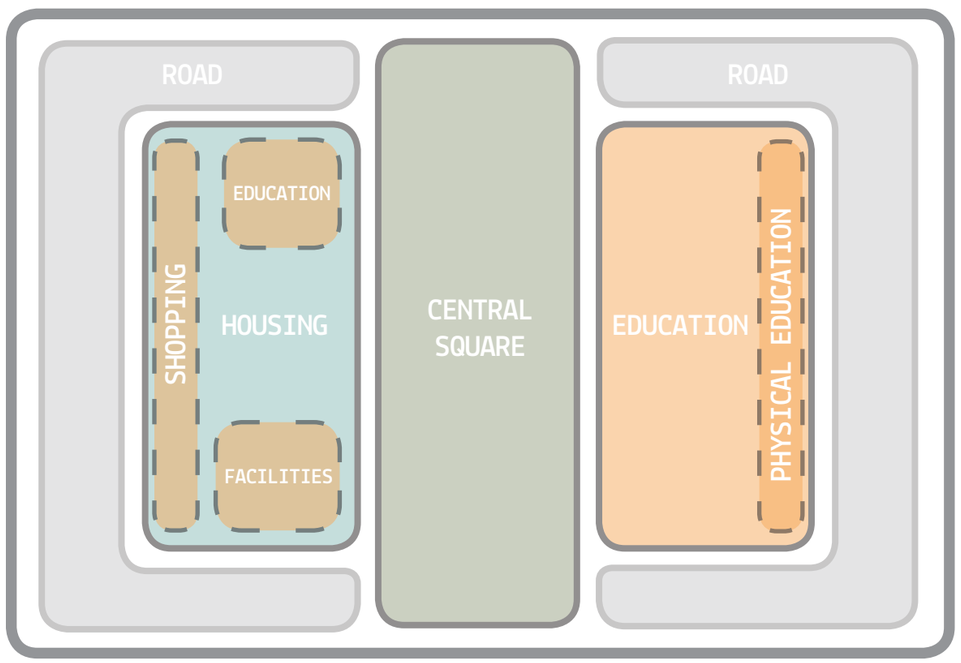
CHAPTER 4

DESIGN

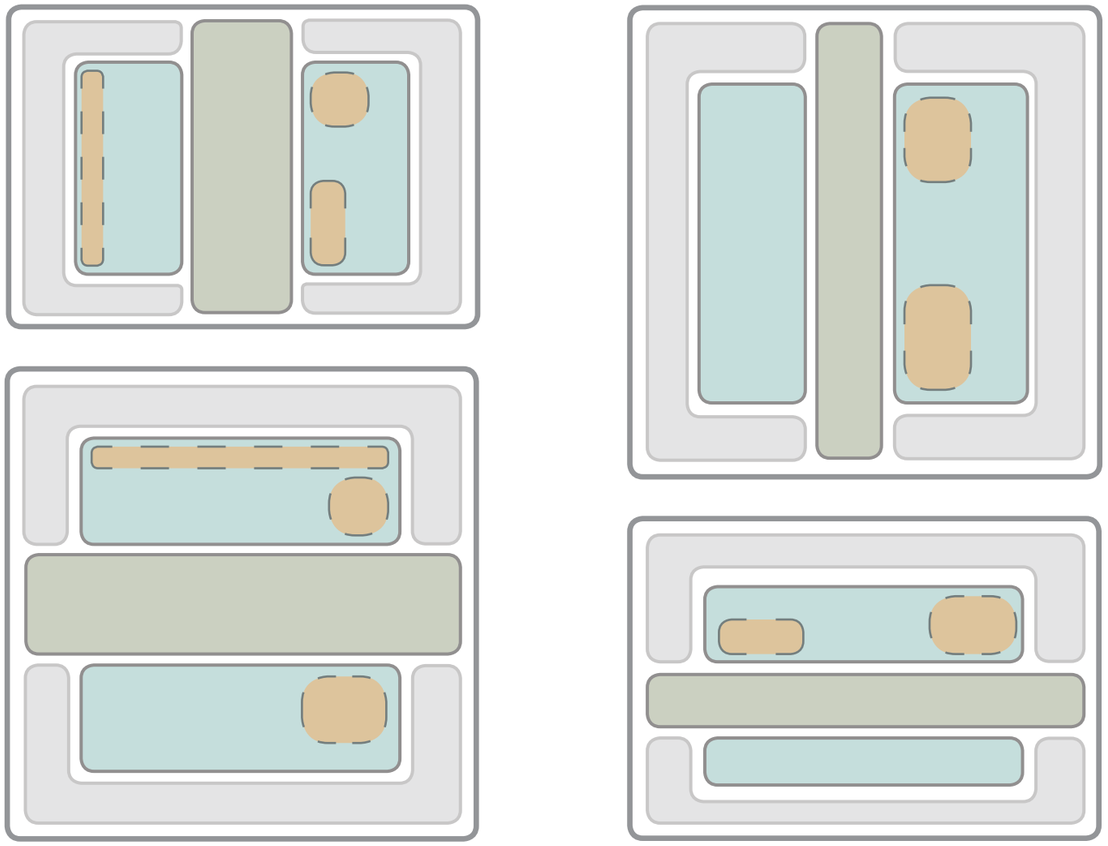
DNA of standard neighbourhood



DNA of central neighbourhood

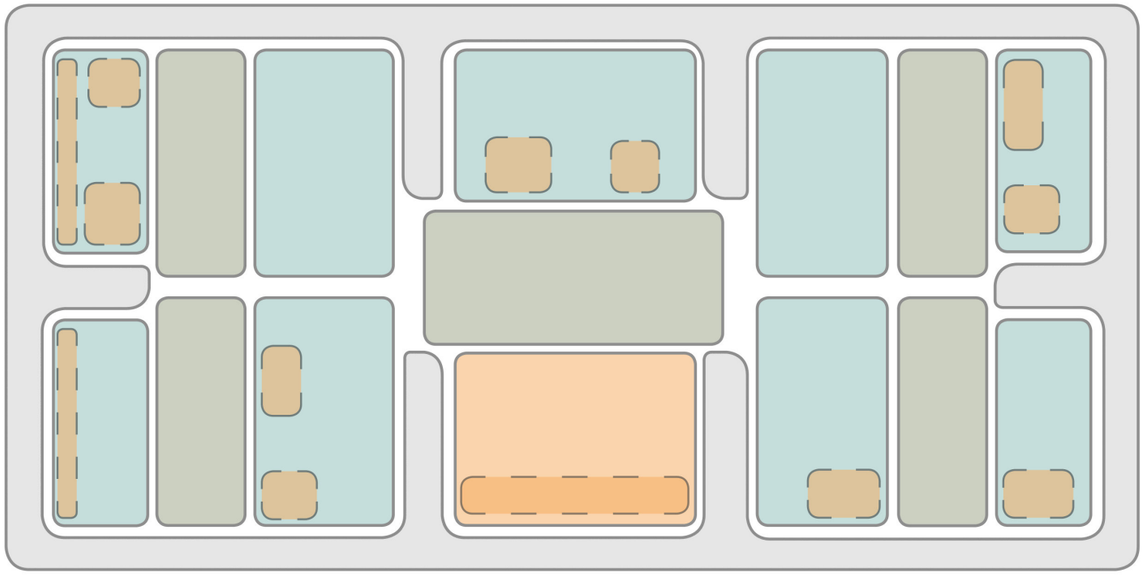


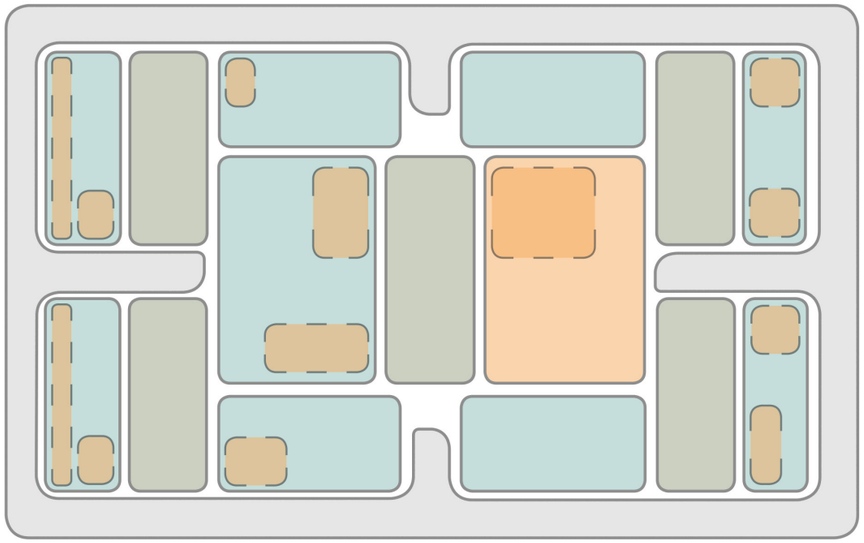
Variations

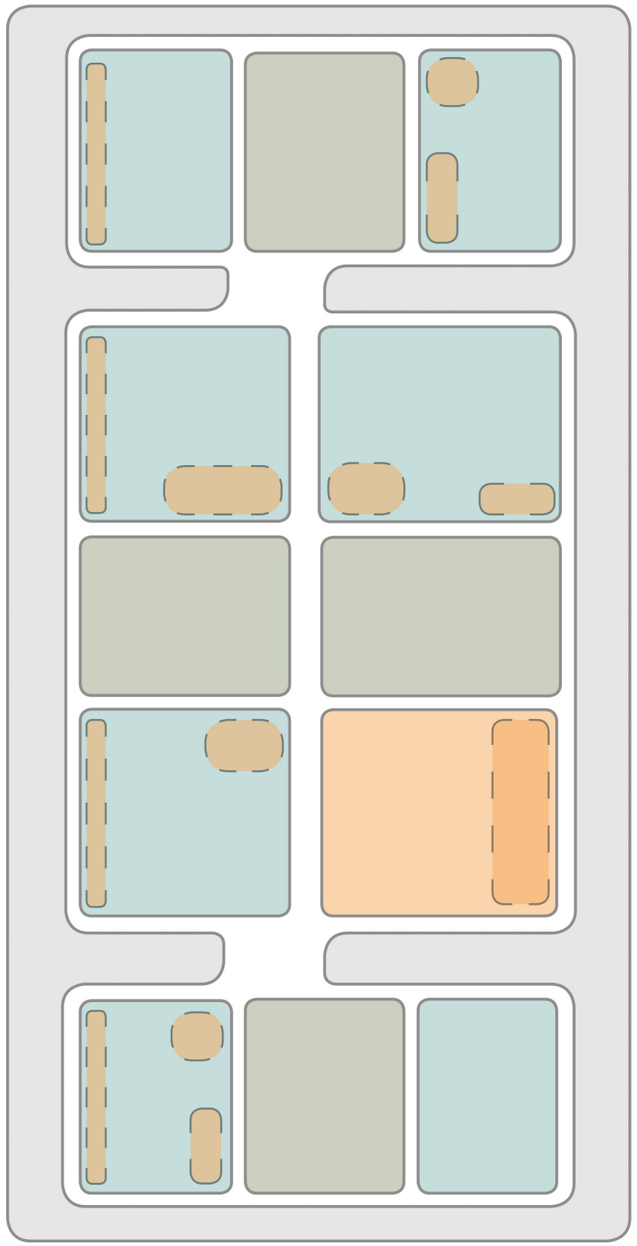


The scheme of the DNA of the typical neighbourhood shows the keys components on the neighbourhood scale. In the middle of the neighbourhood a square surrounded by facilities for children can be found. Around the central square and facilities, the housing schemes are located. The facilities are integrated and thus part of these housing schemes. The car roads are placed around these housing schemes and do not continue within the neighbourhoods, in order to promote safe and secure environments and pedestrian friendly neighbourhoods. The DNA of the central neighbourhood replaces one of these housing zones into an educational zone where the secondary school will be located. The shopping street is not always represented, it depends on the location and its surroundings. Different sizes and configurations are possible within this concept.

Different locations



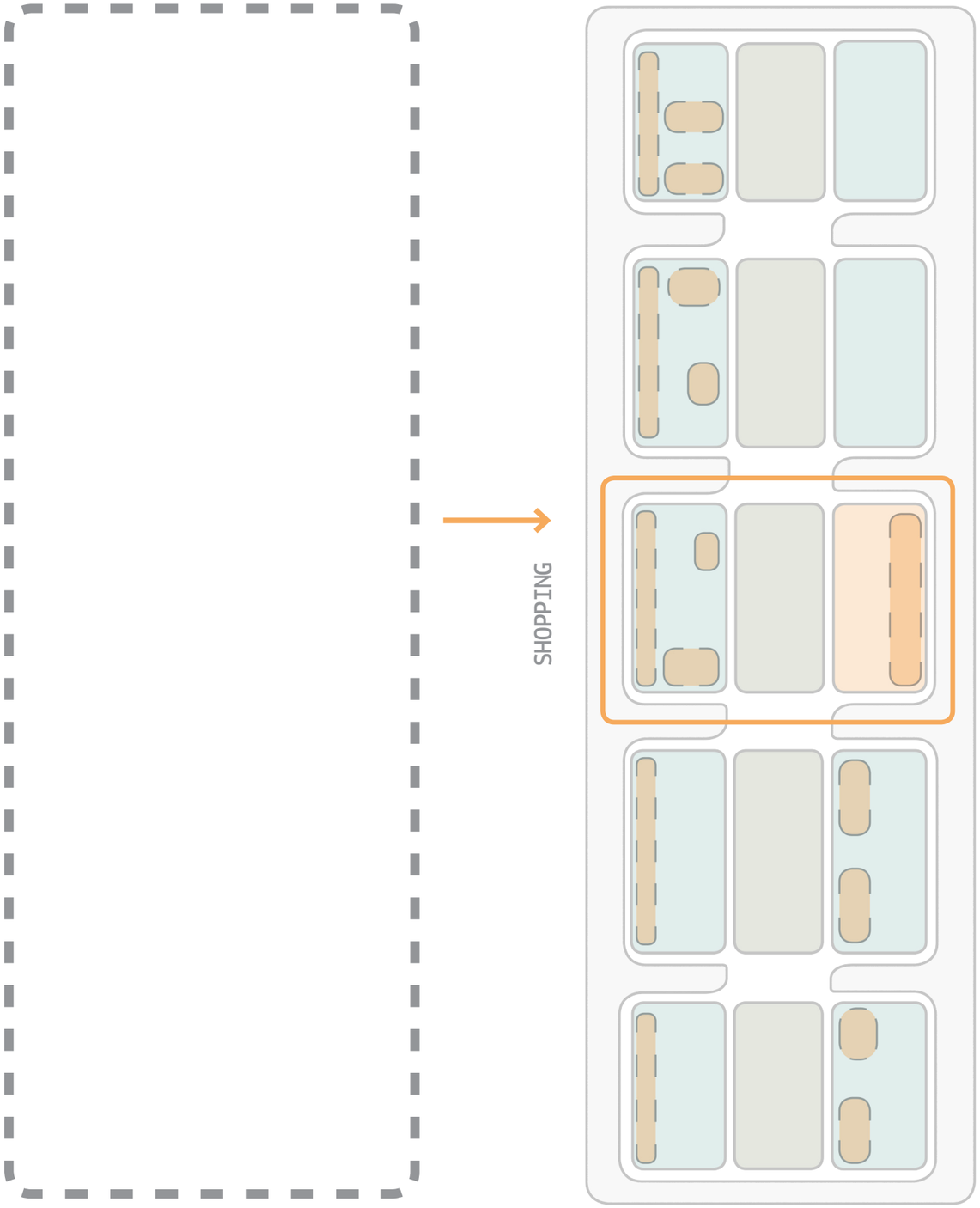


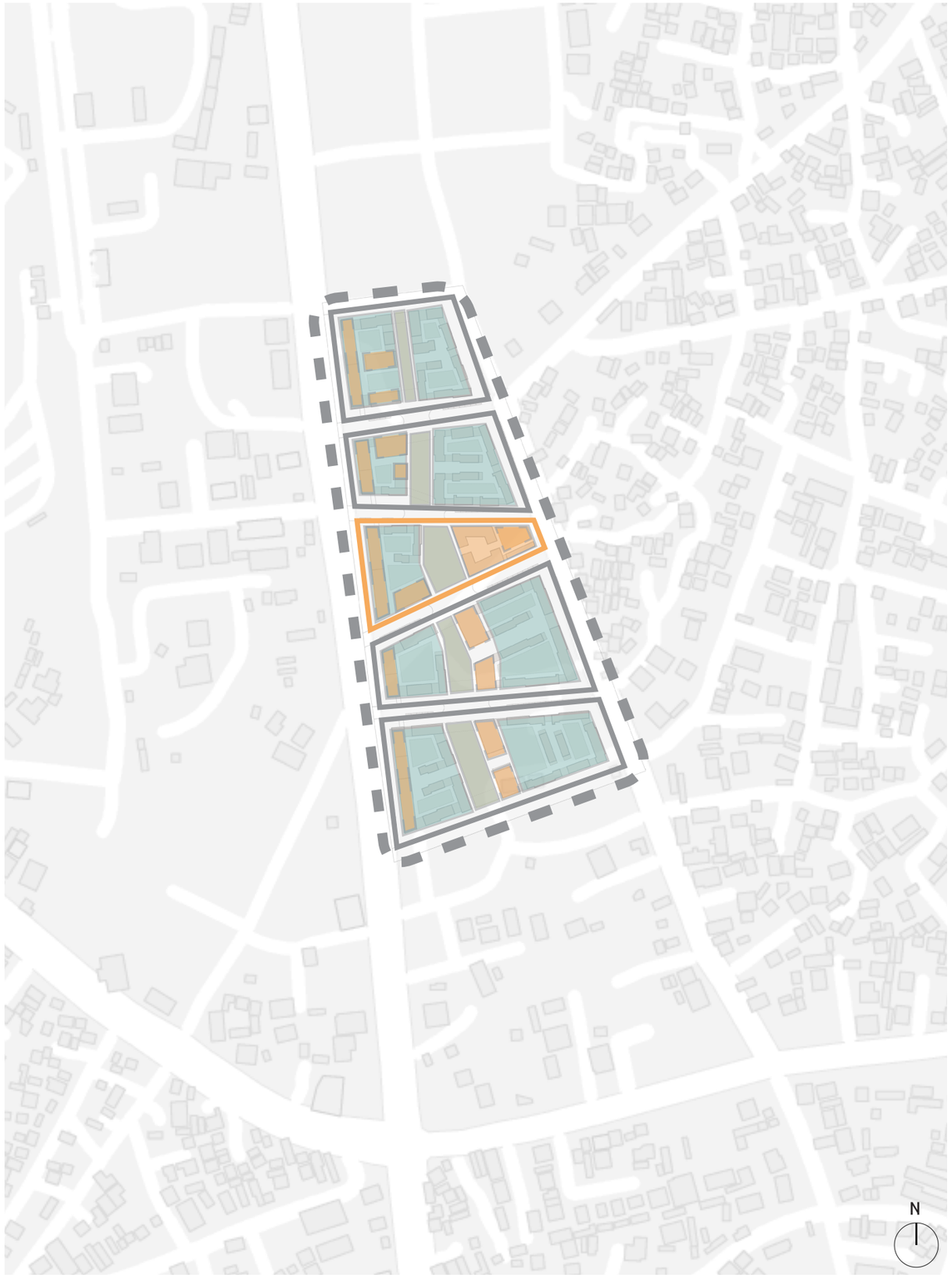


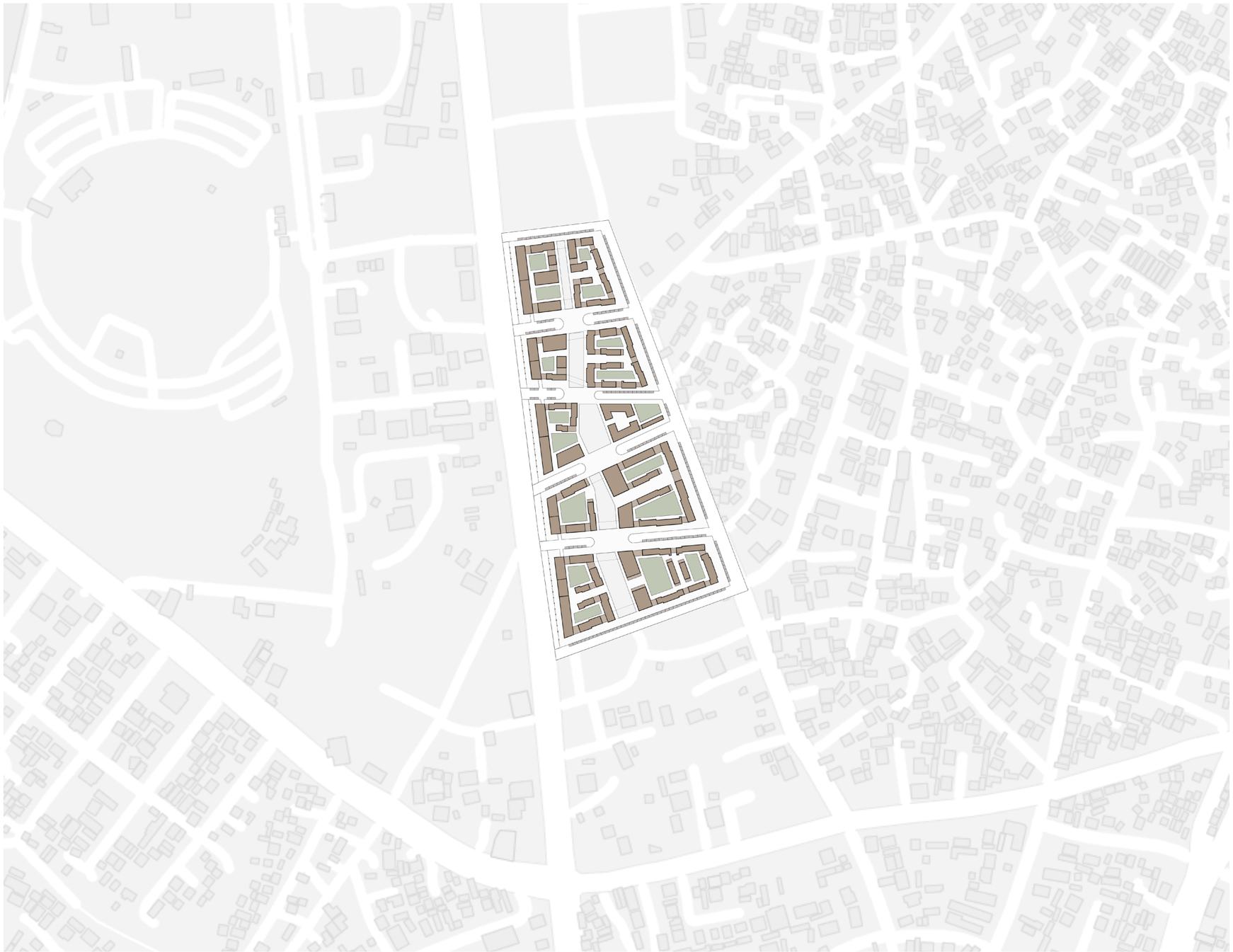
15

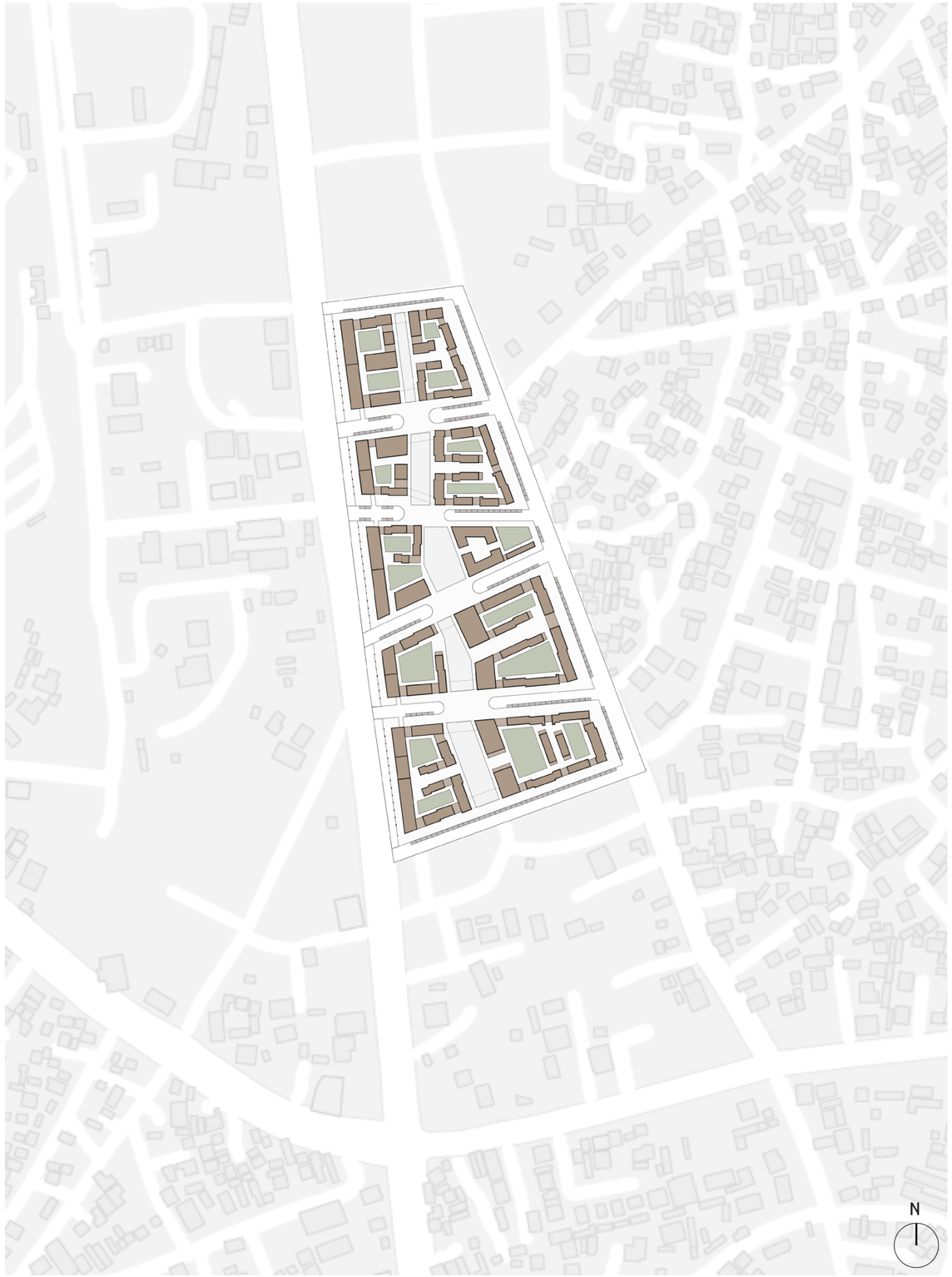
The concept can be easily adapted to different situations and other parts of the city. Different sizes of neighbourhoods are possible. Each neighbourhood has its own identity, since it will be designed by different designers and urban planners. In this manner, the residents of each neighbourhood can still relate to their neighbourhoods. On the larger scale the neighbourhoods will be unified, because of the use of the same materials and other architectural elements.

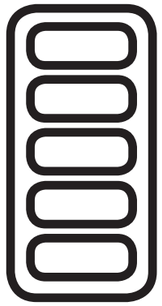
Site Kera sub-city scheme






N
100 m





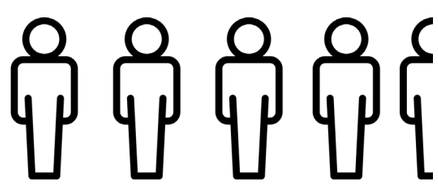
5
Clusters

772
Units

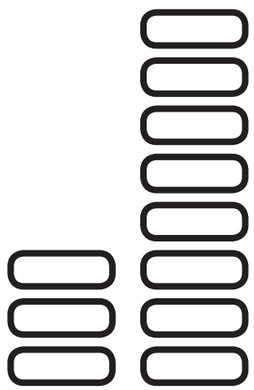
3.474
Inhabitants

1 unit

=



4,5



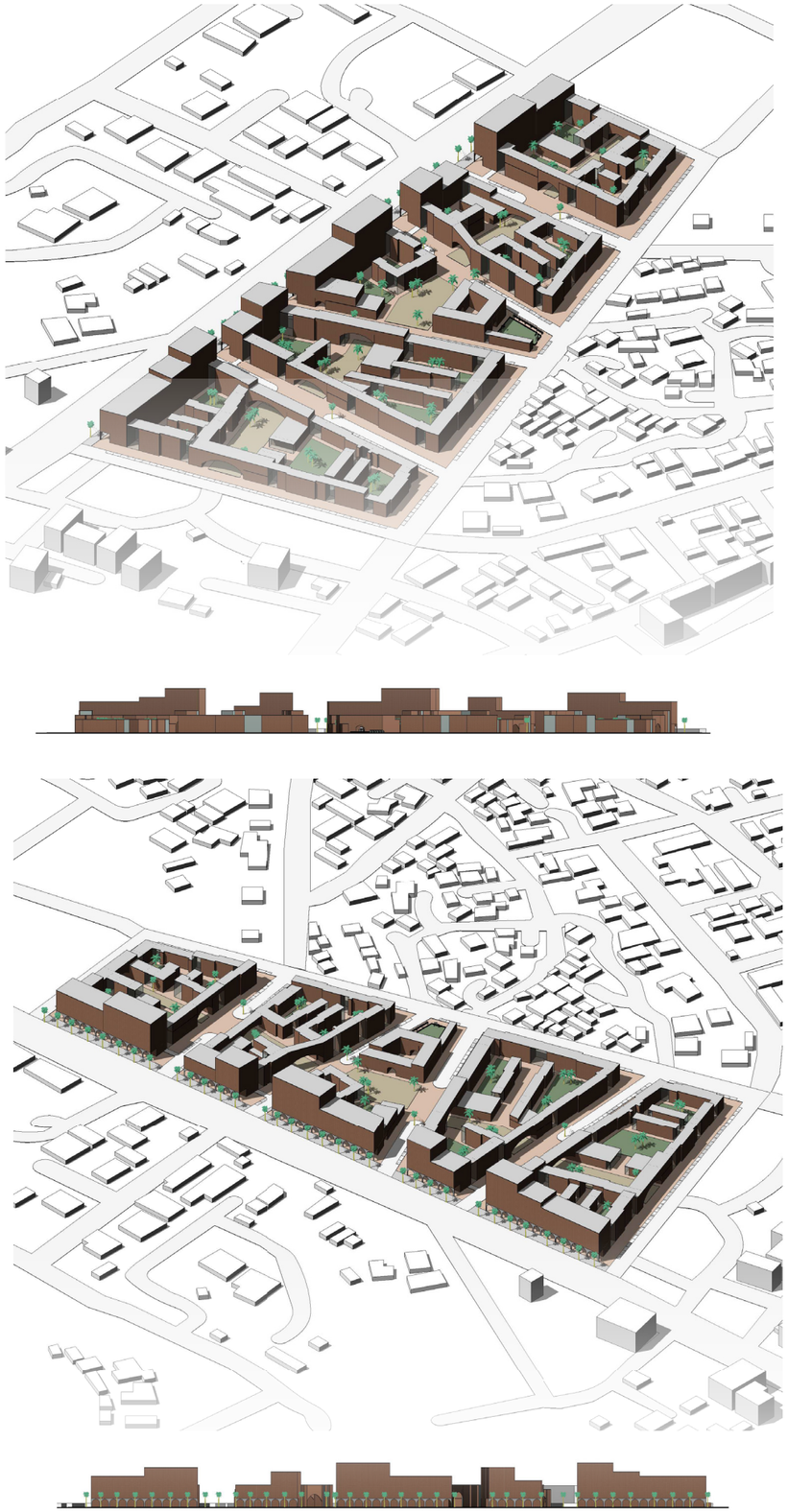
3-10
Floors

0,27
GSI

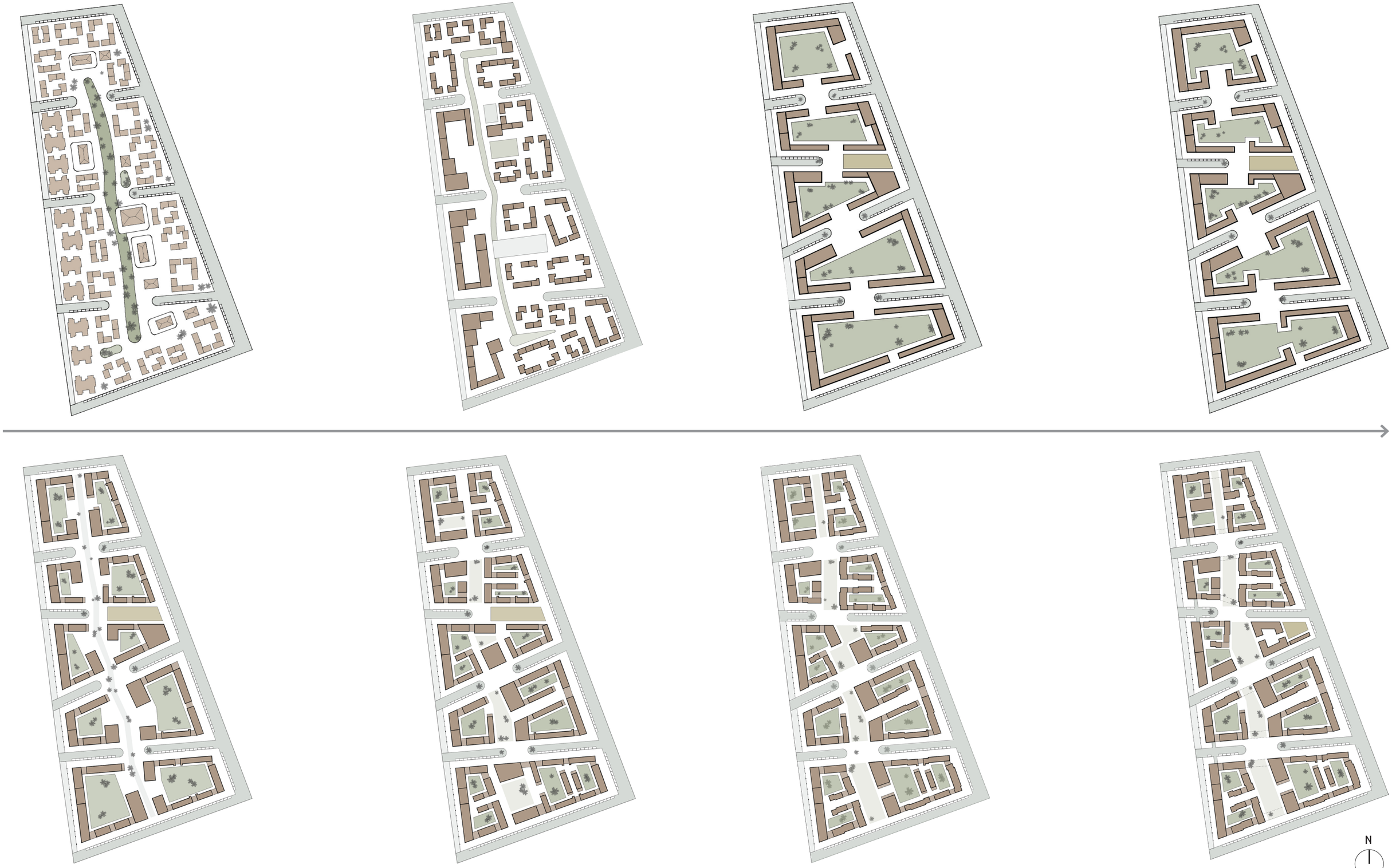
1,18
FSI

Urban - Masterplan top view

Urban - Axos & elevations



Urban - Evolution masterplan



Urban - References

Via Verde/The Green Way - New York (US)

This project is an affordable housing project that represents inclusivity because of its mixed character. Not only is the project focused on a mixed programme, it also offers housing for different income dwellers. The dynamic gardens can be used by the entire community of residents and thus connects the different income groups. Besides the mixing on the scale of the community and programme, the project also offers different housing typologies. The project consists of a 20-story tower, a mid-rise building with duplex apartments and townhouses.

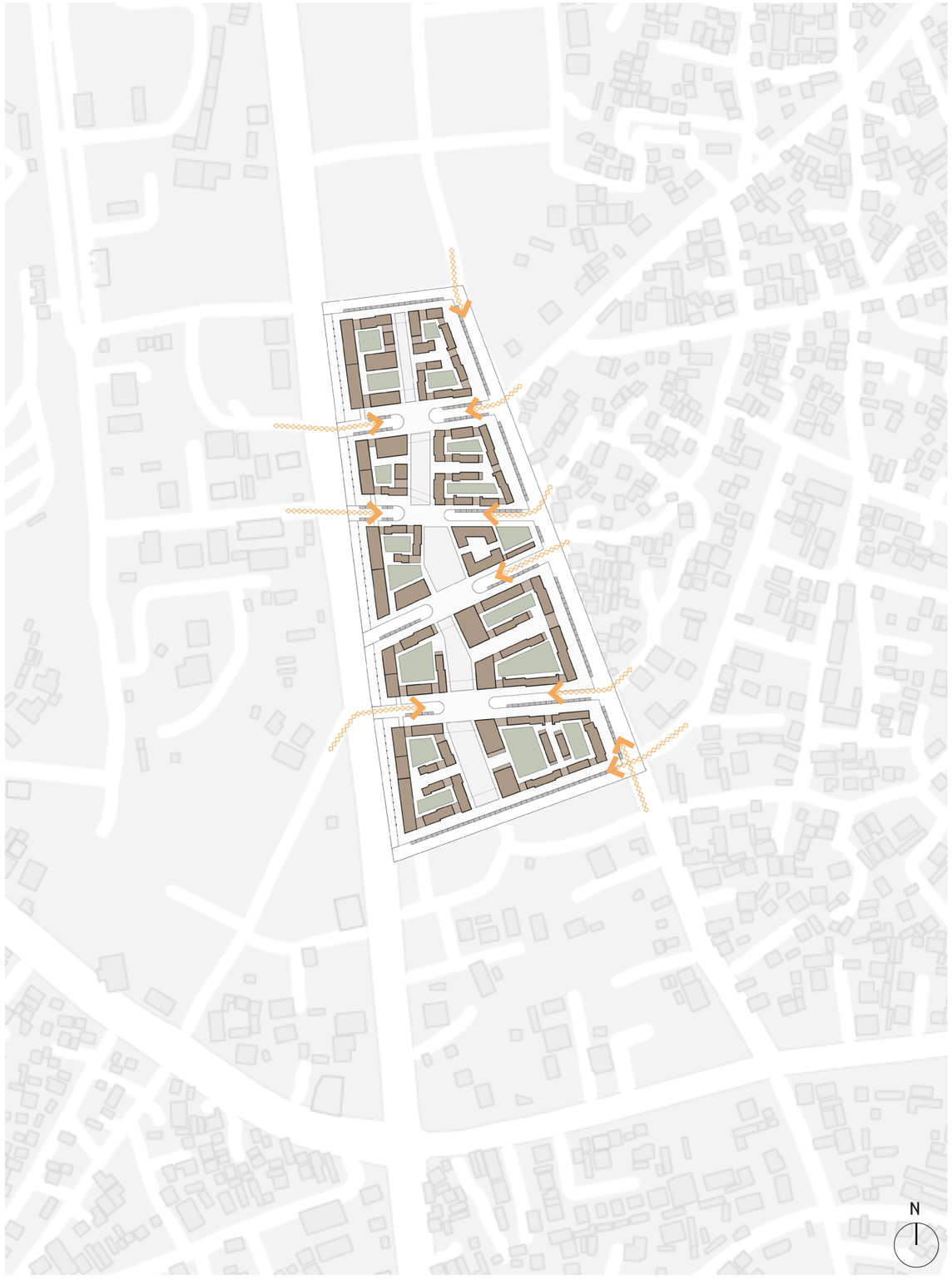
Eastern Docklands - Amsterdam (The Netherlands)

Conjunto Residencial Prefeito Mendes de Moraes - Rio de Janeiro (Brazil)

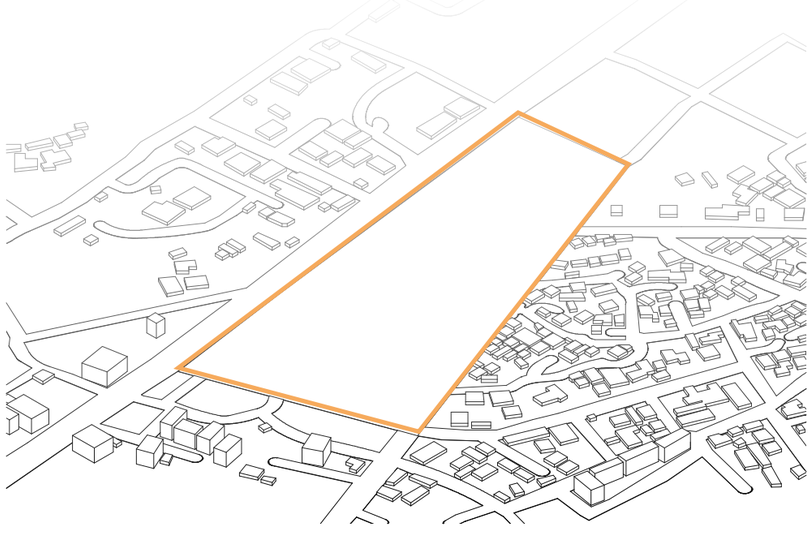
The Pedregulho Housing Complex is an apartment complex and planned community in the Benfica neighbourhood of Rio de Janeiro. The main apartment building consists of a long, serpentine block above pilotis. 272 units are placed on seven levels. The project has an extra layer on the outside, which is designed as a double façade. It provides shade and still has visual access to the exterior. It can be used as an extension of the housing units. This is the main space where neighbours interact with each other. It becomes more than just a gallery, it functions more as a communal space for gatherings.

Kalkbreite - Zürich (Switzerland)

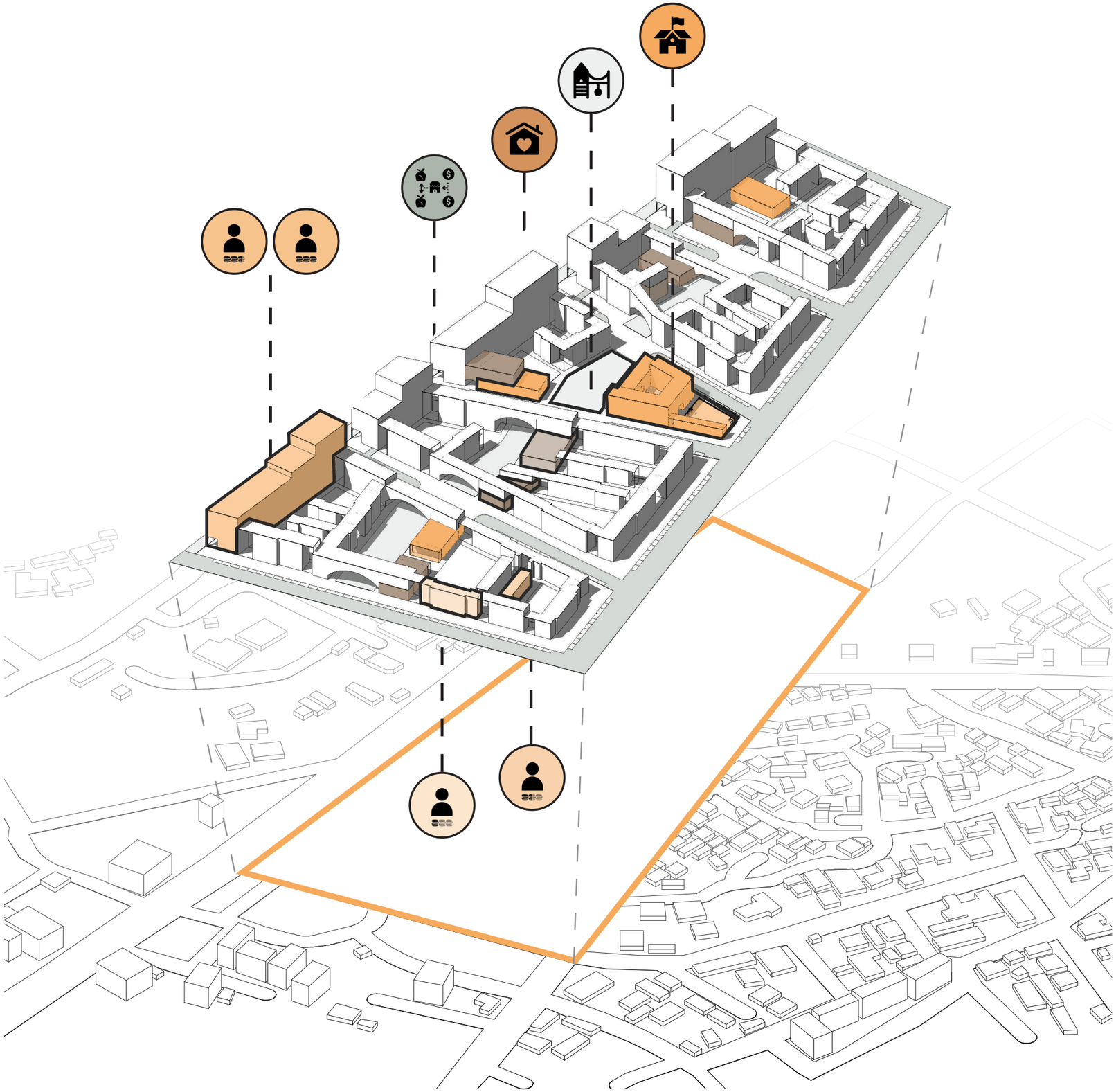
Urban - Connecting roads



Urban - Programme

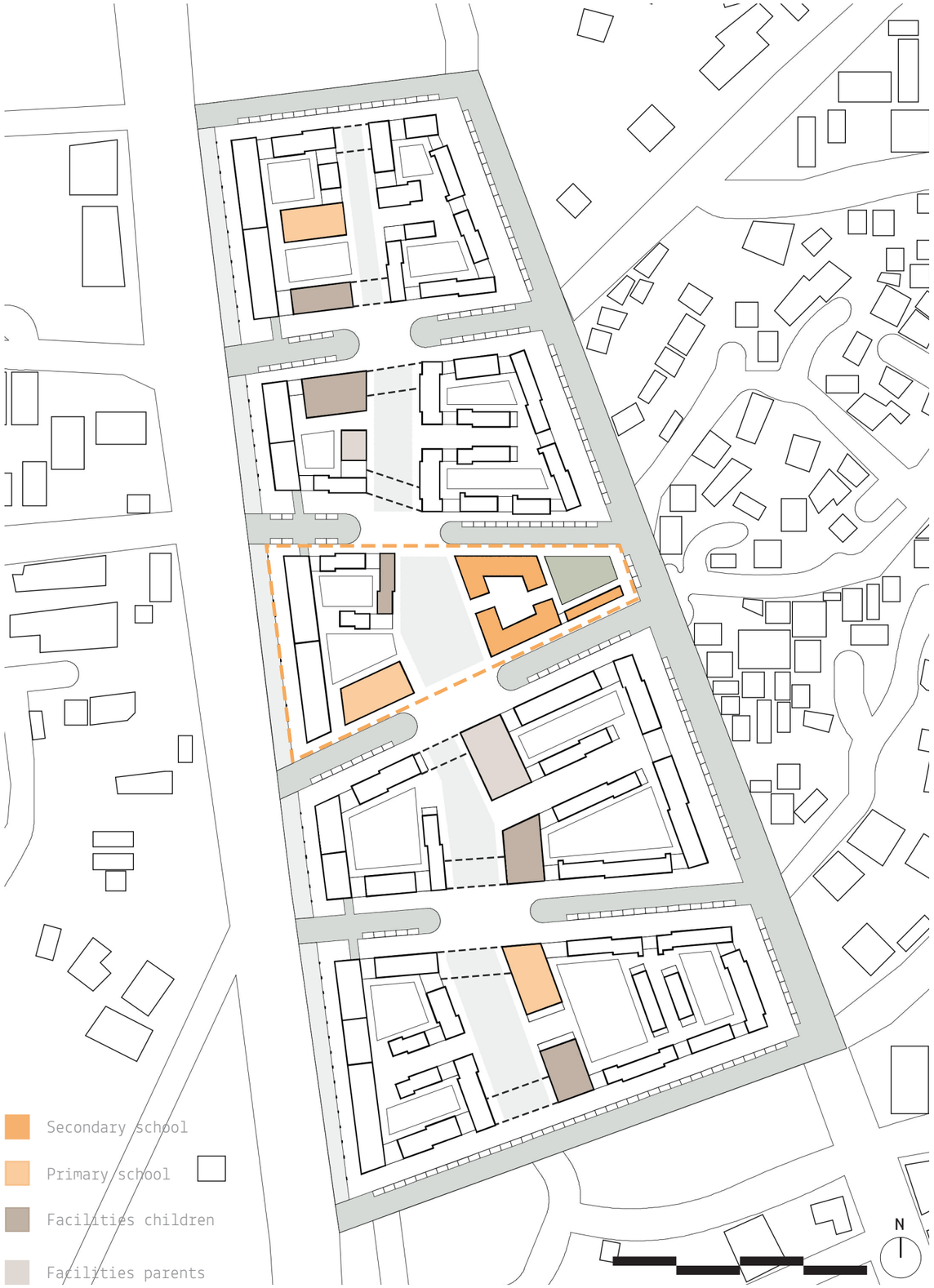


Surroundings
& site

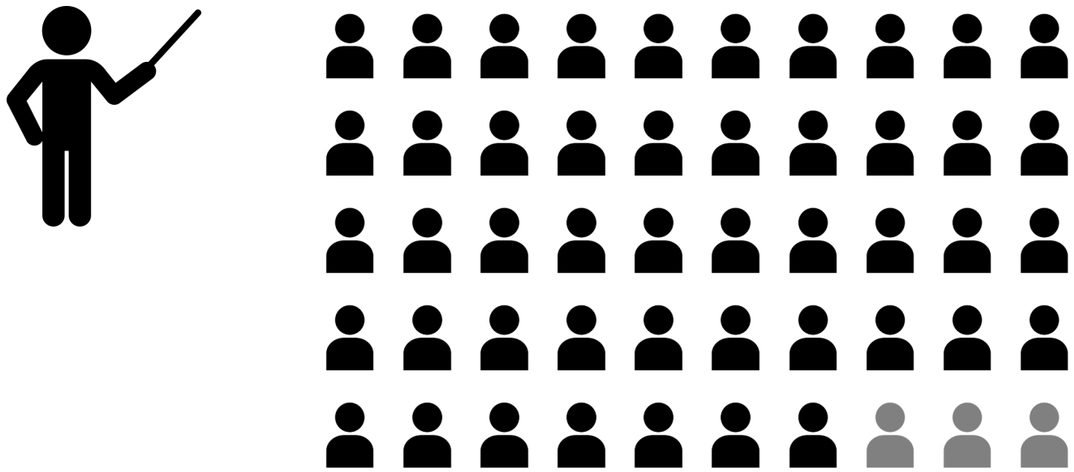


Urban - Income distribution

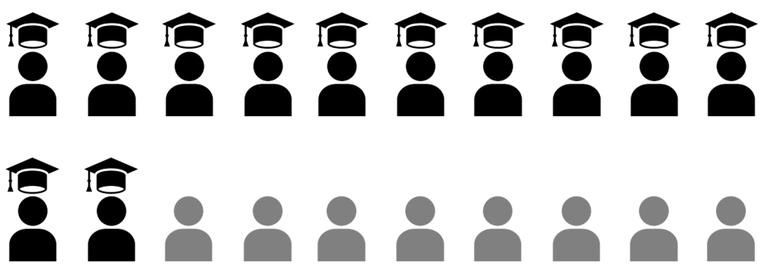
Urban - Facilities around communal square



Ethiopia - Ratio teacher student

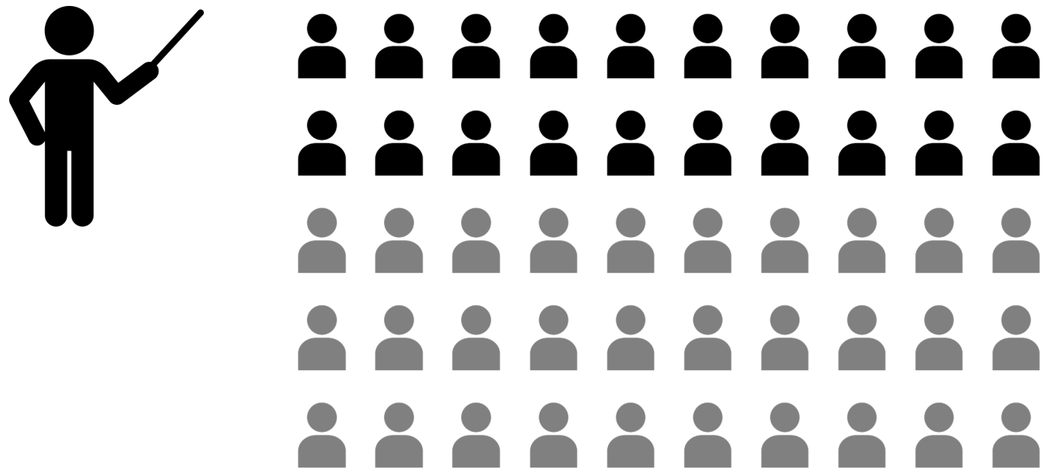


Primary school completion

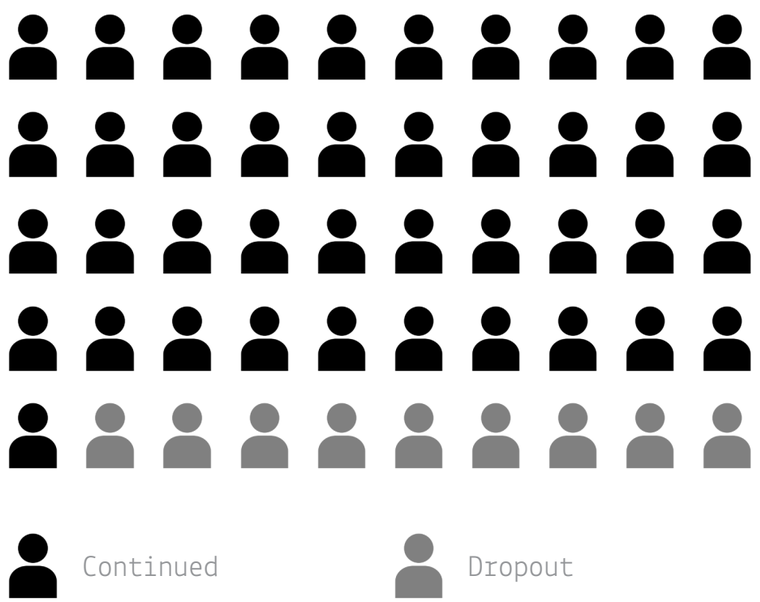


The figures of education in Ethiopia and Addis Ababa are showing that the education circumstances are generally quite poor. Nevertheless the government has been trying to improve the quality of education over the last decade. Nationally there is 1 teacher available per 47 students. In Addis Ababa the education circumstances are improving. The teacher student ratio is here 1:20. But still the drop-out rate of schools after finishing primary school is quite high, since most of the children from especially the lower income families start to generate a source of income within their families.

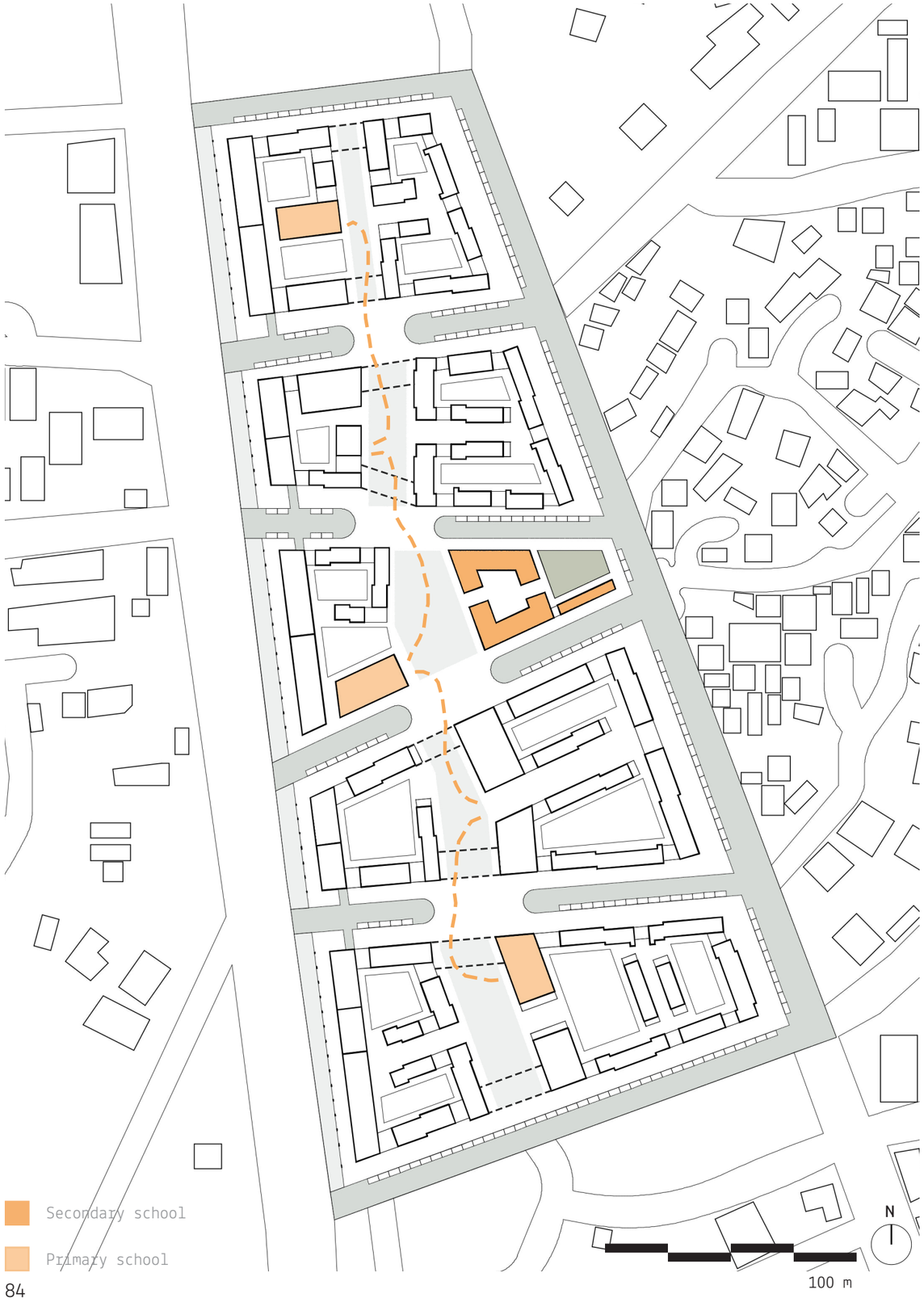
Addis Ababa - Ratio teacher student



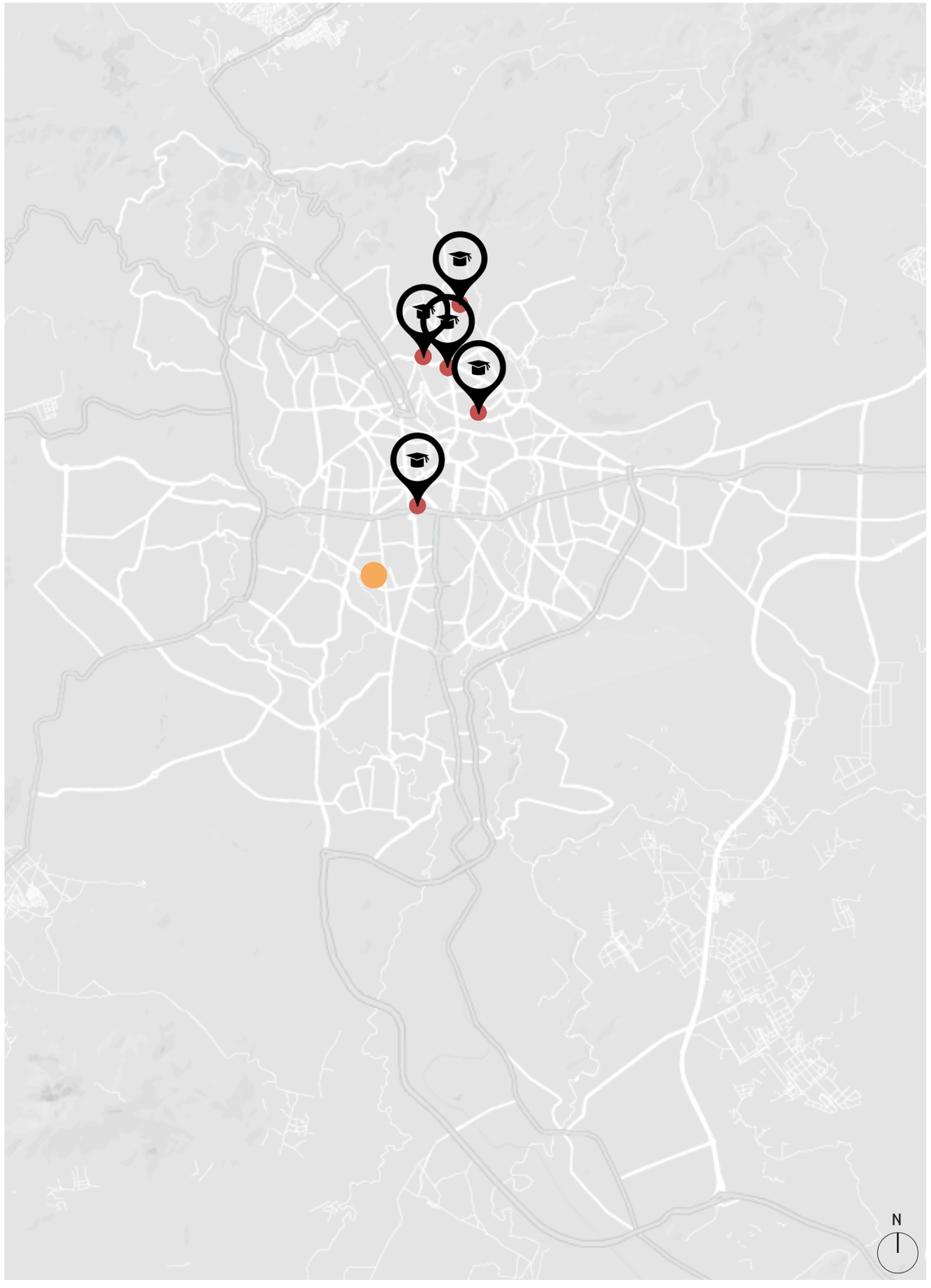
Primary school first year dropout

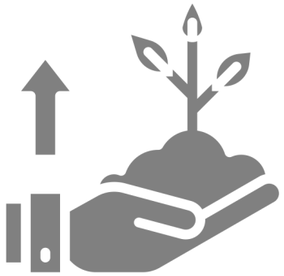


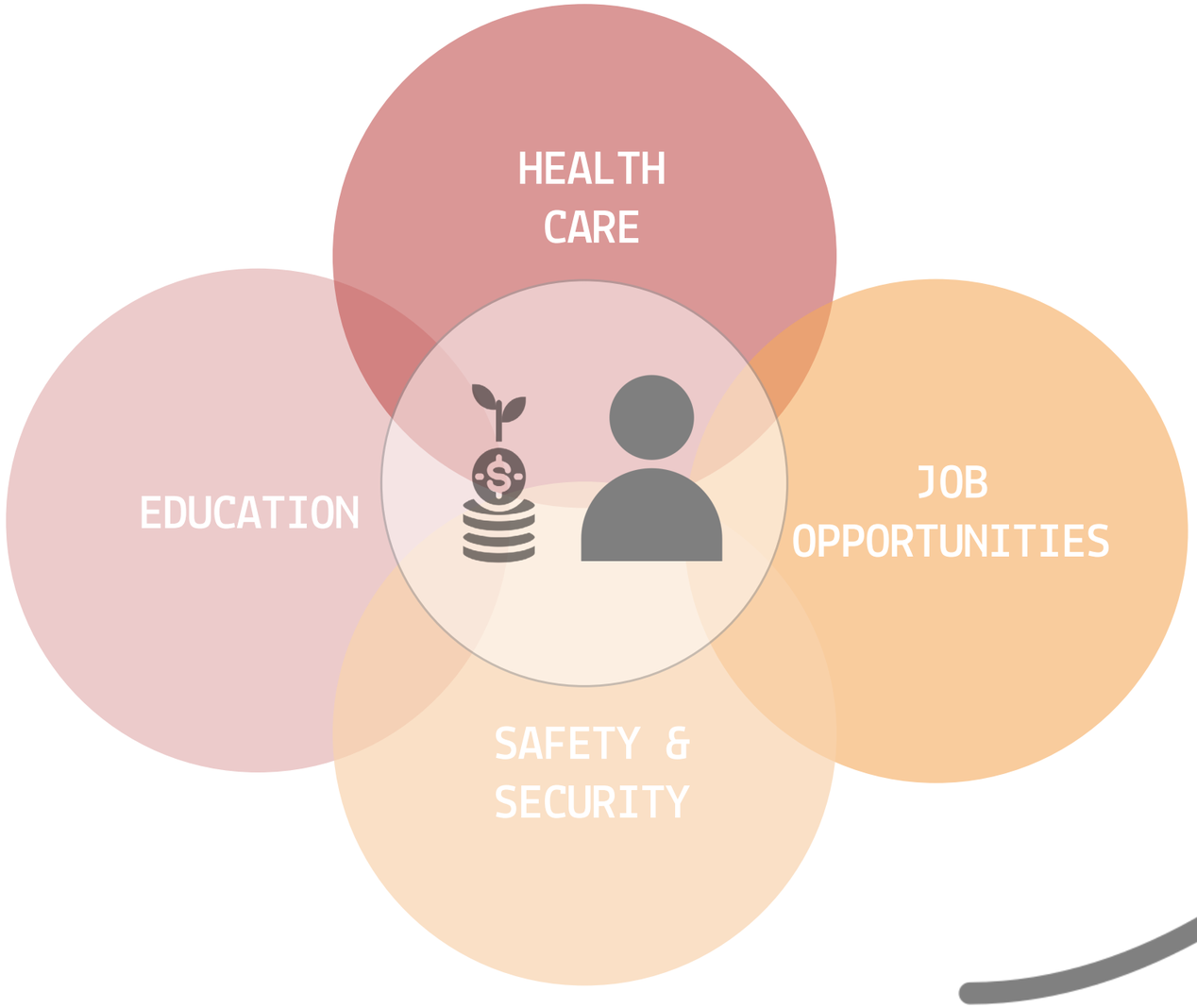
Urban - Education scales

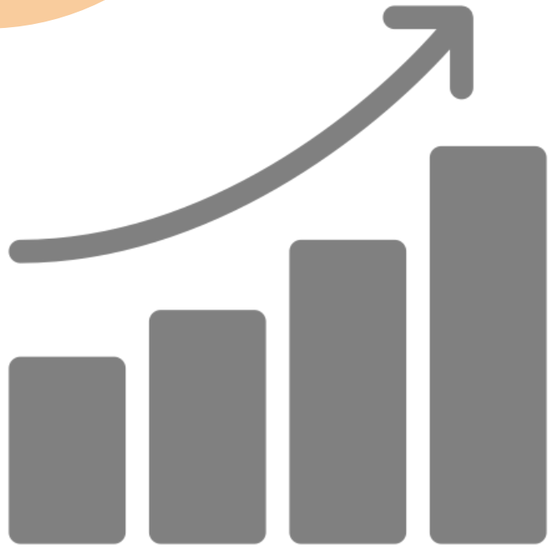


Urban - Education scale city

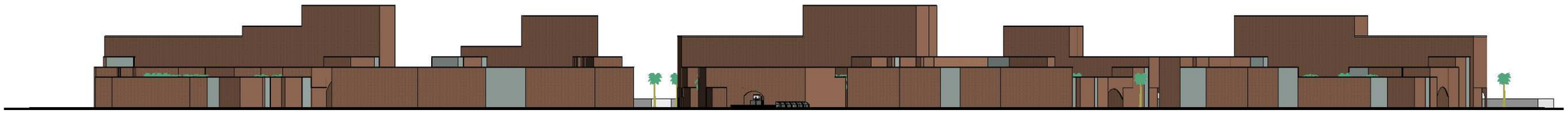




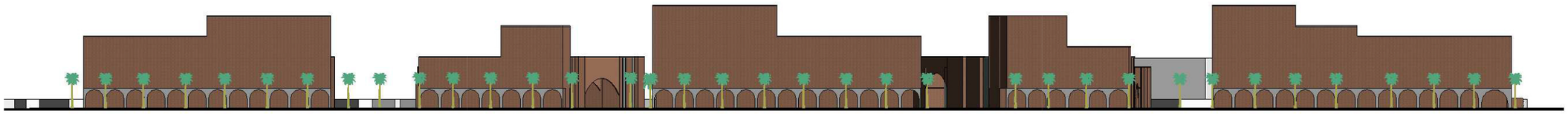

HEALTH
CARE
EDUCATION
JOB
OPPORTUNITIES
SAFETY &
SECURITY



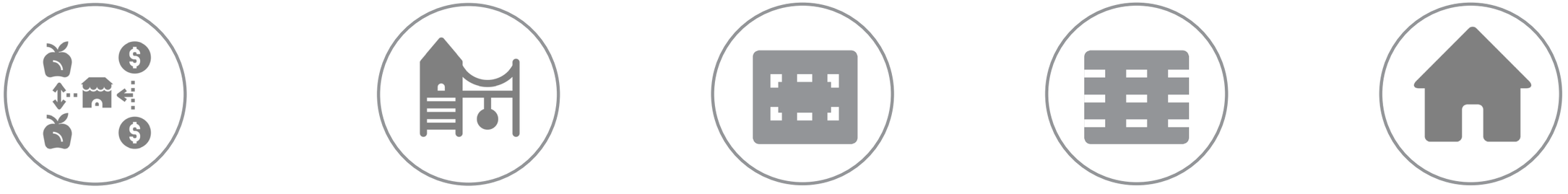
Urban - Elevations

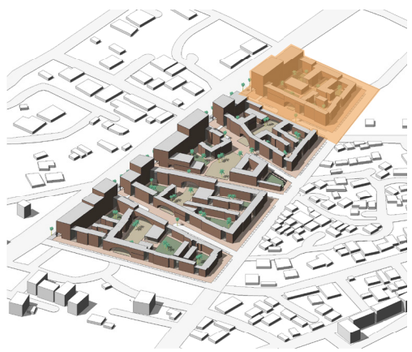


From kebele settlements



From Mozambique Street (shopping street)


Shopping street
Active squares
Courtyard
Gallery
House
Public
Communal
Private



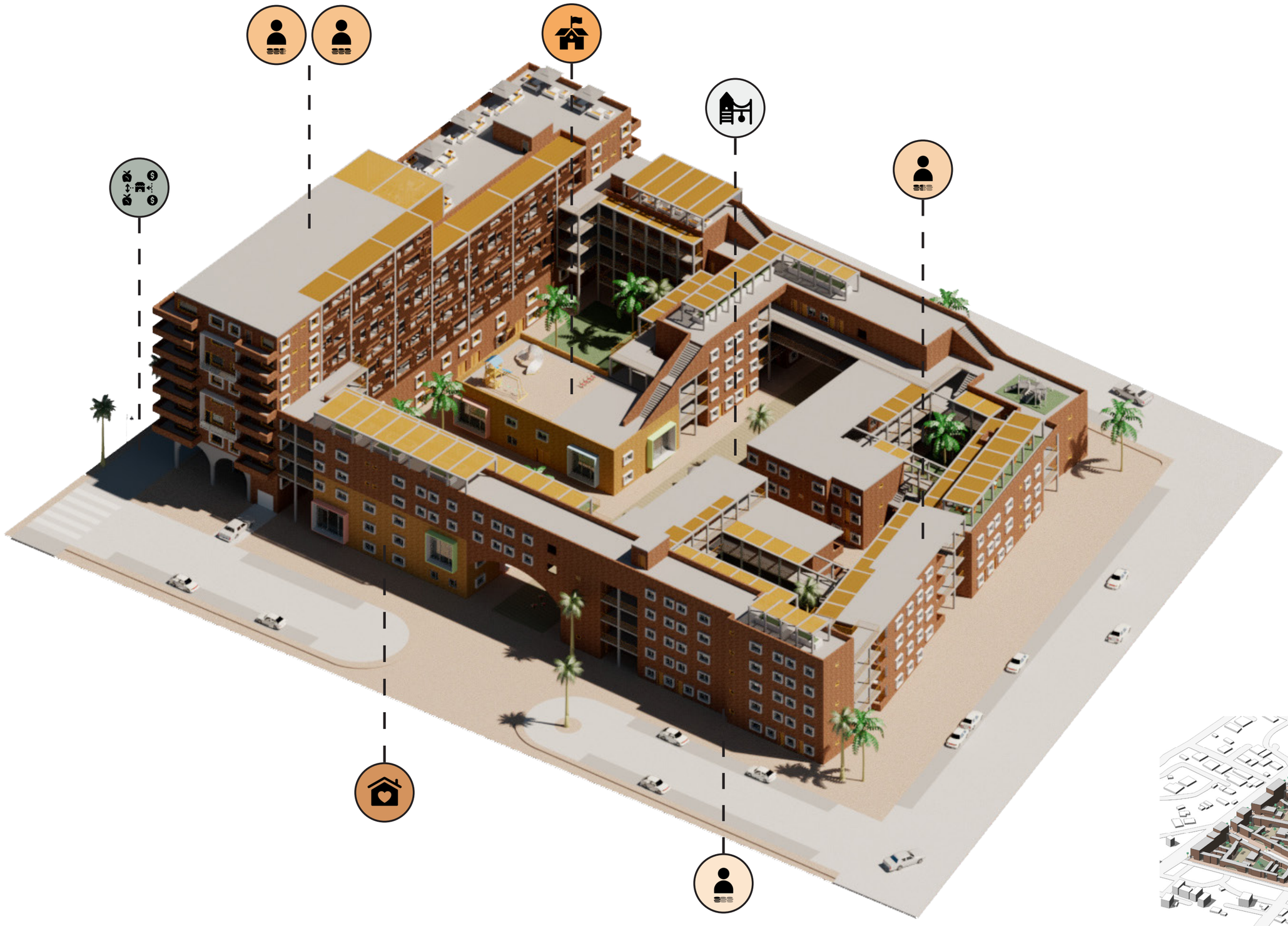
AREA = 1,38 Ha.

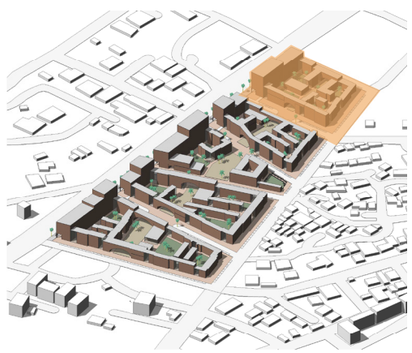
GSI = 0,22

FSI = 1,07

Units = 152

Density = 110 dw/Ha.





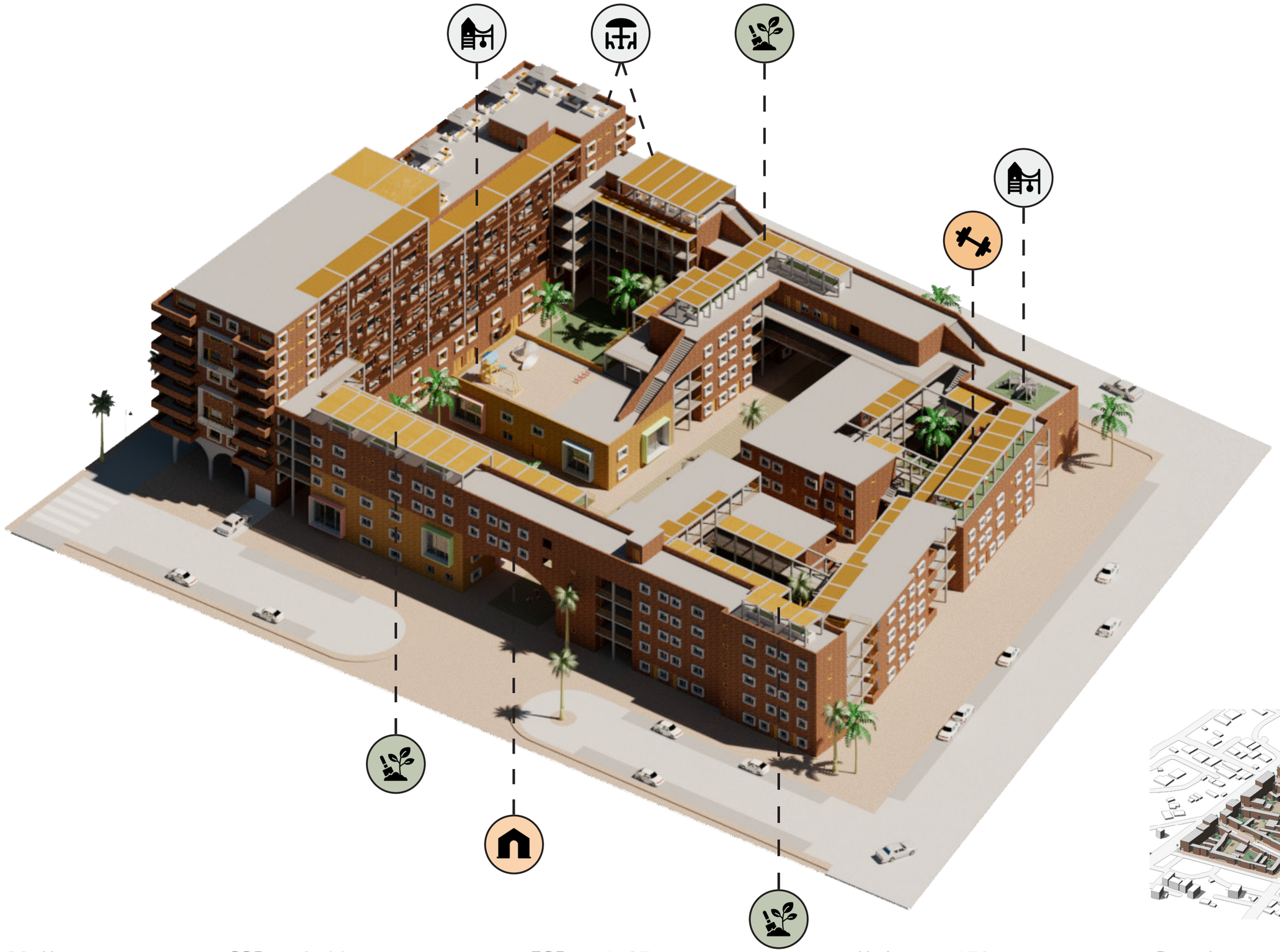
AREA = 1,38 Ha.

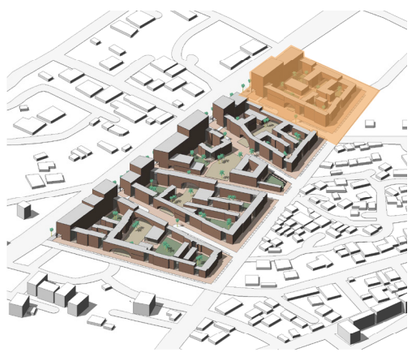
GSI = 0,22

FSI = 1,07

Units = 152

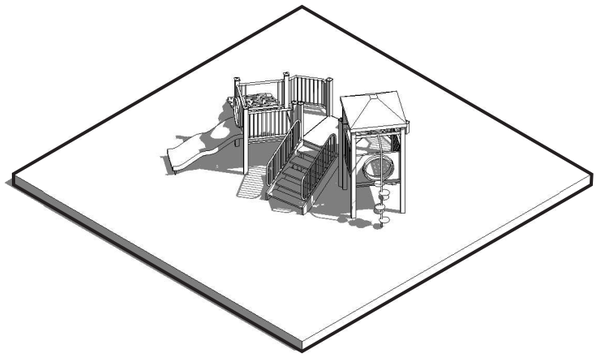
Density = 110 dw/Ha.



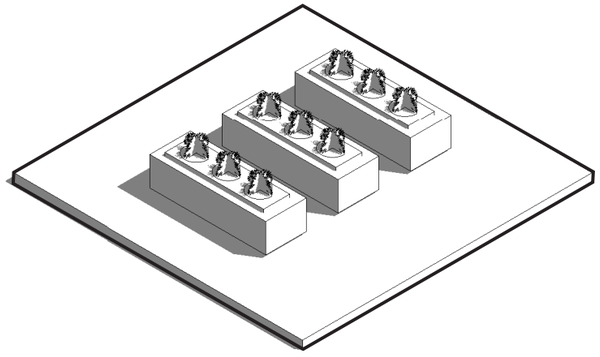


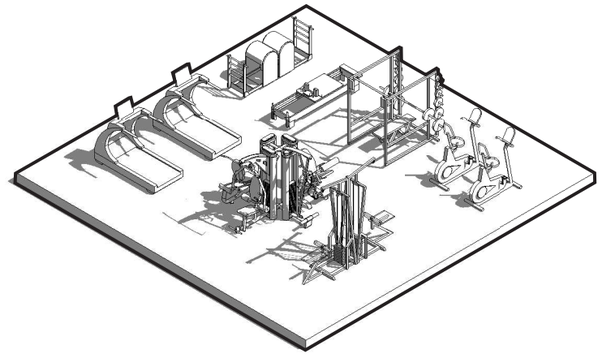
AREA = 1,38 Ha. GSI = 0,22 FSI = 1,07 Units = 152 Density = 110 dw/Ha.

PLAY

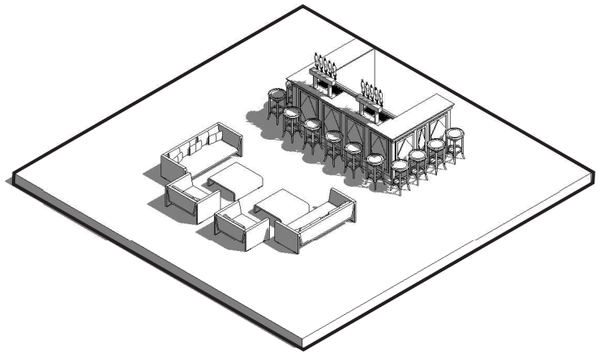


GARDENING





SPORT



ROOFTOP BAR/TERRACE

Neighbourhood - Ground floor connection


Mozambique Street
N
10 m

Neighbourhood - Ground floor connection communal courtyard & public spaces

Neighbourhood - First floor


Mozambique Street
N
10 m

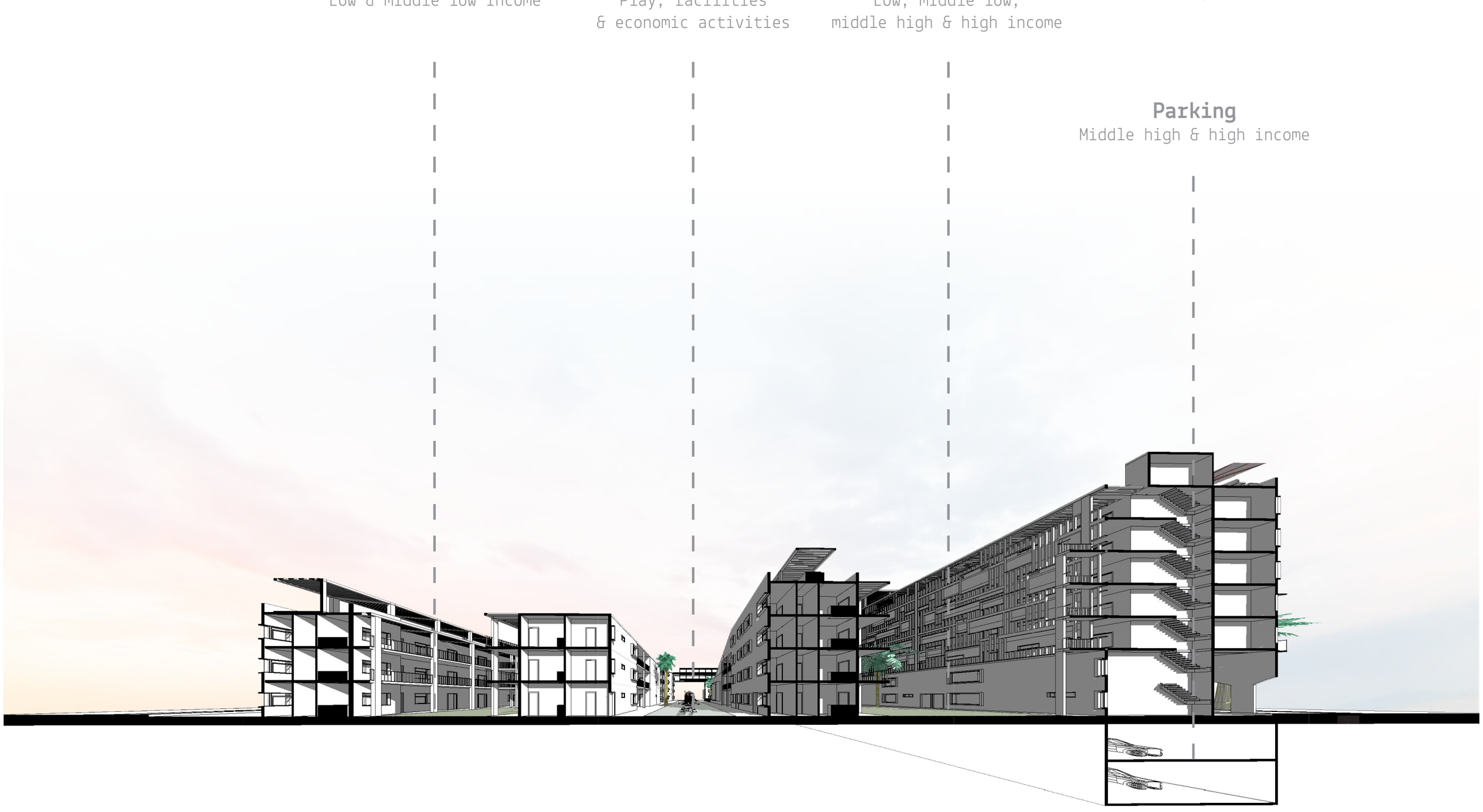
Neighbourhood - Section

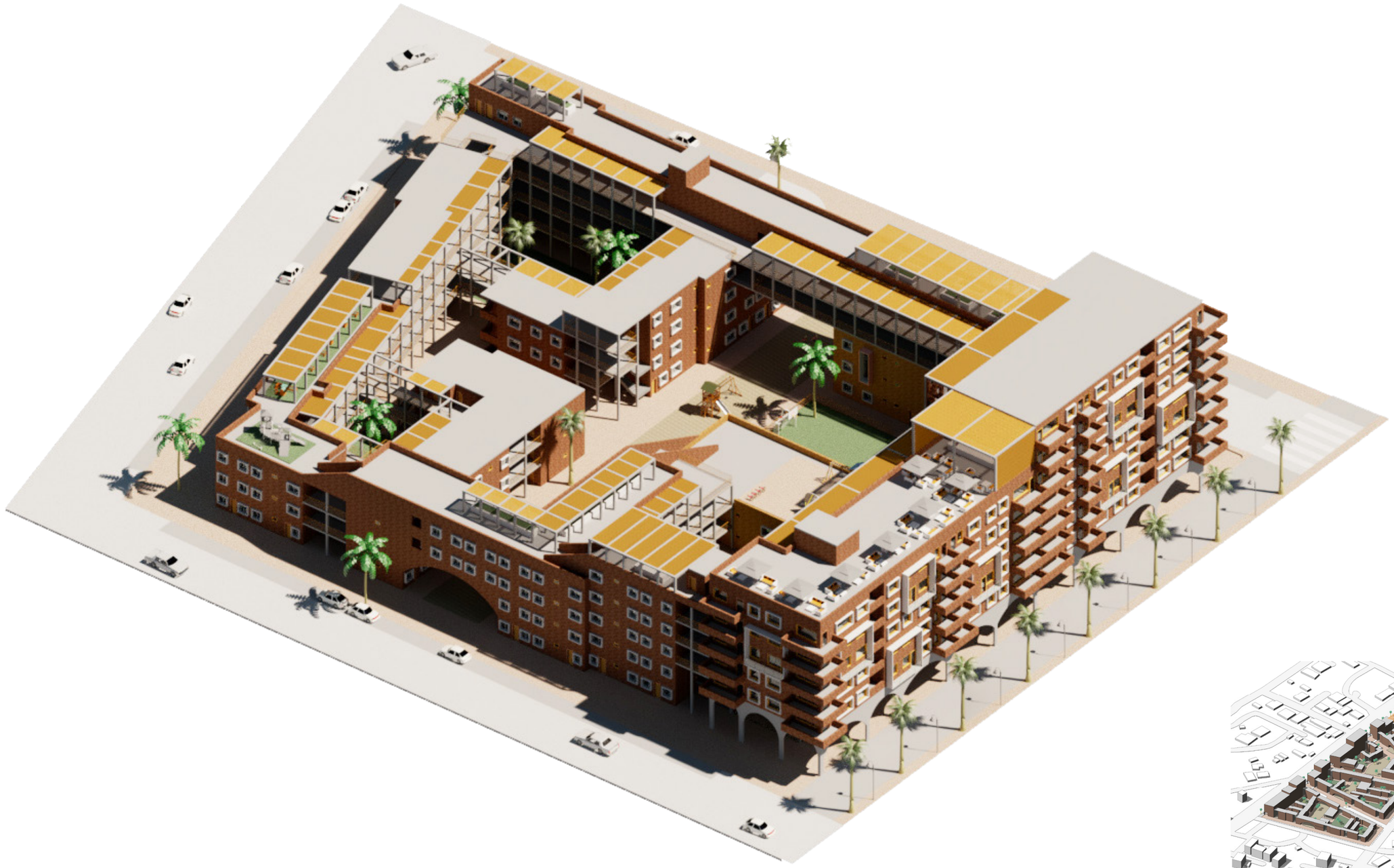
Courtyard
Low & middle low income

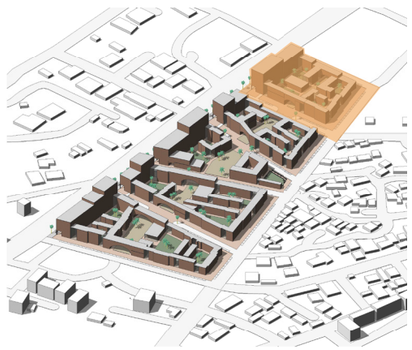
Square
Play, facilities
& economic activities

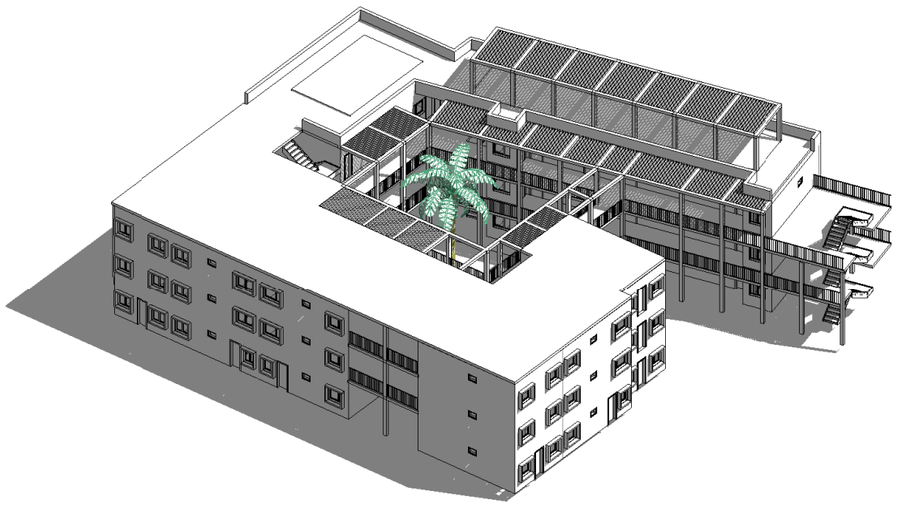
Courtyard
Low, middle low,
middle high & high income

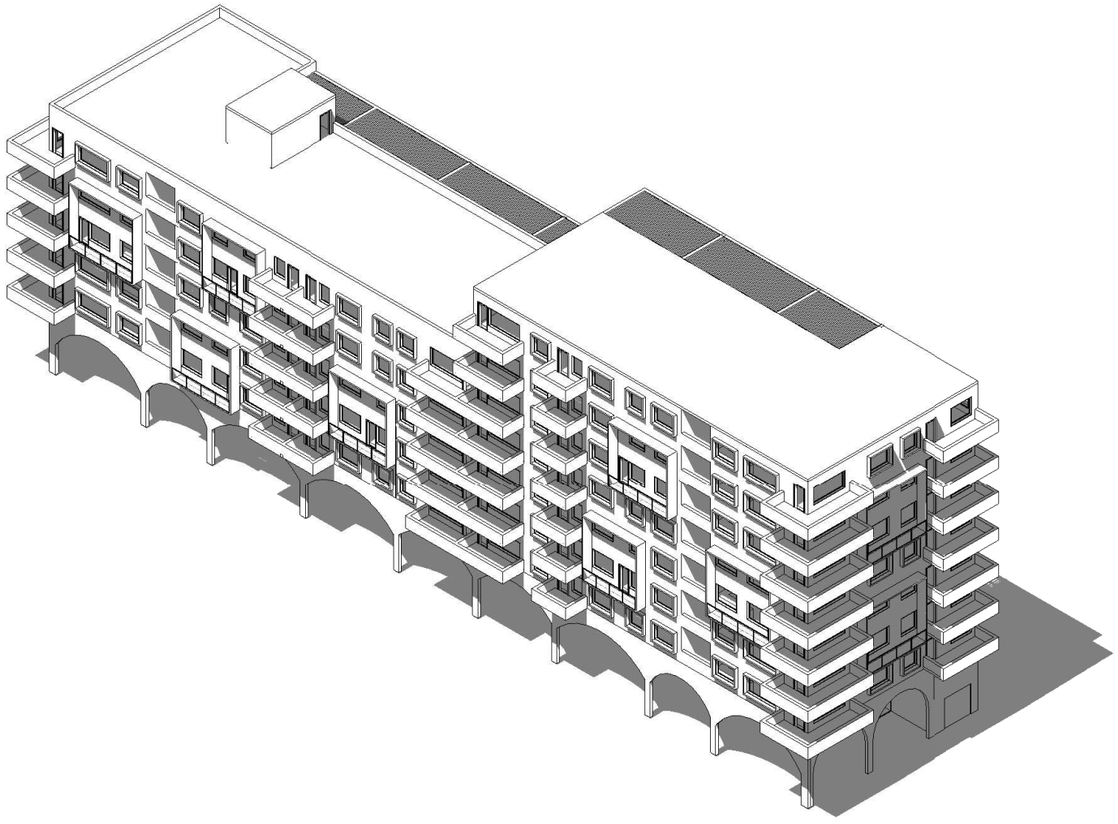
Parking
Middle high & high income











Low income

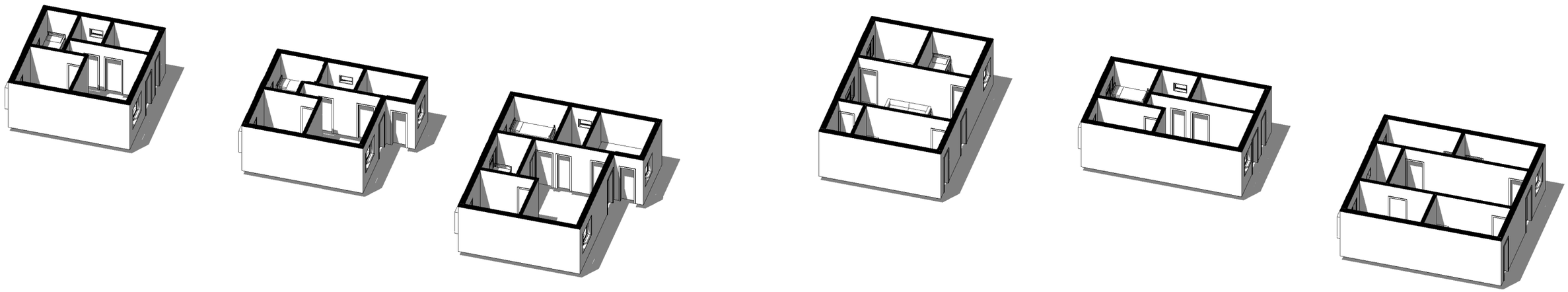
Average unit size: **44 m²**

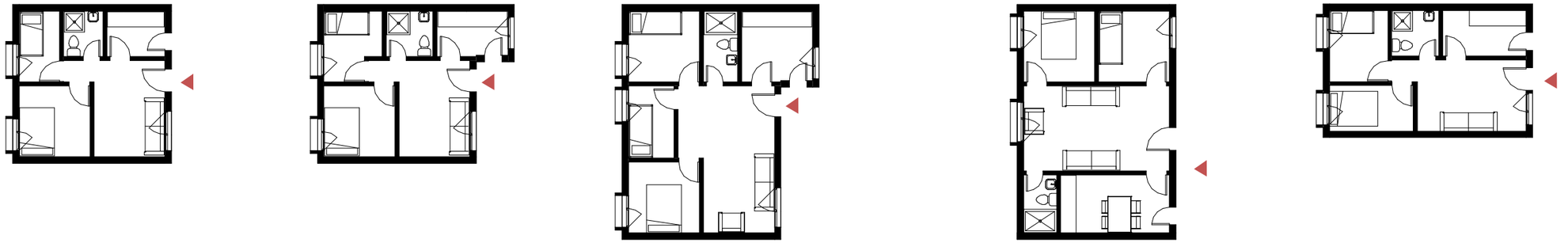
Middle income

Average unit size: **70 m²**
60 m² - middle low
85 m² - middle high

High income

Average unit size: **110 m²**





33 m²
- 2 bedroom

36 m²
- 2 bedroom

56 m²
- 3 bedroom

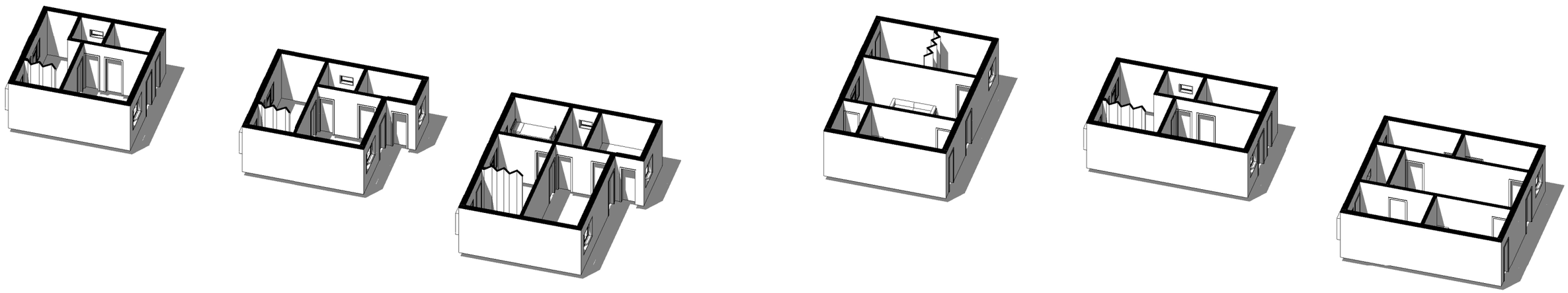
50 m²
- 2 bedroom

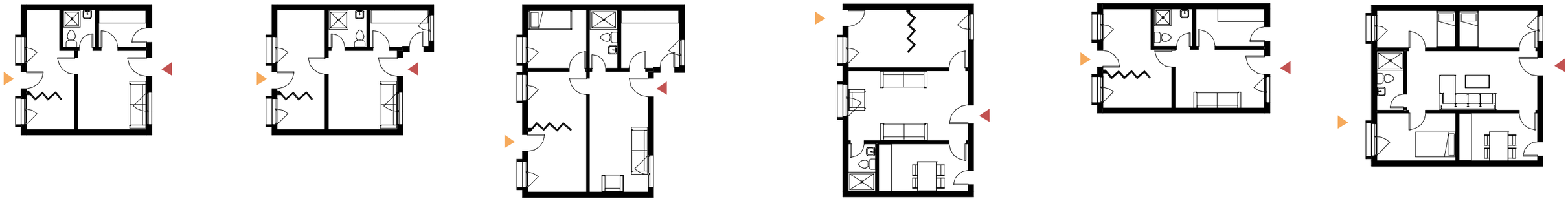
36 m²
- 2 bedroom

56 m²
- 3 bedroom

5 m

Housing - Low income housing units ground foor, homeshop/ bedroom





33 m²
- 2 bedroom

36 m²
- 2 bedroom

56 m²
- 3 bedroom

50 m²
- 2 bedroom

36 m²
- 2 bedroom

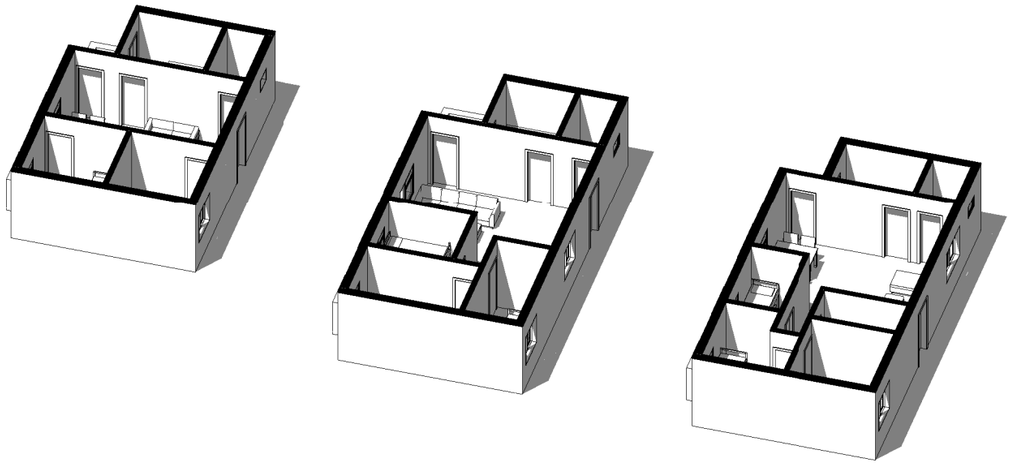
56 m²
- 3 bedroom

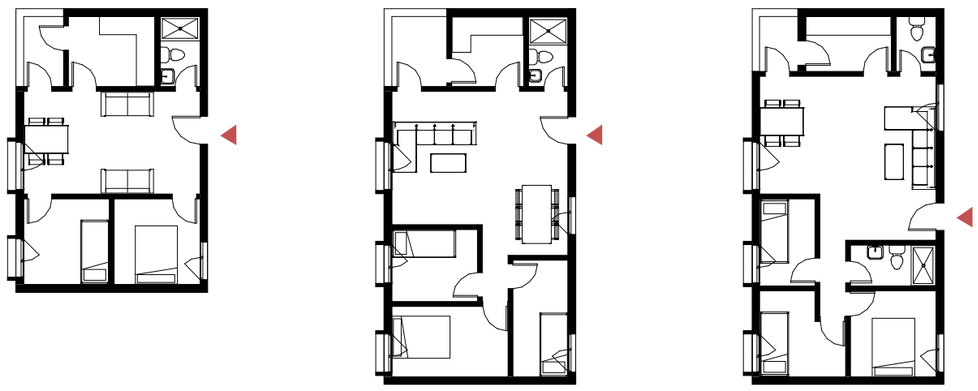
These plans are variations of the previous plans of the lower income group. These dwelling units are placed on the ground floor and offer the possibility for the residents to run a local business from home.

During the day the bedrooms can be unified in order to create a bigger space for the homeshop. The homeshop is always facing the more public side; the street, and can be extended to the outdoor space.

5 m

Housing - Middle low income housing units





50 m²
- 4 m² terrace
-2 bedroom

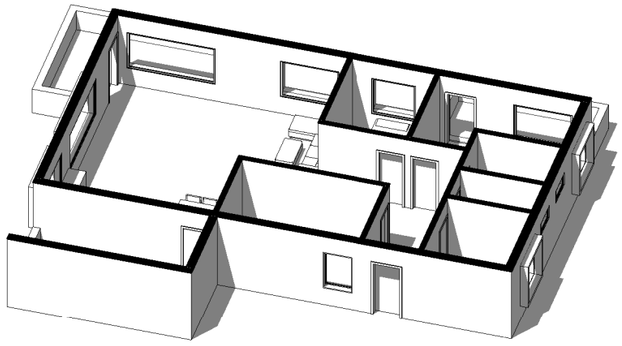
68 m²
- 6 m² terrace
-3 bedroom

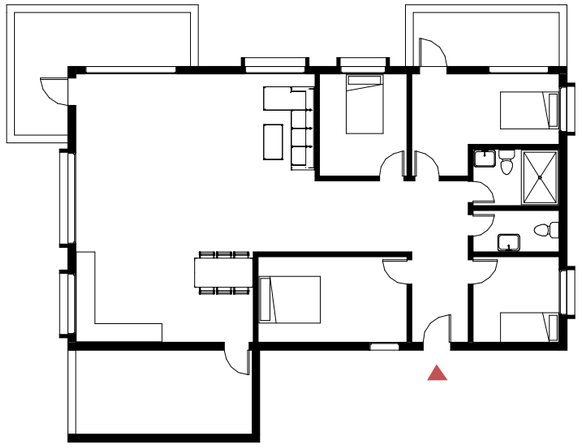
68 m²
- 4 m² terrace
-3 bedroom

5 m

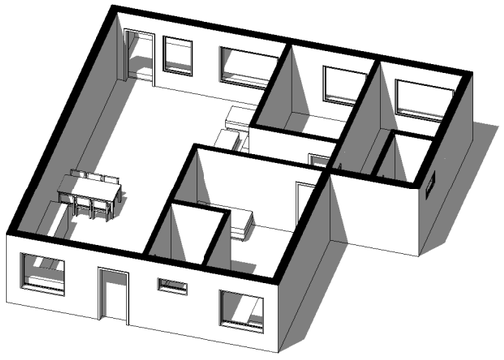
Housing - Low & middle low income courtyard block

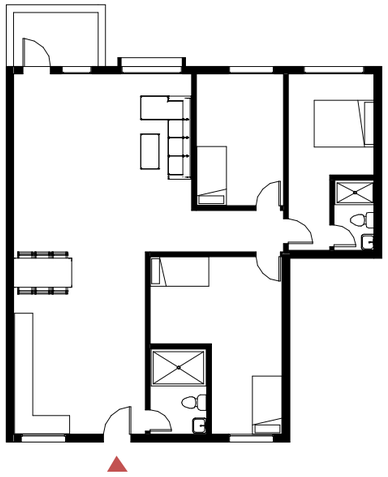
5 m



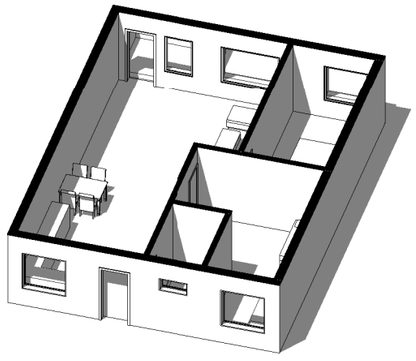


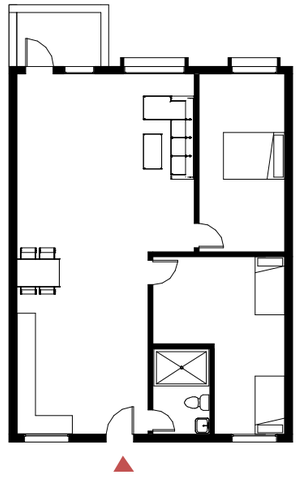
140 m²
- 40 m² terrace
- 4 bedroom



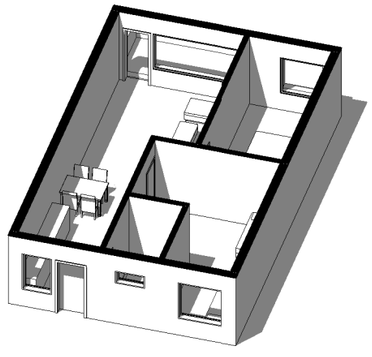


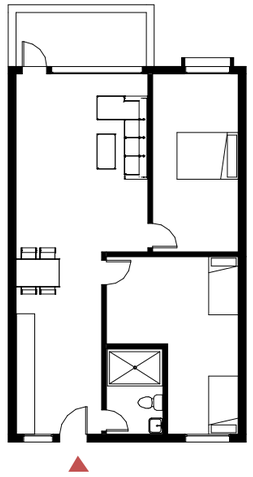
125 m²
- 6 m² terrace
- 3 bedroom





105 m²
- 6 m² terrace
- 2 bedroom

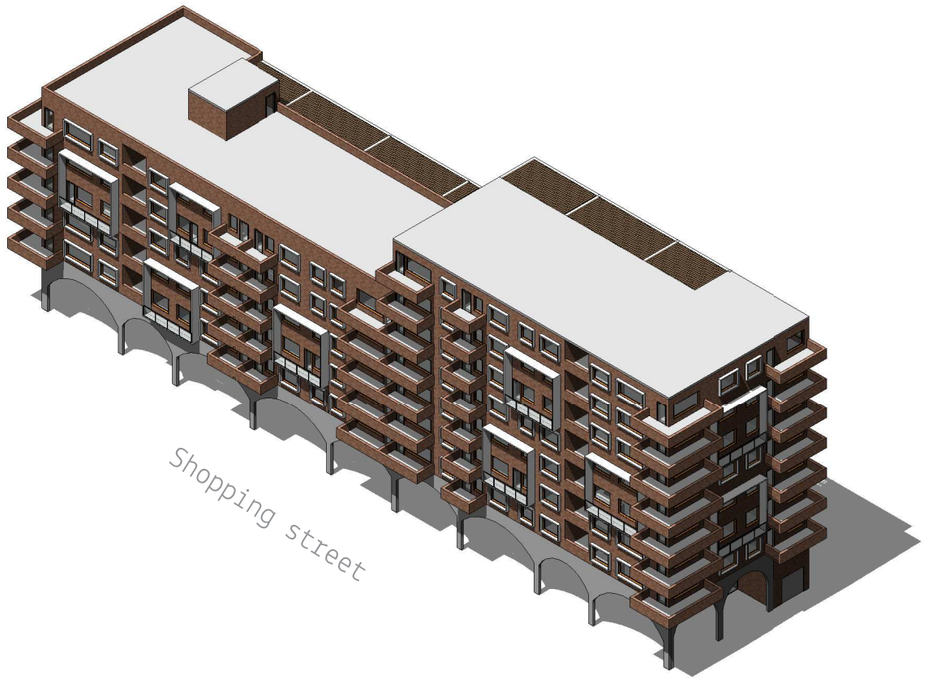


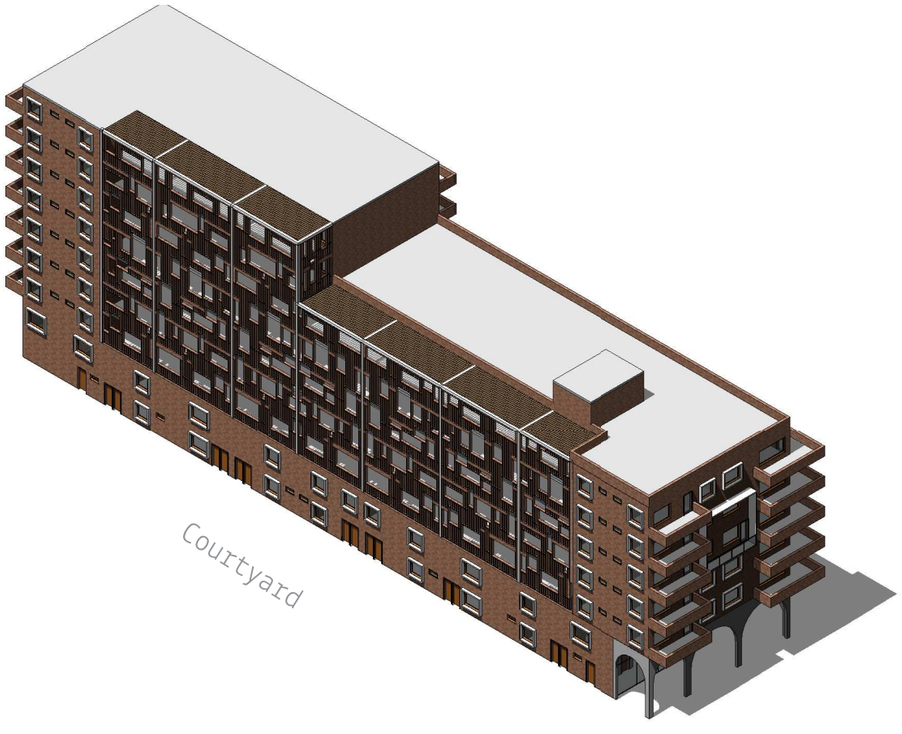


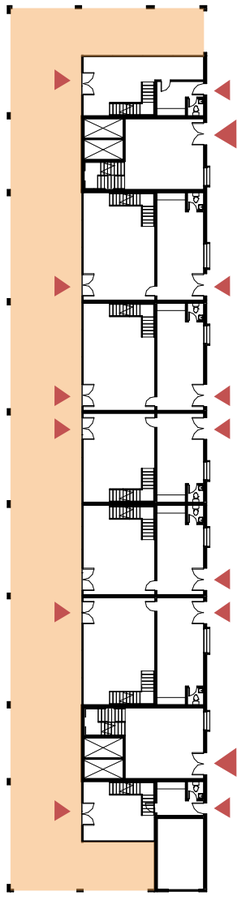
85 m²
- 9 m² terrace
- 2 bedroom

5 m

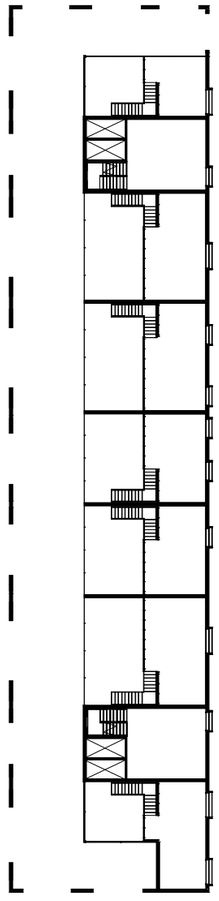
Housing - Middle high & high income block



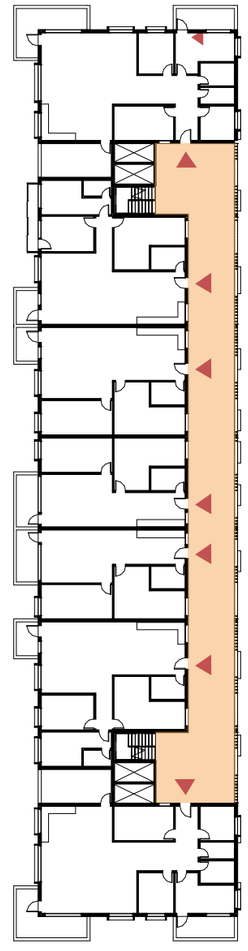




Ground floor
- Shops

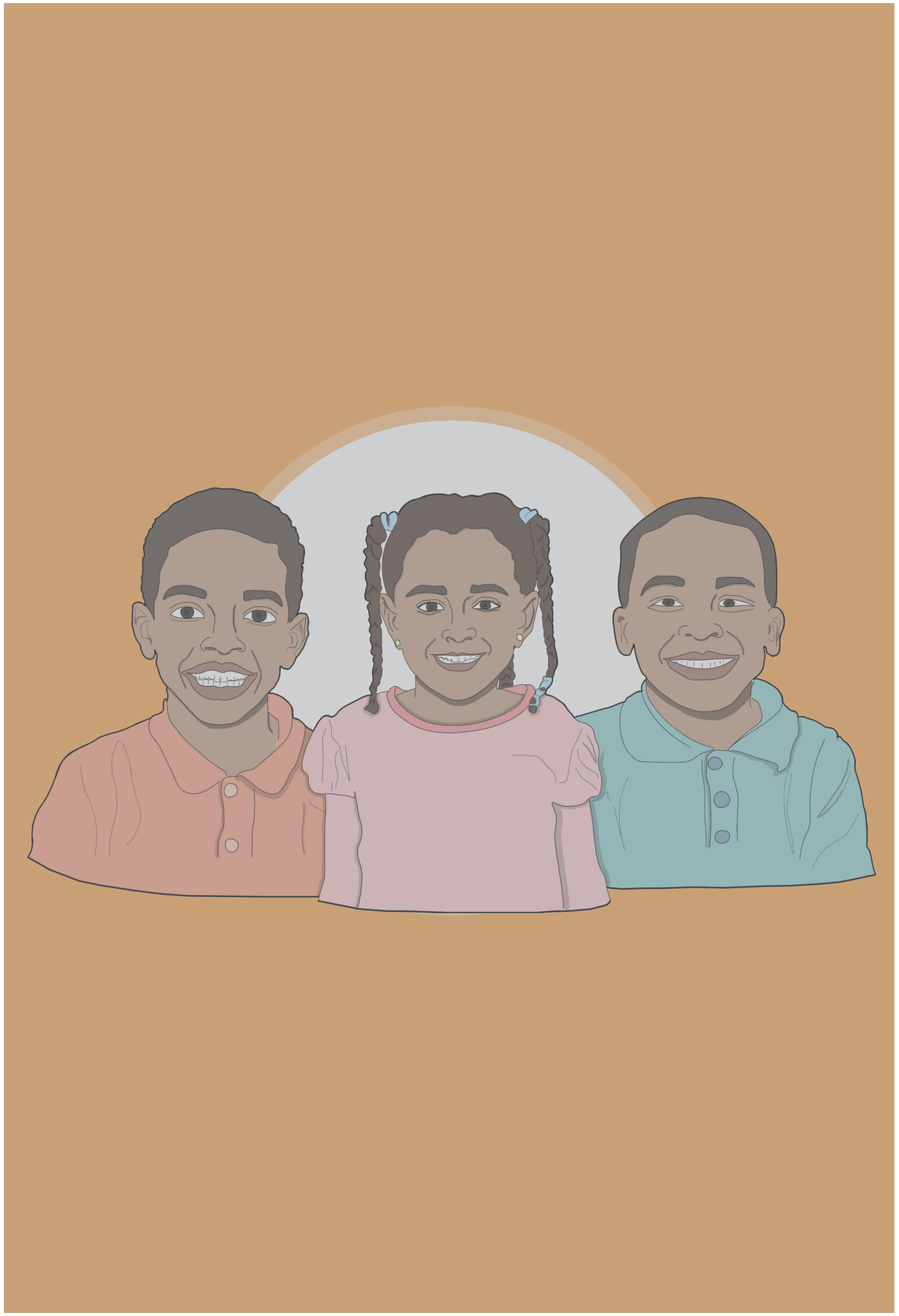


First floor
- Shops



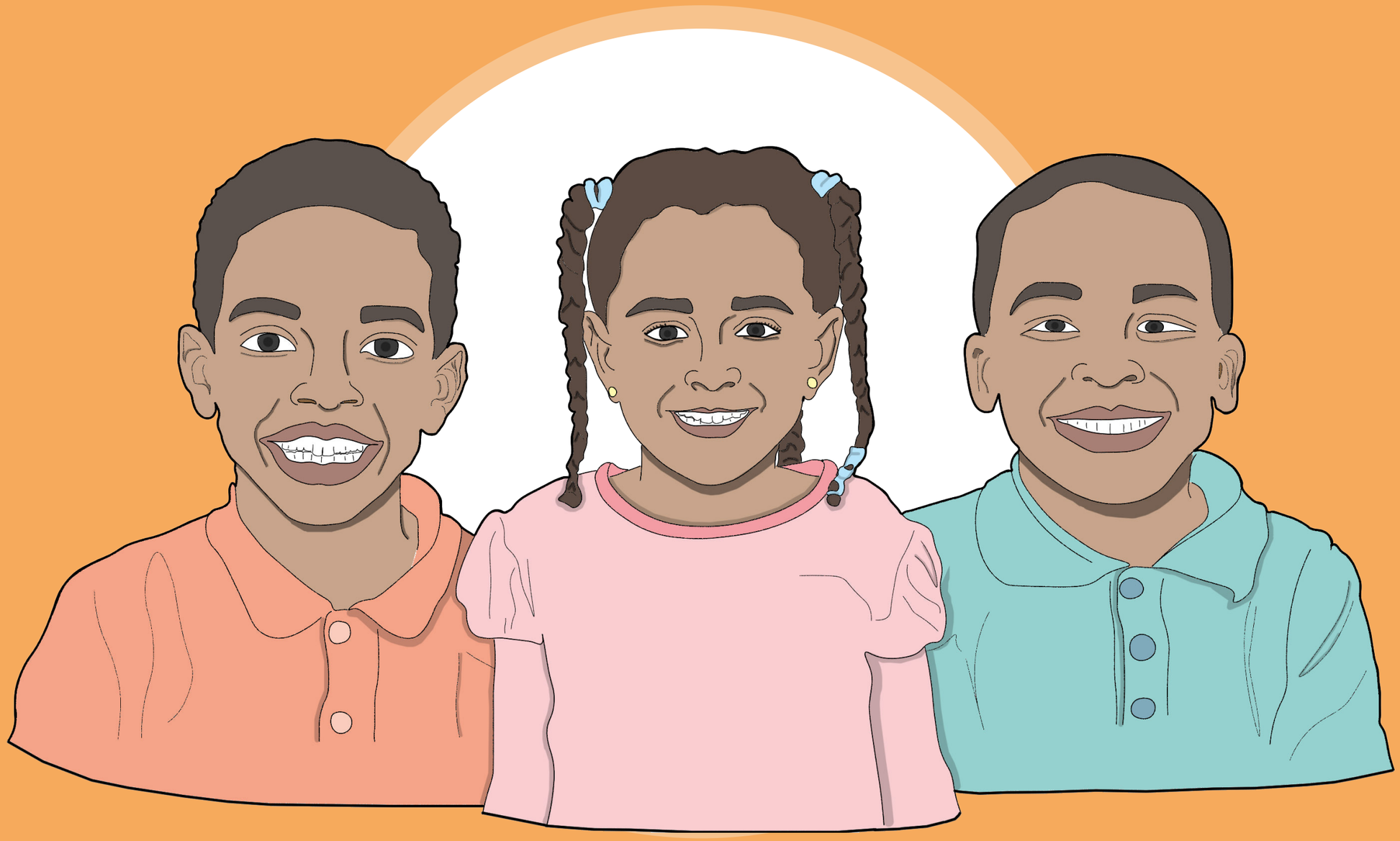
Second floor >
- Apartments

10 m

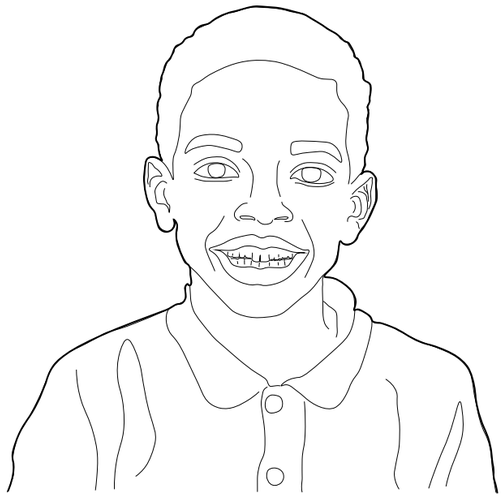


CHAPTER 5

A DAY IN THE LIFE OF 3 FRIENDS



Yonas (8)



Selam, my name is Yonas!
I am a 8 year old boy coming from the rural outskirts of Addis Ababa and I have never been to school. I came to Addis Ababa at the age of seven. I come from a big family, consisting of my parents, my grandma, one bigger sister and one little baby brother. Before moving to this neighbourhood, I used to sell roasted cereals on the streets. My father is a carpenter and my mother is a daily laborer, sometimes they work and sometimes they do not. Therefore, I had to sell the roasted cereals to fulfill our needs. Now that we moved to this neighbourhood, I started to go to school and I really enjoy it. Sometimes, only when it's needed, I still help my parents after school. They are very grateful for the help, but actually they want me to focus on school so I can improve my living standards in the future.

Zala (7)

Hi, my name is Zala.
I am 7 years old and I just came recently to this neighbourhood, my family and I moved from the Gotera condominium 80-20 complex. My family consists out of me, my parents and two sisters. Together we live in an 68 m^2 apartment, which is bigger than our previous apartment. I used to share my bedroom with all of my sisters, now I only have to share it with my twin sibling. In school, I already made some new friends, some of them are Yonas, Amadi, Aida and Nyala. I have friends from different income households and I don't feel any differences between those kids. To me, every child deserves the same equal rights and chances.

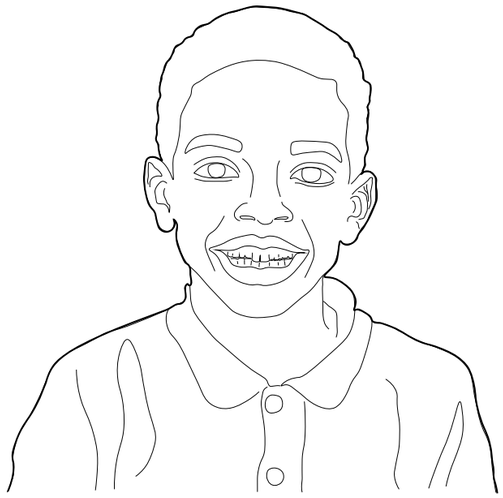
Amadi (7)

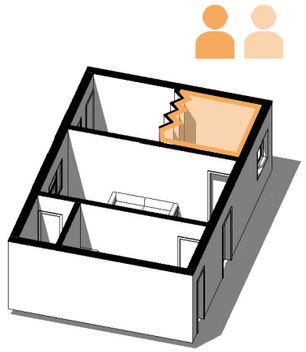
Tena jistilign, my name is Amadi!
I am a 7 year old boy that moved recently to this neighbourhood. We came from a gated community in Bole and we used to live in a villa. Now we have moved to a corner apartment along the main road, where my parents own a shop on the ground floor. It is much more convenient for them to have their business very close to home. I live together with my parents, brother and housekeeper/nanny. I really enjoy living in this neighbourhood, because I can make new friends and play with them in front of our doors or in the courtyards. In our previous community, every household used to live very segregated, so actually it was very hard for me to make friends and play with them. My new best friend's name is Yonas, and I also get along very well with Zala. It is nice to have my best friends close to me, my parents don't need to drive me to my friends, I can go on my own.

This chapter will take you through a typical schoolday of three friends from three different social and economic backgrounds. The school connects the three kids, since they share the same class. Not only the children are brought together, but also their parents.

In the end this story line tries to convey the equality of children. It doesn't matter where these children come from, all children will eventually have the same opportunities and rights within this project. In this manner, the development and growth of the children will be stimulated.

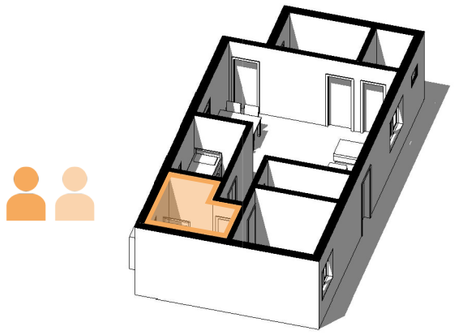
Yonas (8)





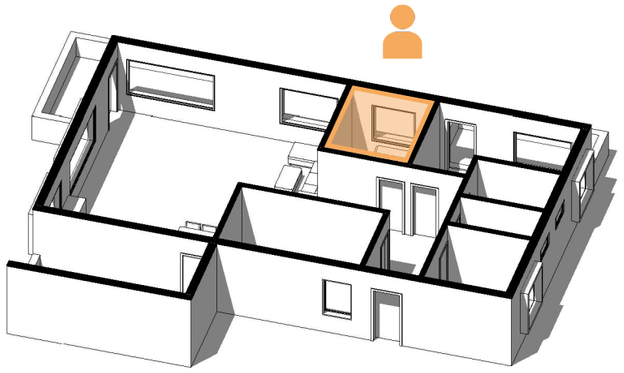
50 m²

Zala (7)



68 m²

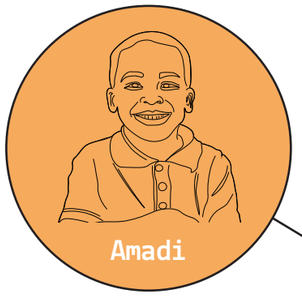
Amadi (7)



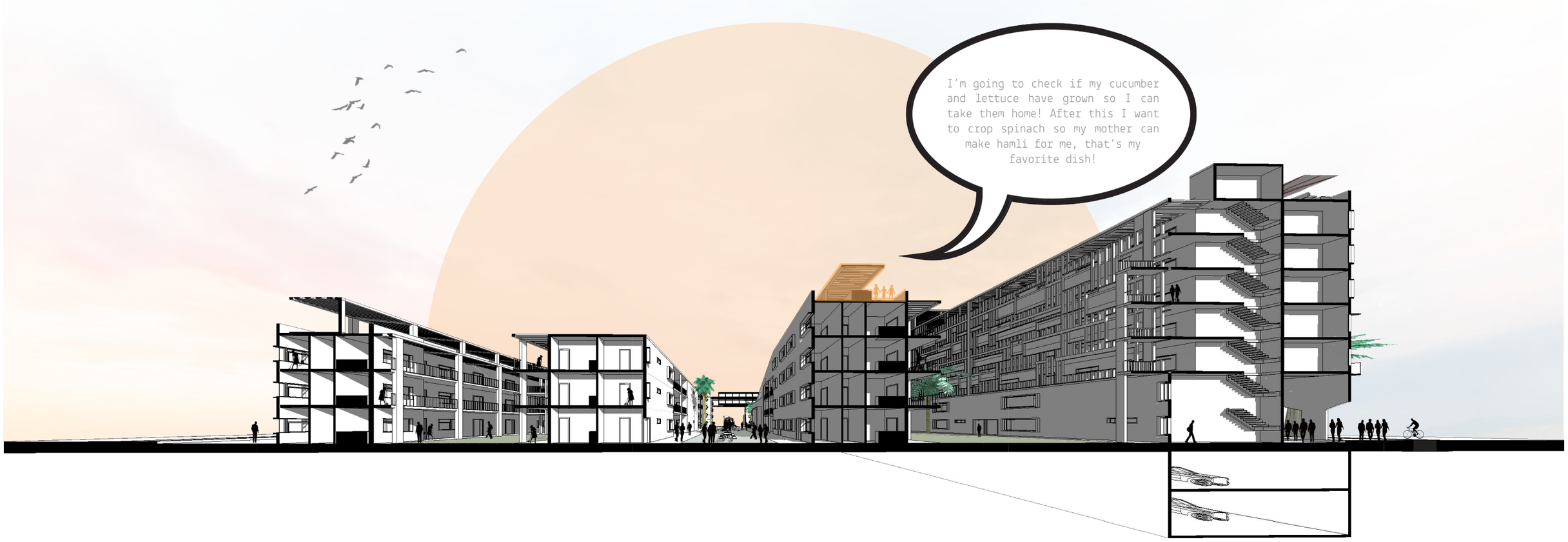
140 m²

Children story - Going to school

Children story - Going to school

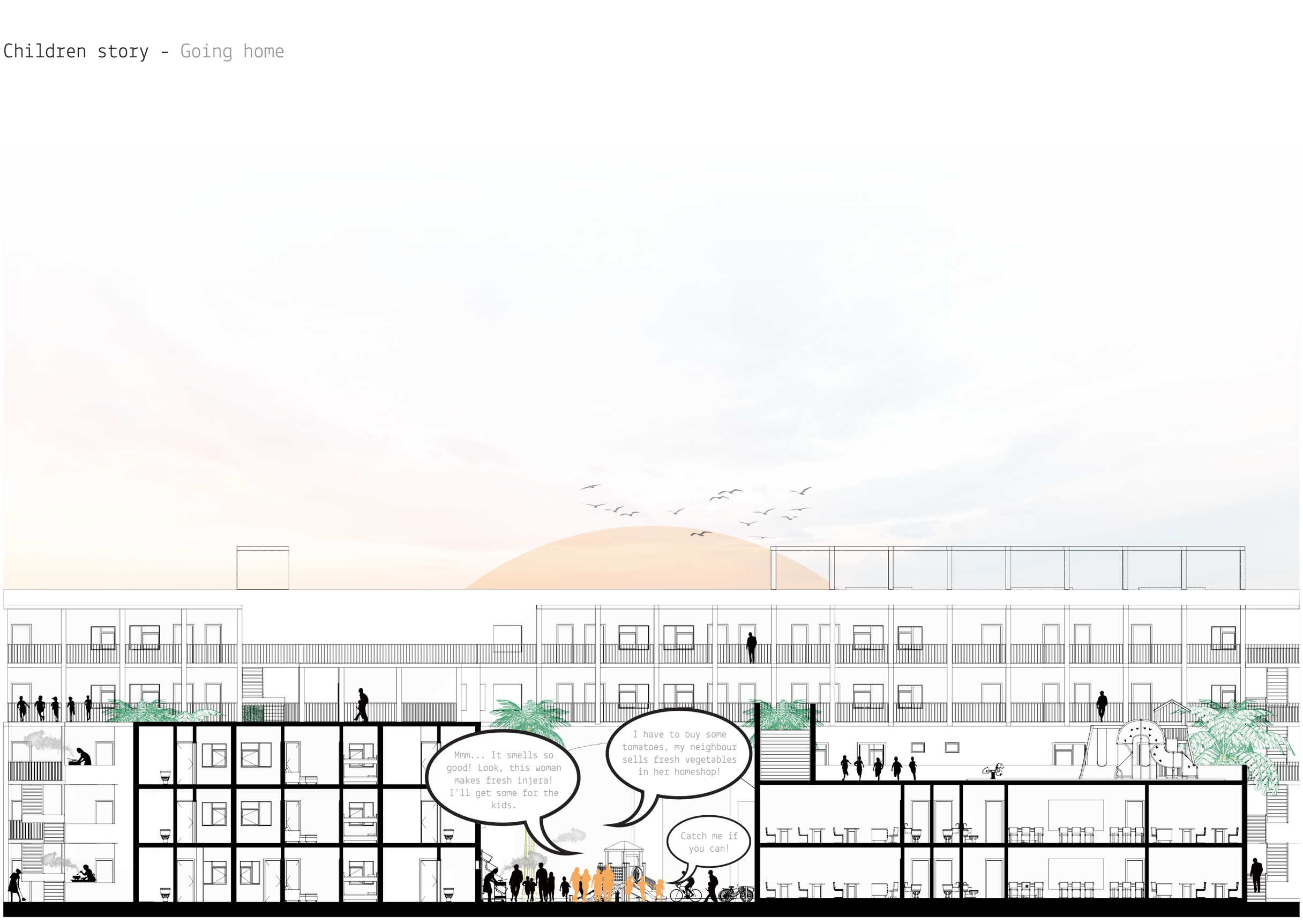


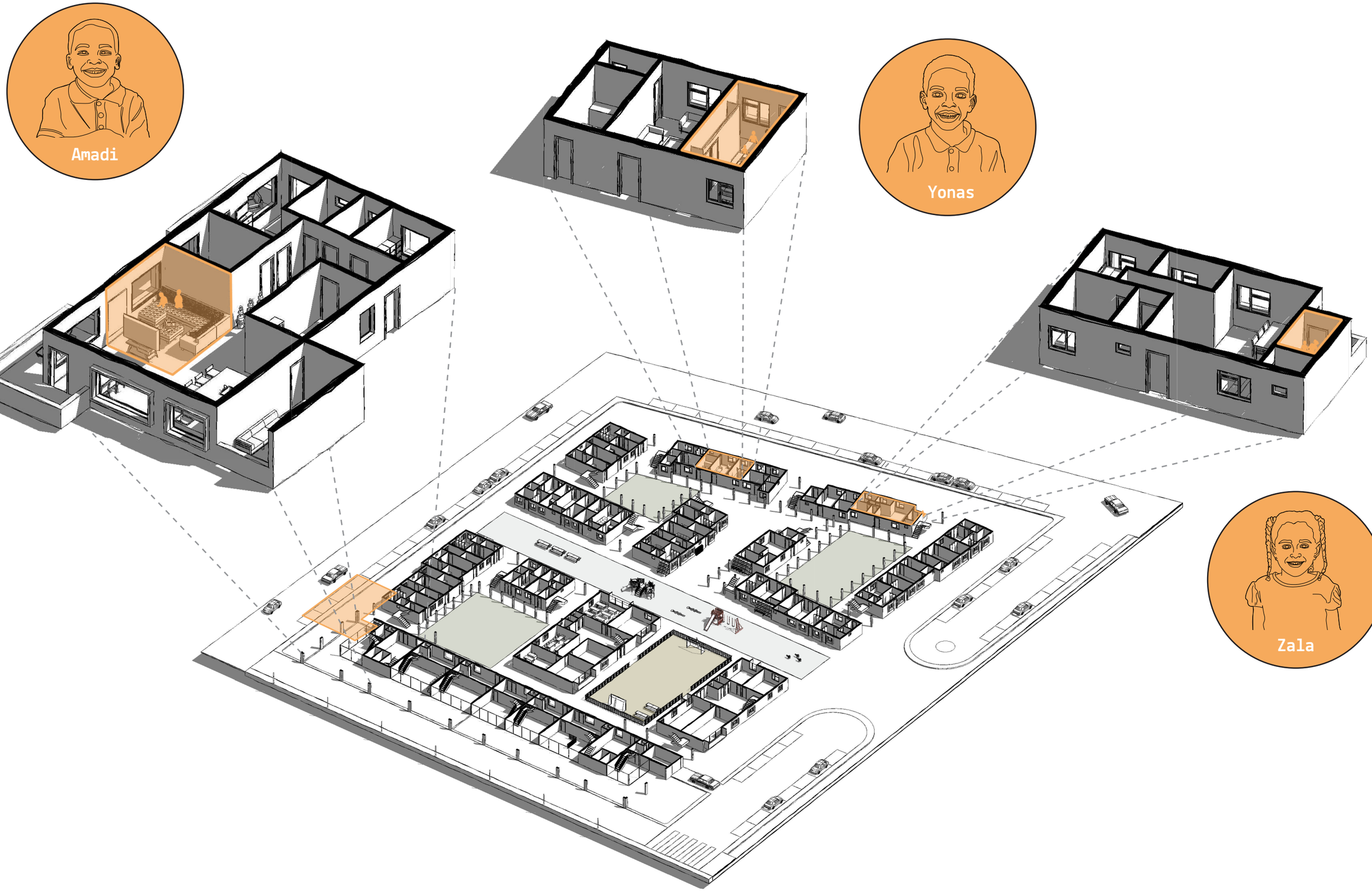
Children story - Vegetables garden



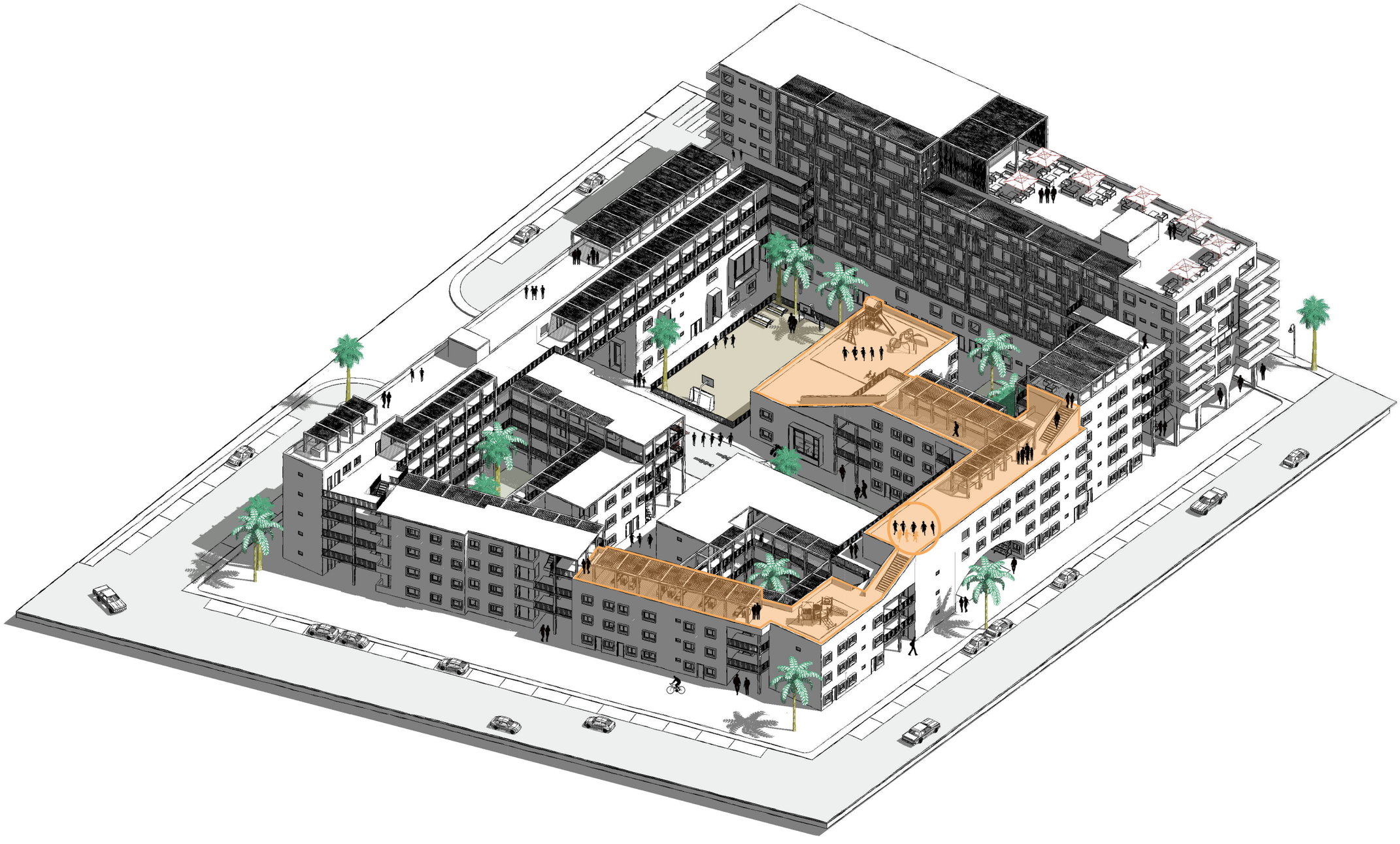
Children story - School break

Children story - Going home




Amadi
Yonas
Zala

Children story - Playing on the roofs



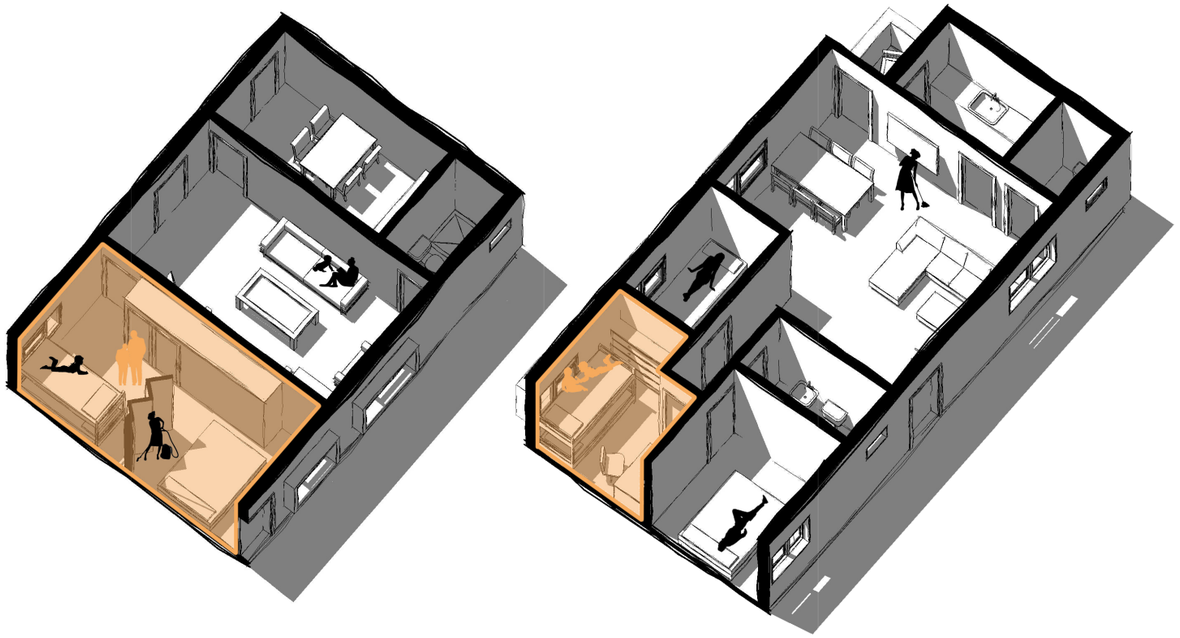
Children story - Playing in the courtyard

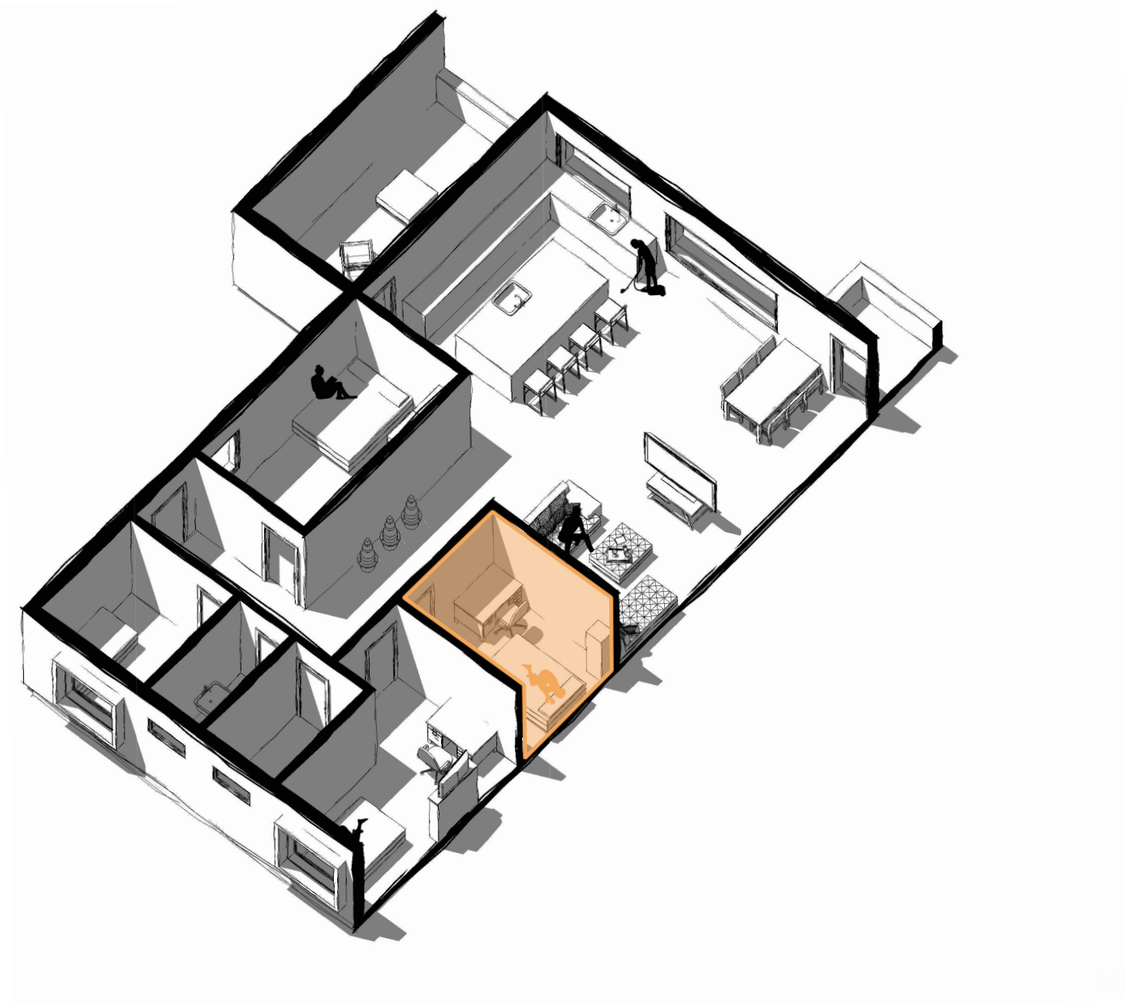
Children story - Home

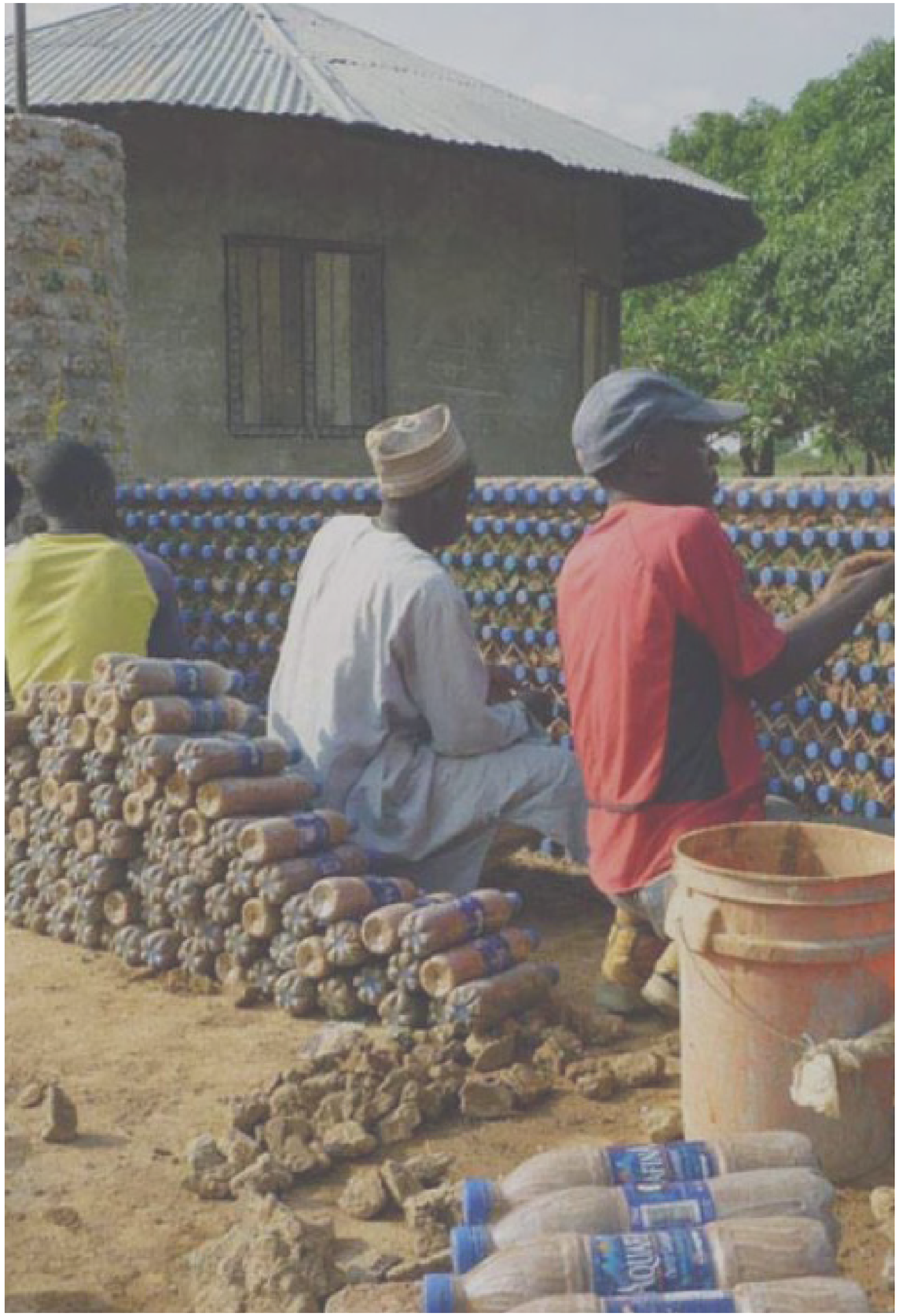
Yonas

Zala

Amadi







CHAPTER 6

BUILDING TECHNOLOGY

Materiality - Waste management problem

The city of Addis Ababa is facing a waste management problem. The city generates a solid waste of 0.4kg/c/day. Sources of waste are generated from: 76% households; 18% institutions,commercial, factories, hotels; and 6% is street sweeping.

The physical composition of waste in Addis is: organic 60%, recyclables 15 % , and others 25%. The recyclable materials include: metal, wood, tyres, electricity products, old shoes and plastic.

The municipality role in recycling is absent and mainly focus on collection, storage, transportation and disposal of solid waste.Most of the collection of recyclable wastes in the city is performed by the informal sector.

There is currently one open dumpsite where all collected waste is disposed off, this place is also known as “Rappi” or “Koshe”.
This dumpsite is in the South west part of the city and has a surface area of 25 hectares. The main problem is that the the dumpsite is getting overfull.

Materiality - Plastic waste

Plastic waste is highly available in the urban and rural regions of Addis Ababa. The plastic is easy to transport because plastic materials are typically much lighter than metals. The lightness of the material makes it easier to carry and lift into place. The lightweight of plastic materials allows for quick and easy installation.

In general, plastics in construction products are lighter than their alternatives, using a lower quantity of material for the same application. As a result, fewer resources are needed in the manufacturing process and less waste will be created by the end of the product life.

Plastics are ***strong, durable, waterproof, lightweight, easy to mould, and recyclable***
– all key properties for construction materials

Waste problem ⟶ waste collection ⟶ **recylcing** ⟶ **material use (building/architecture)**

Encourage recylcing of waste ⟶ clean and healthy environment
But also tackle another problem: lack of (affordable) housing

SOLVING THE PROBLEMS OF WASTE INTELLIGENTLY

TURNING A PROBLEM INTO A SOURCE

Materiality - Application

Recycled plastic can be applied in many different forms in housing, such as:

- Flooring (tiles)
- Roofing (tiles)
- Ceiling (tiles)
- Insulation (foam)
-Wall (sandwich, wall board, infill bricks, tiles)
- Pipes
- Windows (frames)
- Doors (frames)
- Driveway (blocks)
- Walkway (slabs)
- Fences

Building materials made from recycled plastics are not yet widely used in the construction industry.

Blends of recycled mixed-colour plastics usually end up with a grey or black colour.

Benefits

The use of plastics in building and construction:

- Saves energy
- Reduces costs
- Enhances quality of life
- Helps/protects the environment (clean and healthy)
- High contribution to improving the energy efficiency of buildings

Why use plastics in building and construction?

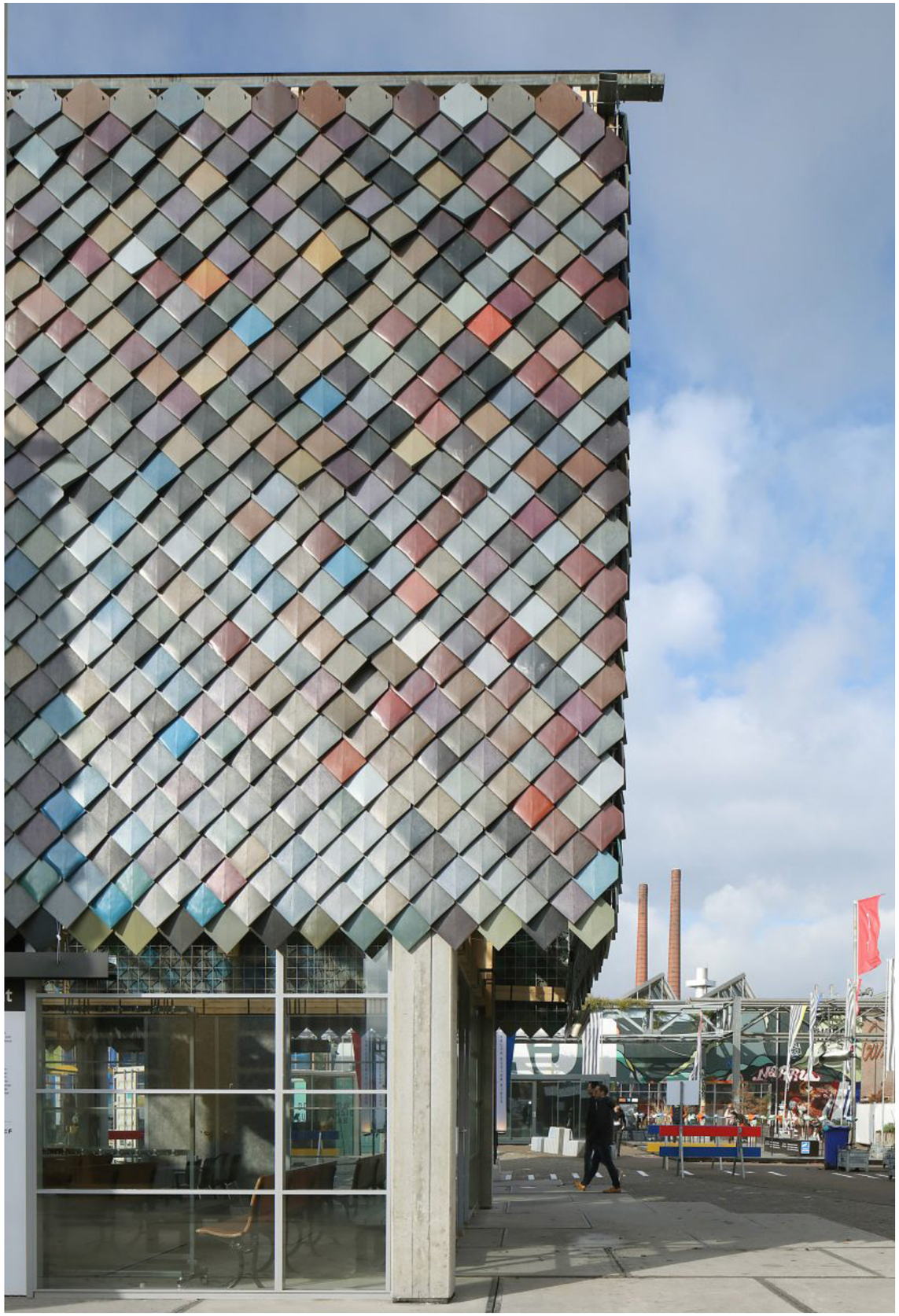
- Plastics are durable and corrosion-free → They are ideal for applications such as window frames and pipes which can last for over 50 years.
- Plastics effectively insulate from cold, heat or sound → They save energy, offer great value for money and reduce noise pollution.
- Plastics are light weight → They contribute to savings by reducing man-hours and the need for heavy equipment such as cranes; they are also easier to handle, transport and store.
- Plastics can either be recycled or their energy recovered → The overall recovery of plastic waste in the building and construction sector shows a positive trend, improving from 56.2% in 2010 to 57.6% in 2011.
- Plastics are easy to maintain, easy to clean and impenetrable → They are ideal for household and hospital surfaces or floor coverings that must remain hygienic.

Durability

Recycled plastic is a highly durable material. The durability of plastic construction products also means that they can often be recovered for future use or kept in place. At the end of their service life, the plastic can be re-used, recycled or converted into energy, which means it can be used over and over again.

The main characteristic of plastic is that this material does not easily degrade over time, after processing the material, it keeps it physical characteristic which lasts for 500-600 years.

Utilizing plastic construction products ensures ease of installation, high performance and low risk of failure, meaning the long-term performance will not be affected by compression, infiltration or other types of physical degradation.



Materiality - Composition

Plastic has fire issues, therefore it is important to add sand or cement to make the product less flamable. Sand/cement will be the fire retardant and the plastic will be the binder. The material that is used in the design is not made 100% of recycled plastic. The proportions and ratio between the plastic and the sand are:

- 70% plastic & 30% sand. 7:3 ratio.

Using around 30% sand will also reinforce plastic.

Plastic brick composition

+

70%

30%

=

Materiality - Process

Collection of plastic waste

↓

Plastic waste will be picked up at pick-up points by local company

↓

Plastic will be sorted

↓

Plastic will be combined with sand (7:3 ratio)

↓

Plastic/sand mixture will be placed in the extruder

↓

The extruder does the mixing of plastic waste, with sand (at very high temperatures)

↓

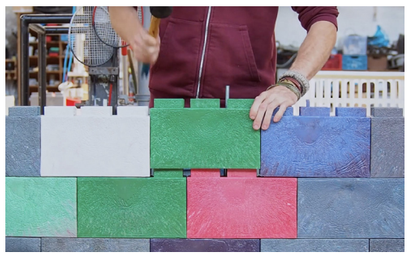
The press compresses the mixture

Materiality - References

Man's Domoraud public primary school - Man (Ivory Coast)

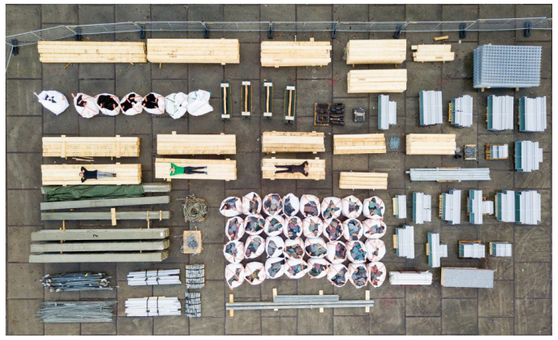
Conceptos Plásticos - Cundinamarca (Colombia)

The innovative local company managed to patent its system of bricks and pillars made of recycled plastic, which is then put together like Lego pieces in a construction system that lets you build houses up to two stories high in five days. They decided to give plastic that has already been thrown away a second chance at life, keeping in mind that on average it takes 300 years for it to completely degrade.



Precious Plastics

People's Pavilion - Eindhoven (Netherlands)



Recycled Plastic Bottle House - Yelwa (Nigeria)

The country's first plastic-bottle house was established in Yelwa. In Nigeria millions of plastic bottles are dumped into waterways and landfill each year causing pollution, erosion, irrigation blockages, and health problems. Bottle houses take this dangerous waste out of the environment and make it useful. Used plastic bottles were collected from hotels, restaurants, homes, and embassies starting in December 2010 to accumulate the estimated 7,800 needed to build the inaugural home in Yelwa. The bottles are filled with dry soil or construction waste. They are then laid in rows like bricks and bound together with mud, producing a sturdy, well-insulated, and inexpensive three-room structure that is resistant to both bullets and earthquakes.

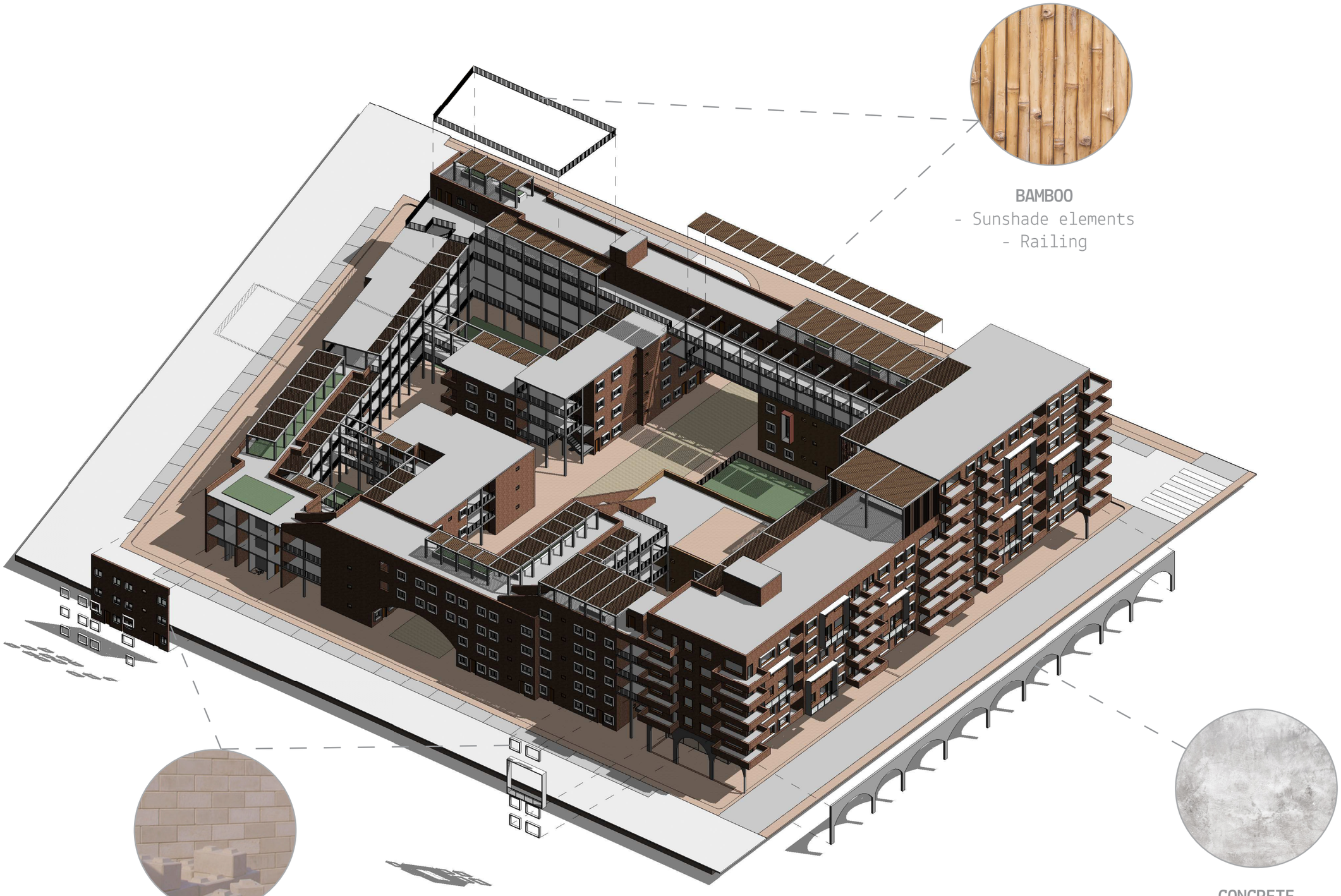
Materiality - References

Gjenge Makers - Nairobi (Kenya)

The production of plastic bricks and the use of recycled plastic in architecture is an upcoming trend. Gjenge Makers is a social enterprise whose aim is to address the need for sustainable and affordable alternative construction materials in Kenya and the Continent.

The company collects waste in the streets and gets plastic waste from factories, companies, schools etc. After collecting the plastic, they process these using the latest cutting-edge technologies to mix the recycled plastic with sand to form a mixture which they mold into various products. Different colors and different patterns are possible to produce. For now, the company is only focussing on paving blocks, but they would like to produce building blocks soon.

Materiality - Neighbourhood scale



BAMBOO
- Sunshade elements
- Railing

PLASTIC BRICKS
- Infill pannels of recycled plastic
- Window sunshade elements

CONCRETE
- Structure

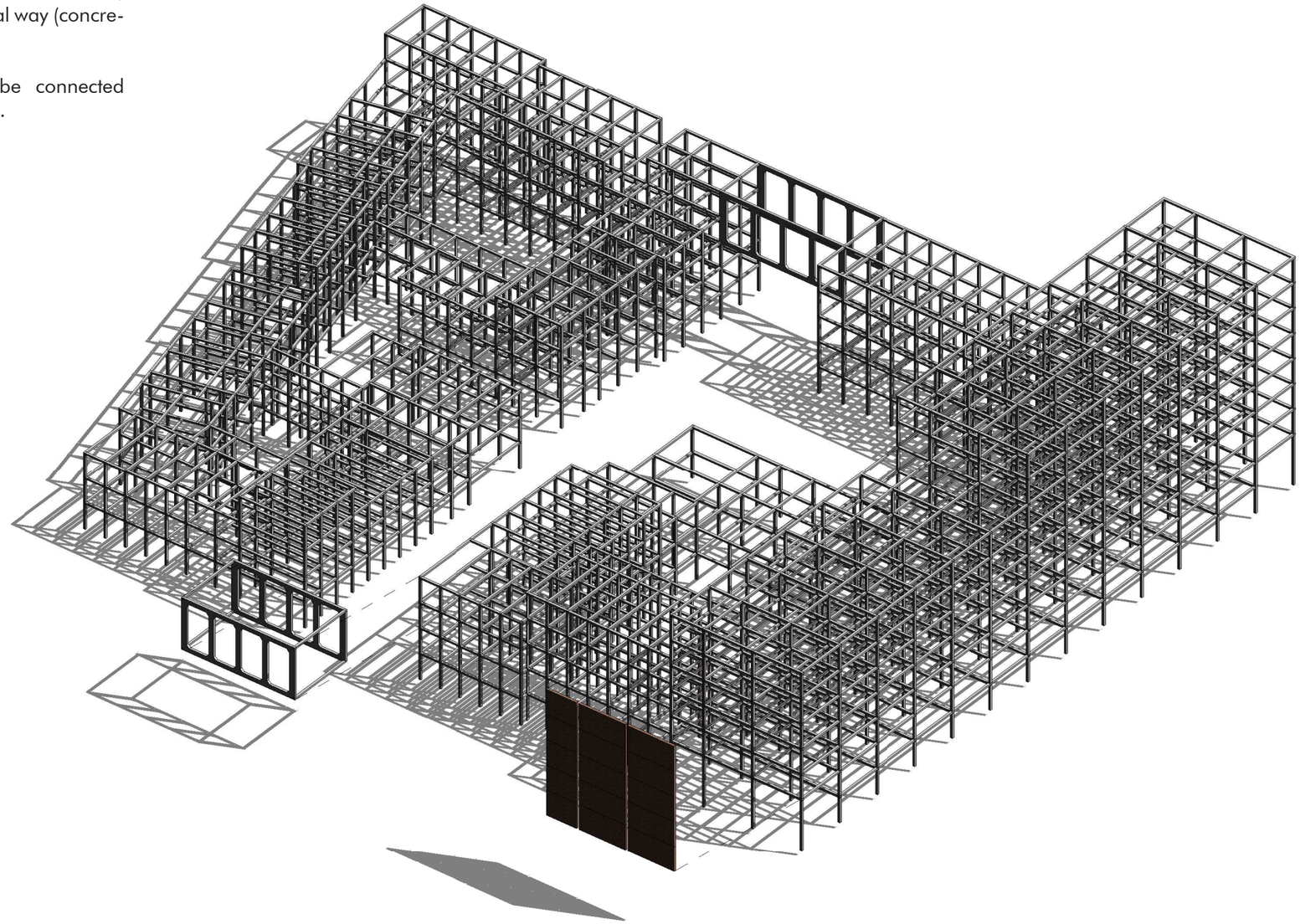
Structure - Concrete framework

Reinforced concrete framework + recycled plastic brick infill

This might not the current standard, but could be more normalized in the future, upgrading the idea of recycled bricks (higher income).

This combination is very low-tech but still innovative; it is more innovative than the traditional way (concrete + bricks).

The different income groups will be connected through the use of the same materials.



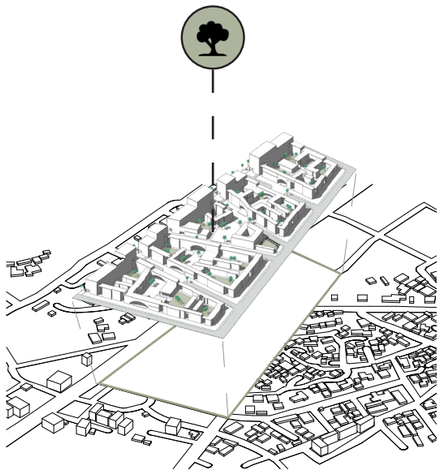
Sustainability - Climate section

Sunshading by extensive galleries & sunshade elements

Tree: natural sunshading

Natural ventilation Cross ventilation

Sustainability - Greenery, health, CO2 footprint & ecology



Greenery advantages:

Health:

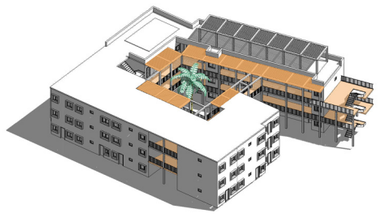
Positive effect on people's health and contributes to the quality of life in a neighbourhood. There is a positive effect on the health, wellbeing and social connections of people living, working and recreating in a green environment, which contributes to social cohesion in neighbourhood.

- Helps children cope with stress.

Climate:

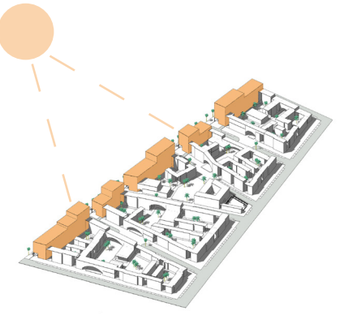
- Reduction of CO_2 concentration
- Reduction of heat stress
- Reduction of air pollution
- Keeps air fresh and healthy
- Dampens noise
- Helps cooling the temperature down in warmer periods

Sustainability - Shading



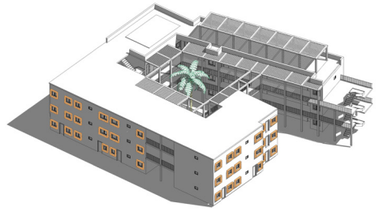
Galleries

- outdoor space for domestic activities



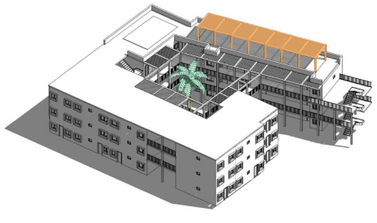
High rise strip

- sunshade for the building blocks behind it



Window blocks

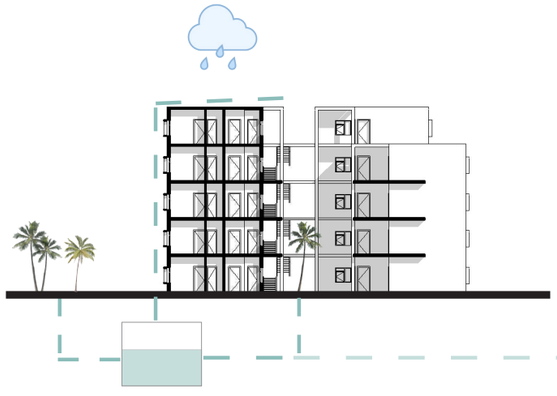
- spaces directly exposed to sun



Pavilions

- sunshade for programme on rooftops

Sustainability - Reuse

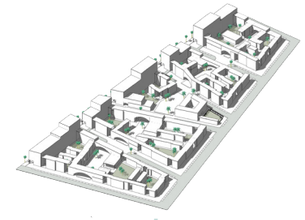


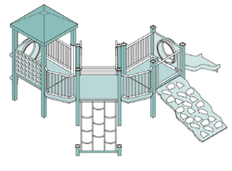
Water tank

Water management

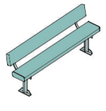
drainage system

Taking advantage of rainy season, to store water and reuse it to water the green areas, plants/trees during the dryer periods





Playgrounds

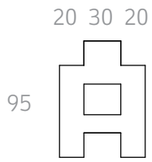
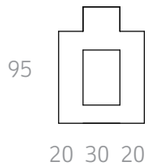
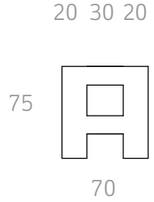
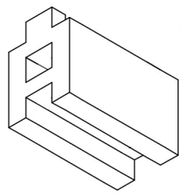
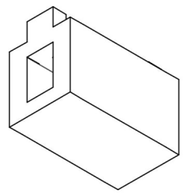
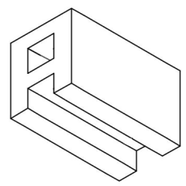


Urban objects

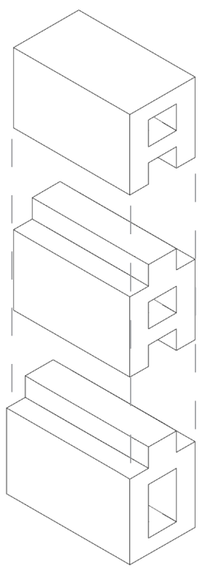
Recycled materials

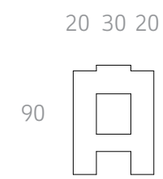
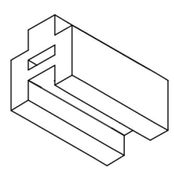
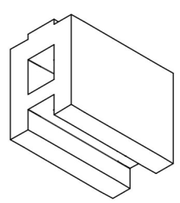
Plastic bricks - Profiles

Standard

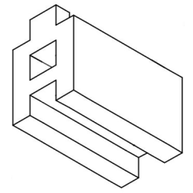
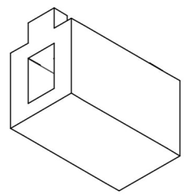
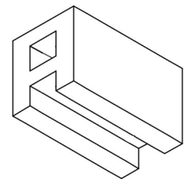
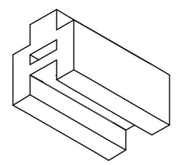
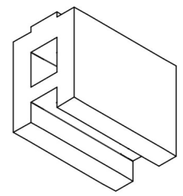
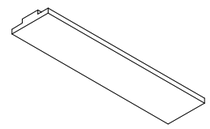
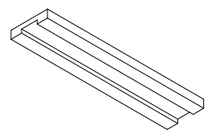
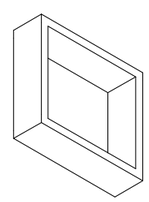
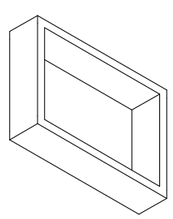
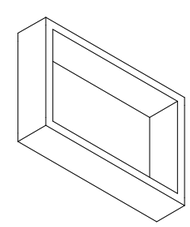
	In between	Below	Top
2D			
3D			

Connected to floor/joint



2D		
3D		

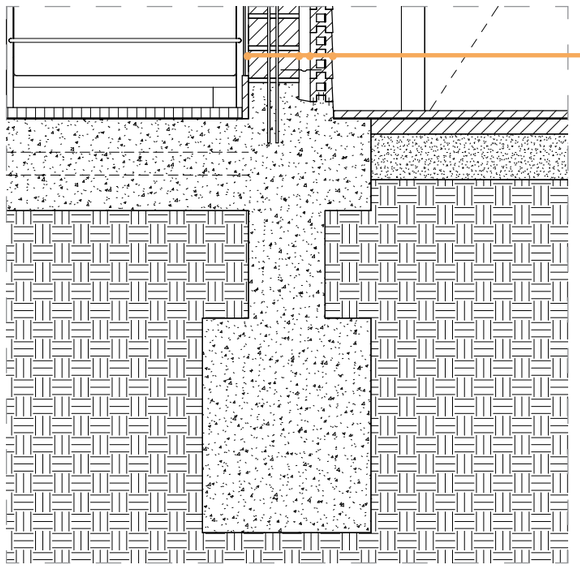
Plastic toolbox - Set of profiles

	In between	Below	Top
Bricks			
			
Joints			
Sunshade windows			

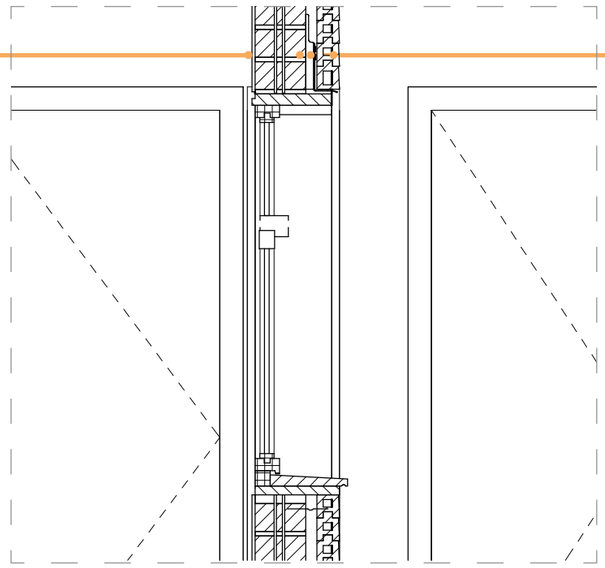
Facade fragment - Section & elevation

Details - Foundation, windows, floors & walls

Detail 1 - Foundation



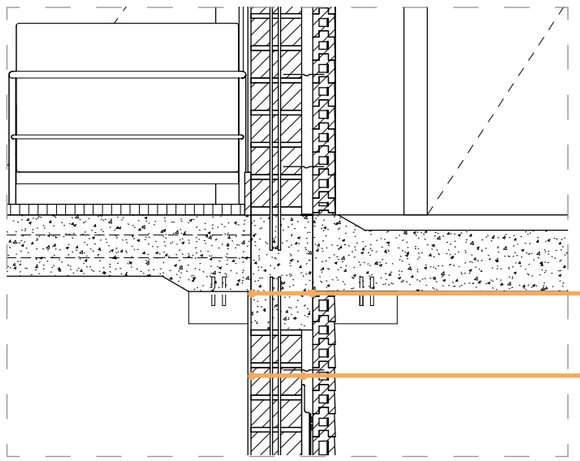
Detail 3 - Window 1



From inside - outside:
Adobe render - 10 mm
Adobe blocks - 165 mm
Cavity wall - 40 mm
Plastic brick - 70 mm

Wall thickness - 285 mm

Detail 2 - Floor, gallery & wall

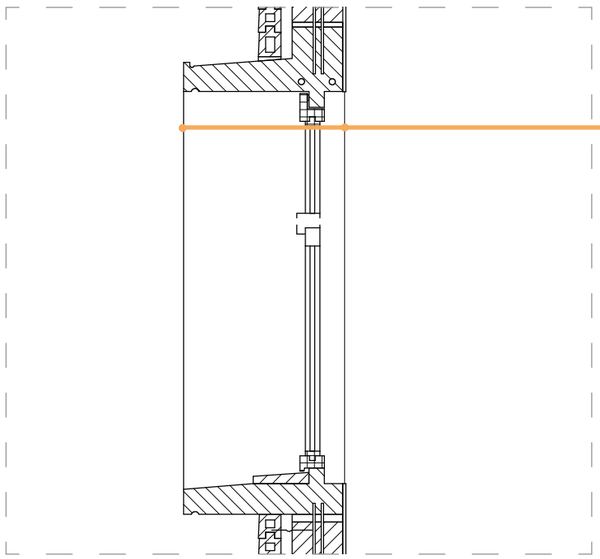


Structure:

Concrete beam - 375 x 200 mm

Concrete column - 165 x 165 mm

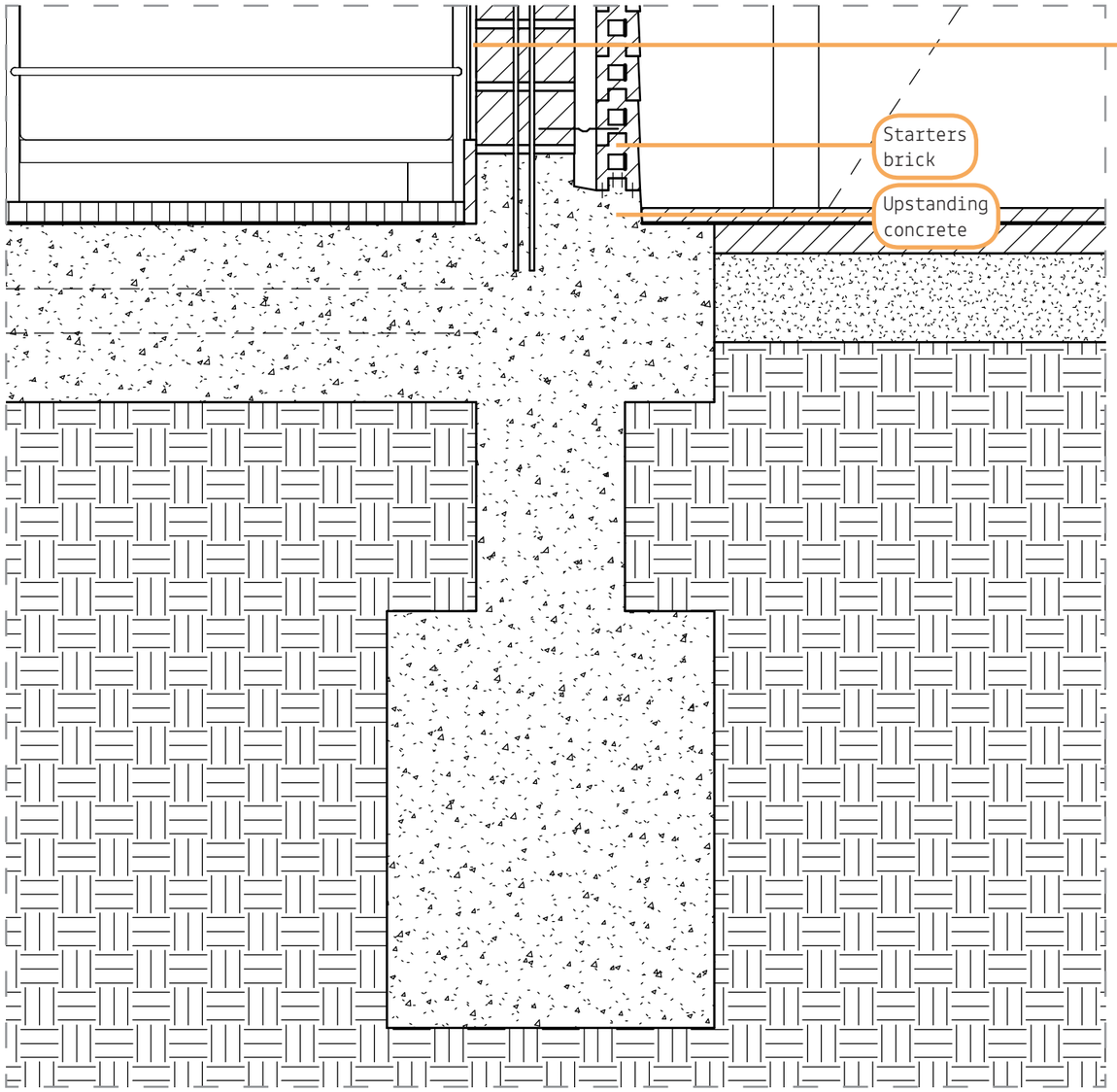
Detail 4 - Window 2



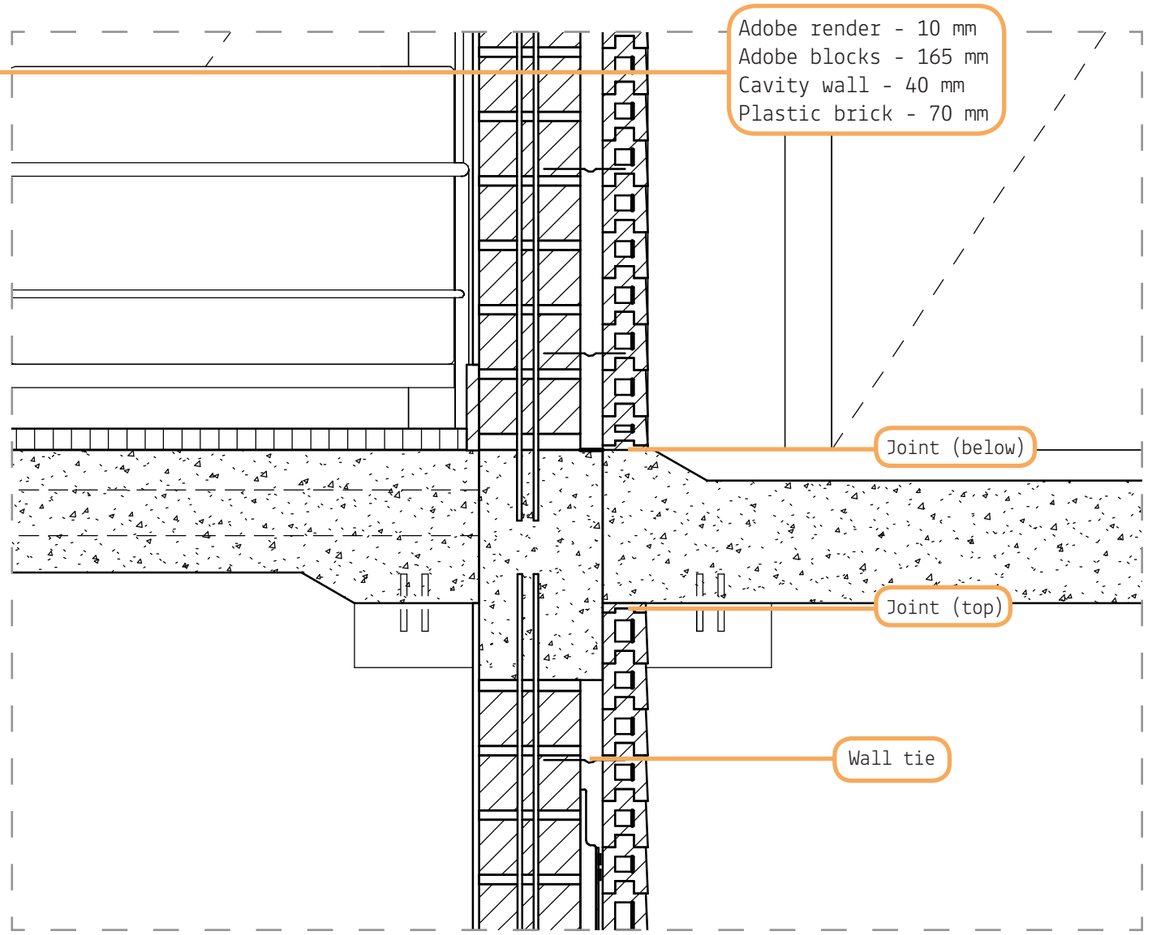
Recycled plastic sunshade element - 520 mm

40 cm

Details - Foundation 1:10

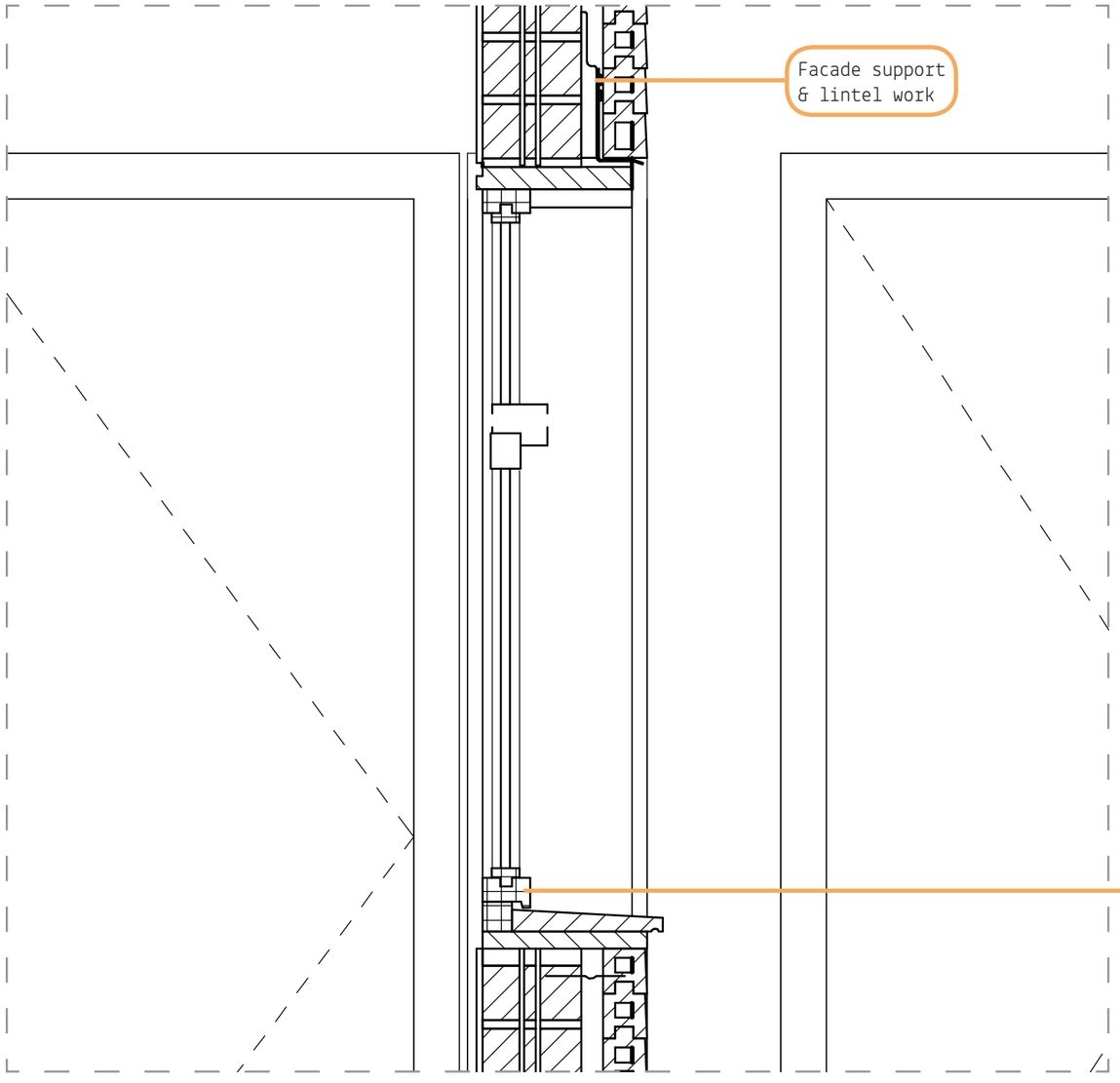


Details - Floor, wall and gallery 1:10

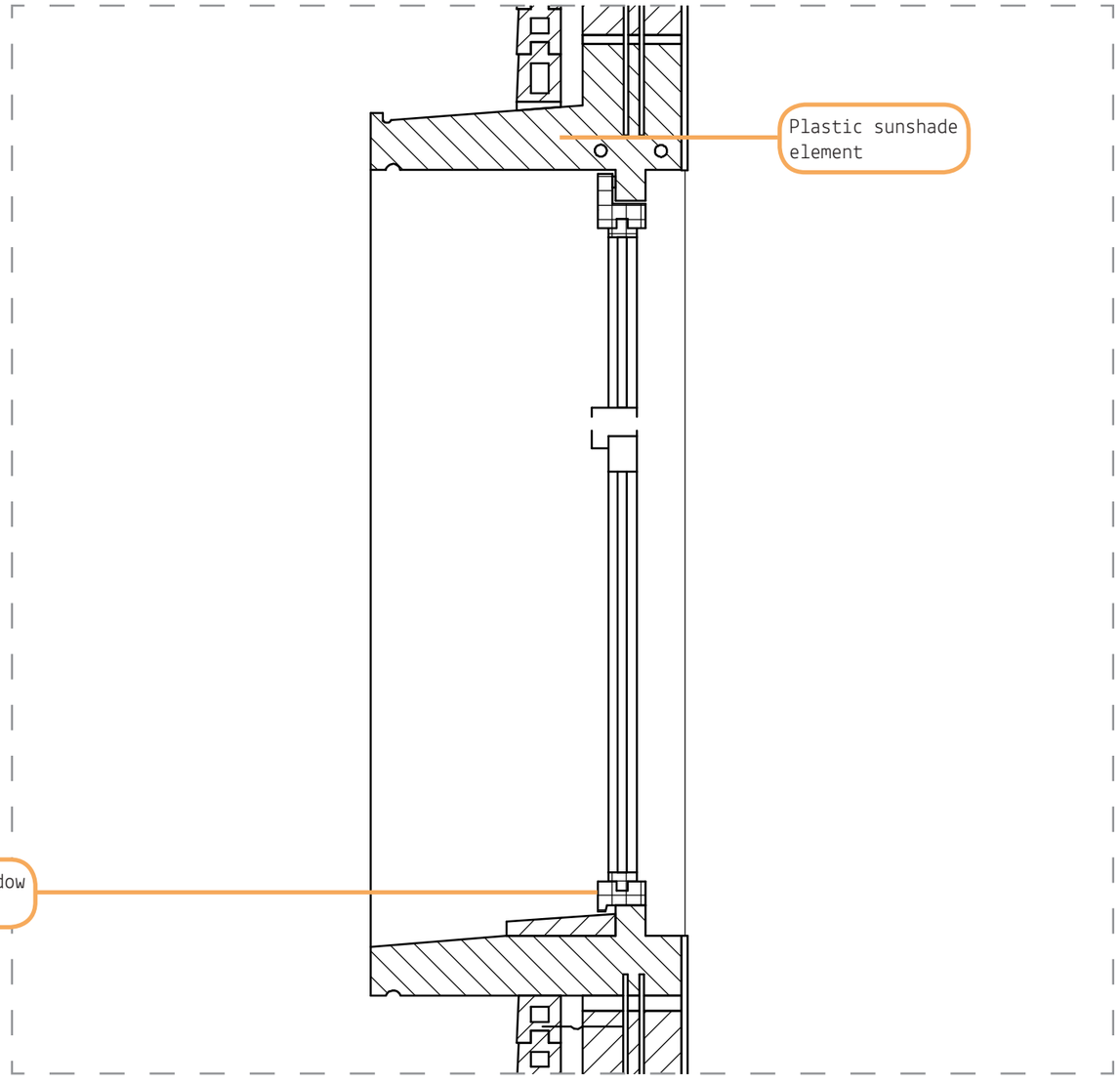


40 cm

Details - Window along gallery facade 1:10

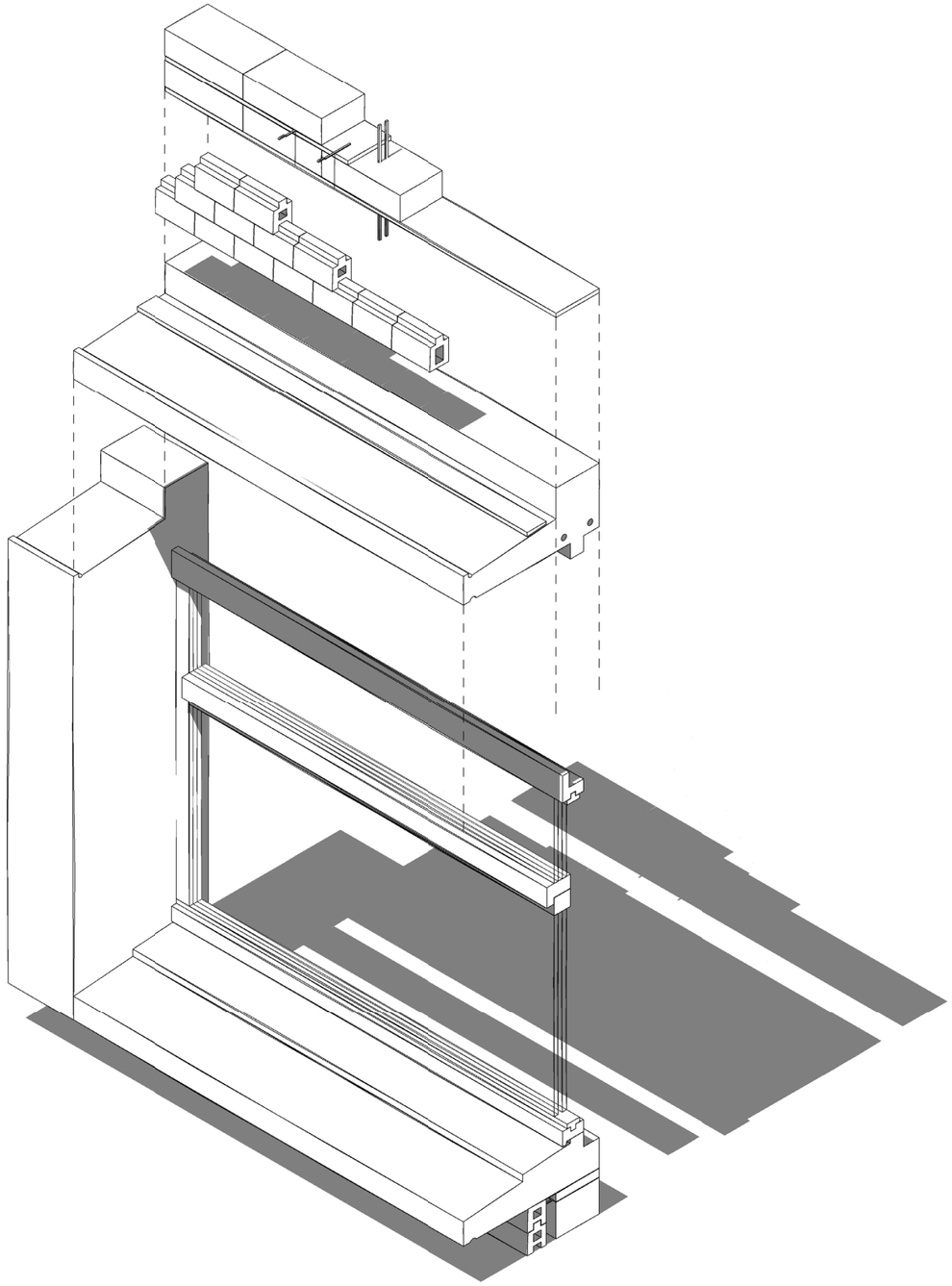


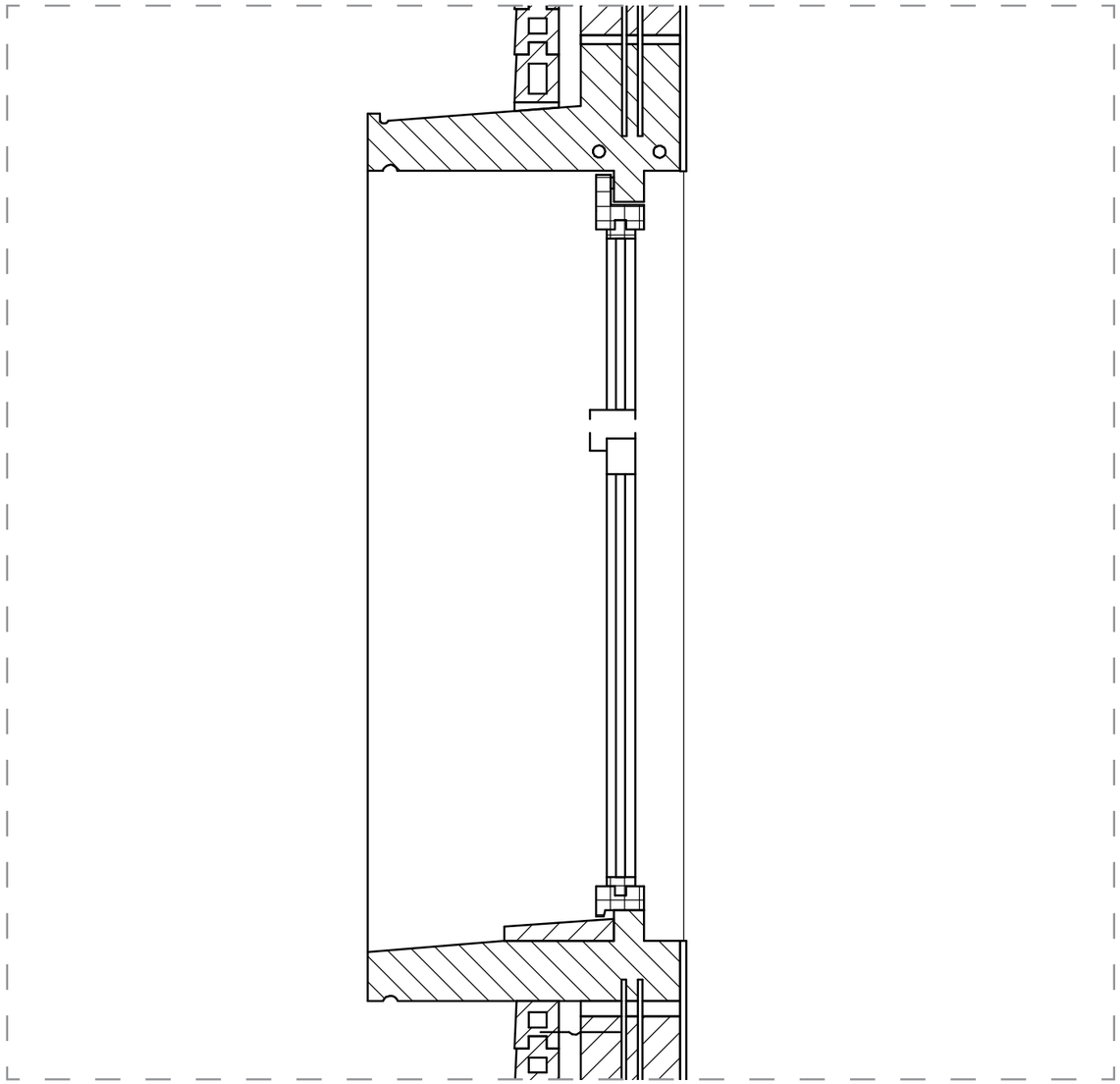
Details - Window allong other facade 1:10



20 cm

Details - Window detail exploded view





20 cm

CHAPTER 7

MANAGERIAL STRATEGY

Stakeholder analysis - Who lives in it?

End users are local people from Addis Ababa and surroundings looking for affordable housing.

Family households (100%)
- Parents + 1-4 children living in one housing unit.

Families from different income levels:

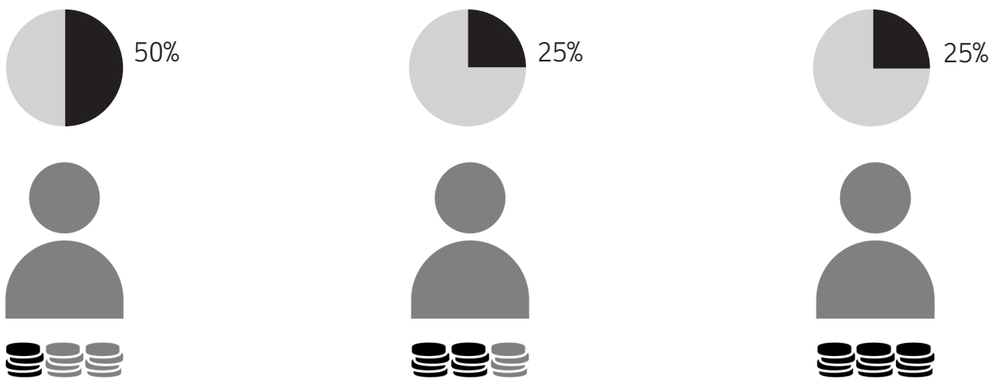
have **children** in common

Children

Wishes & needs

- Education
- Spaces for play
- Sport facilities
- Spaces for growth
- Safety & security
- Priority for pedestrians
- Open spaces, greenery & nature

Balance



Low income group

Middle income group
Low to middle (50%)
Middle to high (50%)

High income group

Aspirations & value

	 Low income dwellers	 Middle income dwellers	 High income dwellers
Wishes & needs	- Affordable housing - Social housing - Close to job & amenities	- Owning or renting a 2/3 bedroom apartment - Close to amenities	- Owning luxurious apartments - High quality (living standards)
Value	- Running local/small businesses - Offering (cheap) labour	- Customers of local/small businesses - Cross subsidy of the project	- Providers of local/small businesses - Cross subsidy of the project - Upgrading livelihood & quality of neighbourhoods

Family aspirations

Parents

Job opportunities

Retail

Children

Education

Care

Sport

Play

Stakeholder analysis - Who lives in it?

Home ownership & rental

Low income

Average unit size: 44 m²

25% Owner occupied
75% Rental

Middle income

Average unit size: 70 m²

50% Owner occupied
50% Rental

High income

Average unit size: 110 m²

Owner occupied

In terms of home ownership and renting, most of the lower income dwellings will be rental. Because the condominium project has shown that many residents cannot afford the down payment or struggle to pay the monthly mortgage. The half of the dwellings of the middle income group will be rental and the other half will be owner-occupied, and the dwellings for the higher income will be only home ownership, in order to make profit and use the money to build the other housing schemes.

Stakeholder analysis - Who develops and provides it?

The Ethiopian government will be partnering with private local project developers to create affordable housing.

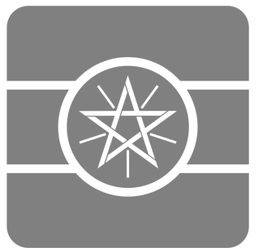
The project will be a government-led low- and middle-income affordable housing programme to increase the living condition of different income groups. The housing for the higher income will be mostly developed by a project developer.

Considering the limitation of budget and capability of local government to provide high quality affordable housing, participation of private developers should count in this process.

By partnering with private developers, the projects also gets a new, innovative team of passionate builders, designers, planners, and more to make these dwellings both appealing and achievable. Supports from developers are considered important to improve the quality of housing and settlement projects. They have ability to attract more trained-well professionals than the government does.

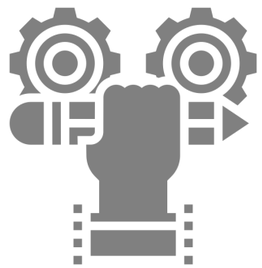
Furthermore, sometimes it takes the government a couple of years to complete an affordable housing project, with help from the private developer, the project could be built quicker.

Partnership



Government

+



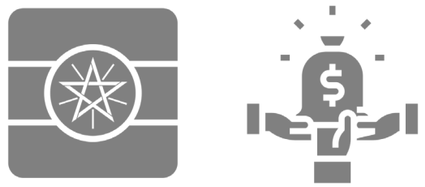
Developer

Stakeholder analysis - Who pays for it?

The government finances public housing through funds/subsidies while the private developer relies on loans and other sources.

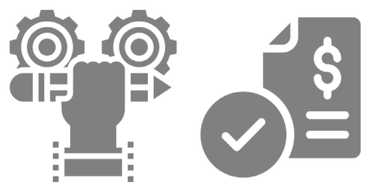
The government finances the public and social housing through funds that is intended to cover the gap between the rents that public housing tenants pay and the developments' operating costs (such as maintenance and security).

The private developers relies on loans and other sources to fund construction before people move in and start paying the down payment or rent. Developers borrow money from lenders based on the amount they will be able to pay off over time. But developers can only get those loans and equity sources if the development will produce enough revenue to pay back the loans and pay returns to investors.



Government
- funds

+



Private developer
- loans

Stakeholder analysis - Who designs it?

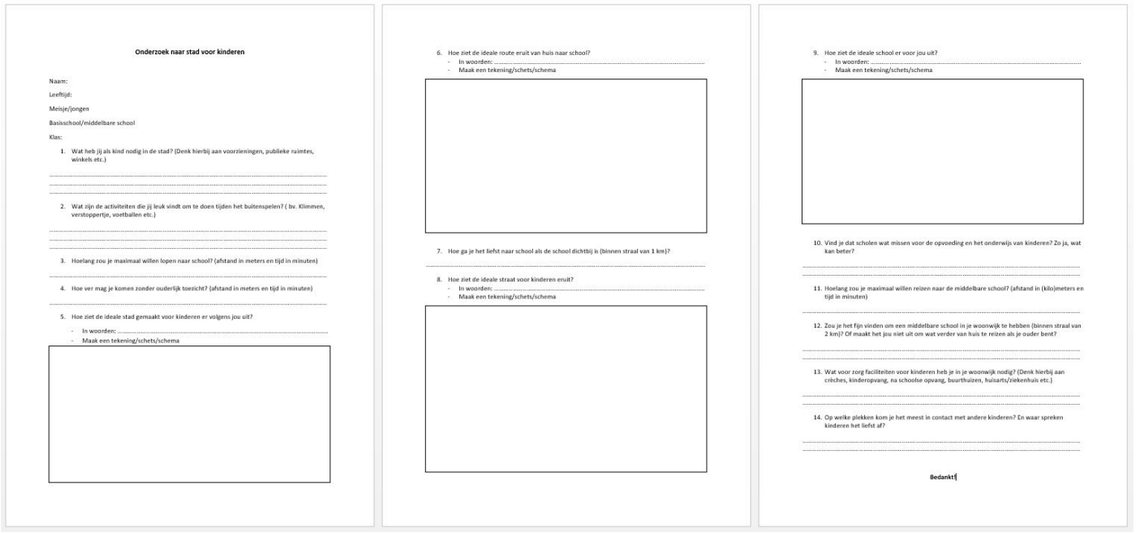
A team existing of local and foreign architects and designers will be designing the urban scheme for the designated plot.

Historically seen, the mix of income groups in the foundation is in the city of Addis Ababa, the city is known for mixing different income groups and different ethnic groups. The local architects, together with foreign architects, will search for a way to bring this harmonious mix back to the current housing and urban context. Furthermore the foreign architect can bring references from present day mixed neighbourhoods in western socities.

The architects will engage in part of the process that takes into account the social and traditional values by doing research (conducting interviews). While the design team focuses on searching innovative approaches in terms of materiality, building systems etc. The design team together with the architects will make the balance for social and traditional ways of building/designing with innovative approaches.

During the designing process, a survey will be done with local children, asking about their needs growing up in the city regarding education and care (doing it myself in The Netherlands). It is important to take into account their needs in order to design a child friendly proof neighbourhood. The children will eventually influence the design of the urban spaces and facilities/amenities.

Not only the children, but also the parents will be engaged and interviewed by the architects. This survey will be done to make sure that the needs of the future residentswill be represented, but also their involvement during the design process will help to give the future residents a sense of belonging (within their community).

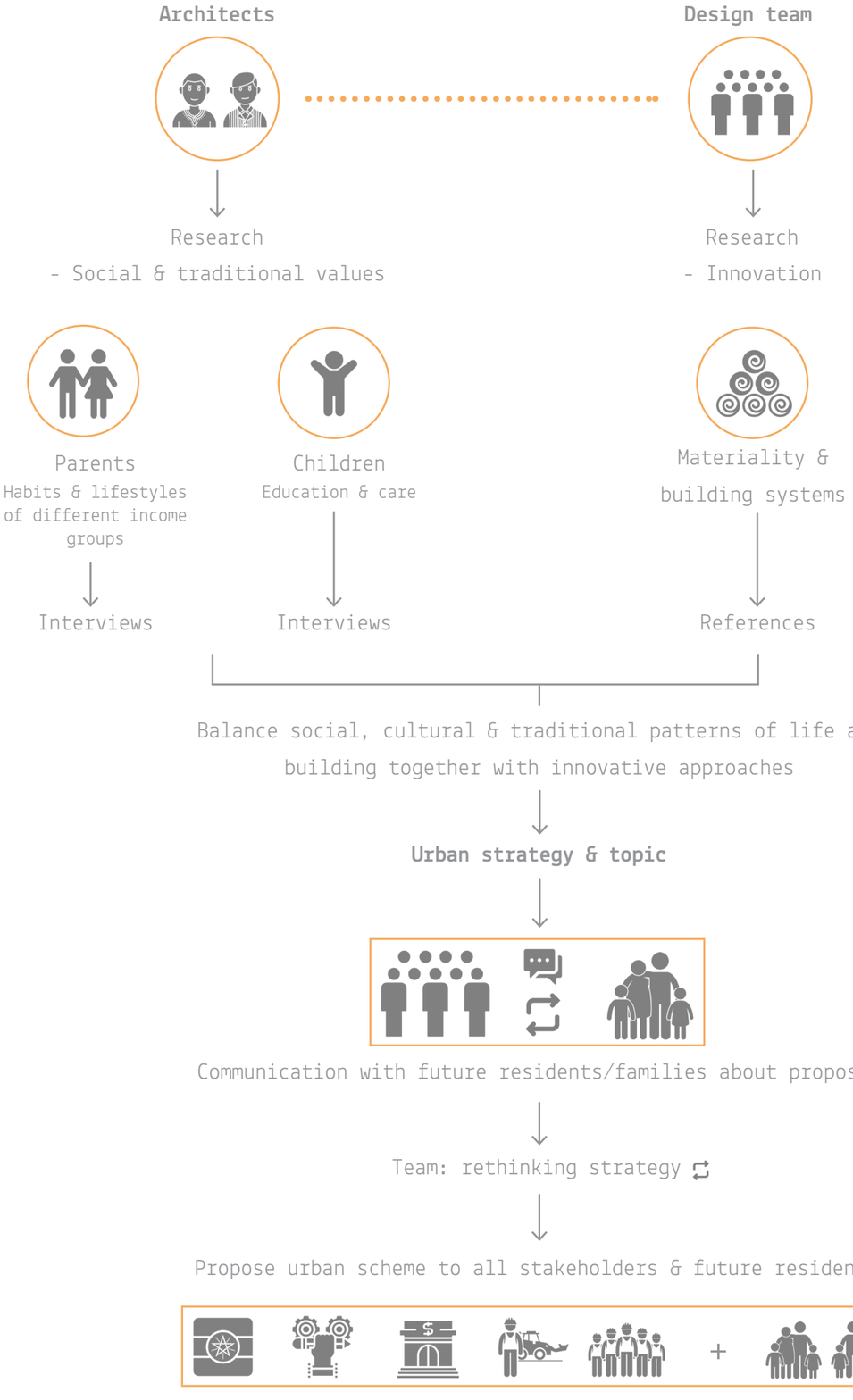


Onderzoek naar stad voor kinderen

Naam:
Leeftijd:
Meisje/jongen
Basisschool/middelbare school
Klas:

1. Wat heb jij als kind nodig in de stad? (Denk hierbij aan voorzieningen, publieke ruimtes, winkels etc.)
2. Wat zijn de activiteiten die jij leuk vindt om te doen tijden het buitenspelen? (bv. Klimmen, verstopperije, voetballen etc.)
3. Hoelang zou je maximaal willen lopen naar school? (afstand in meters en tijd in minuten)
4. Hoe ver mag je komen zonder ouderlijk toezicht? (afstand in meters en tijd in minuten)
5. Hoe ziet de ideale stad gemaakt voor kinderen er volgens jou uit?
   - In woorden: .....
   - Maak een tekening/schets/schema
6. Hoe ziet de ideale route eruit van huis naar school?
   - In woorden: .....
   - Maak een tekening/schets/schema
7. Hoe ga je het liefst naar school als de school dichtbij is (binnen straal van 1 km)?
8. Hoe ziet de ideale straat voor kinderen eruit?
   - In woorden: .....
   - Maak een tekening/schets/schema
9. Hoe ziet de ideale school er voor jou uit?
   - In woorden: .....
   - Maak een tekening/schets/schema
10. Vind je dat scholen wat missen voor de opvoeding en het onderwijs van kinderen? Zo ja, wat kan beter?
11. Hoelang zou je maximaal willen reizen naar de middelbare school? (afstand in (kilo)meters en tijd in minuten)
12. Zou je het fijn vinden om een middelbare school in je woonwijk te hebben (binnen straal van 2 km)? Of maakt het jou niet uit om wat verder van huis te reizen als je ouder bent?
13. Wat voor zorg faciliteiten voor kinderen heb je in je woonwijk nodig? (Denk hierbij aan crèches, kinderopvang, na schoolse opvang, buurthuizen, huisarts/ziekenhuis etc.)
14. Op welke plekken kom je het meest in contact met andere kinderen? En waar spreken kinderen het liefst af?

Bedankt!



Stakeholder analysis - Who builds it?

The housing scheme will be built by a local construction company in partnership with the future residents.

The local construction company will fabricate the construction of the framework the production of the plastic bricks. Parents and children can help within the process of recycling and collecting the plastic waste. The plastics will be collected in dump sites and storage spaces that will be designated for this recycled waste. After the collection, the company will pick upp all of the plastic waste and transport this to the work place. The labour of producing plastic bricks will be done by local labourers. Labour is affordable in Ethiopia, and there is enough of man craft. The production of the plastic bricks will create job opportunities.

The end users, in this case the future residents, will help with the contsruction of the bricks into the framework, by laying the bricks. The bricks are easy and fast to construct. These labour hours, or "sweat equity", can be used as the down payment on their new home, or it could reduce the monthly rent. This strategy helps low-income families to become homeowners.

Participating families not only work on their own home, but everyone works on every house in the building group and no one moves in until all houses are completed, creating a community bond (before living in the dwellings and neighbourhood). By working together, they also build relationships and neighbourhoods.

Partnership

Local construction company
- construction framework & production of bricks

+

Future residents
- recycling/collection & laying the bricks

Stakeholder analysis - Who manages it?

The Housing Department of the government oversees the housing program while it is administrated locally by public housing agencies.

The housing program is controlled by the housing authority, in this case the government and the private developer, they are both part of the ownership.

Housing authority
- government + developer

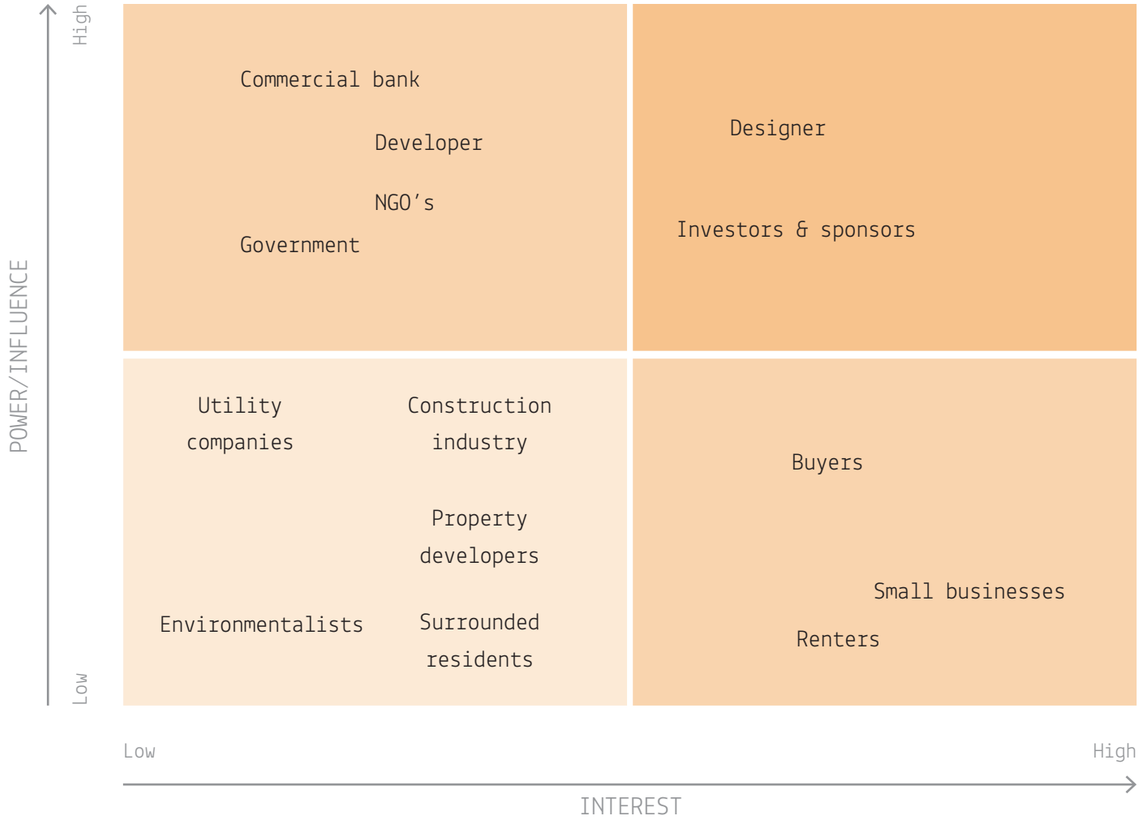
+

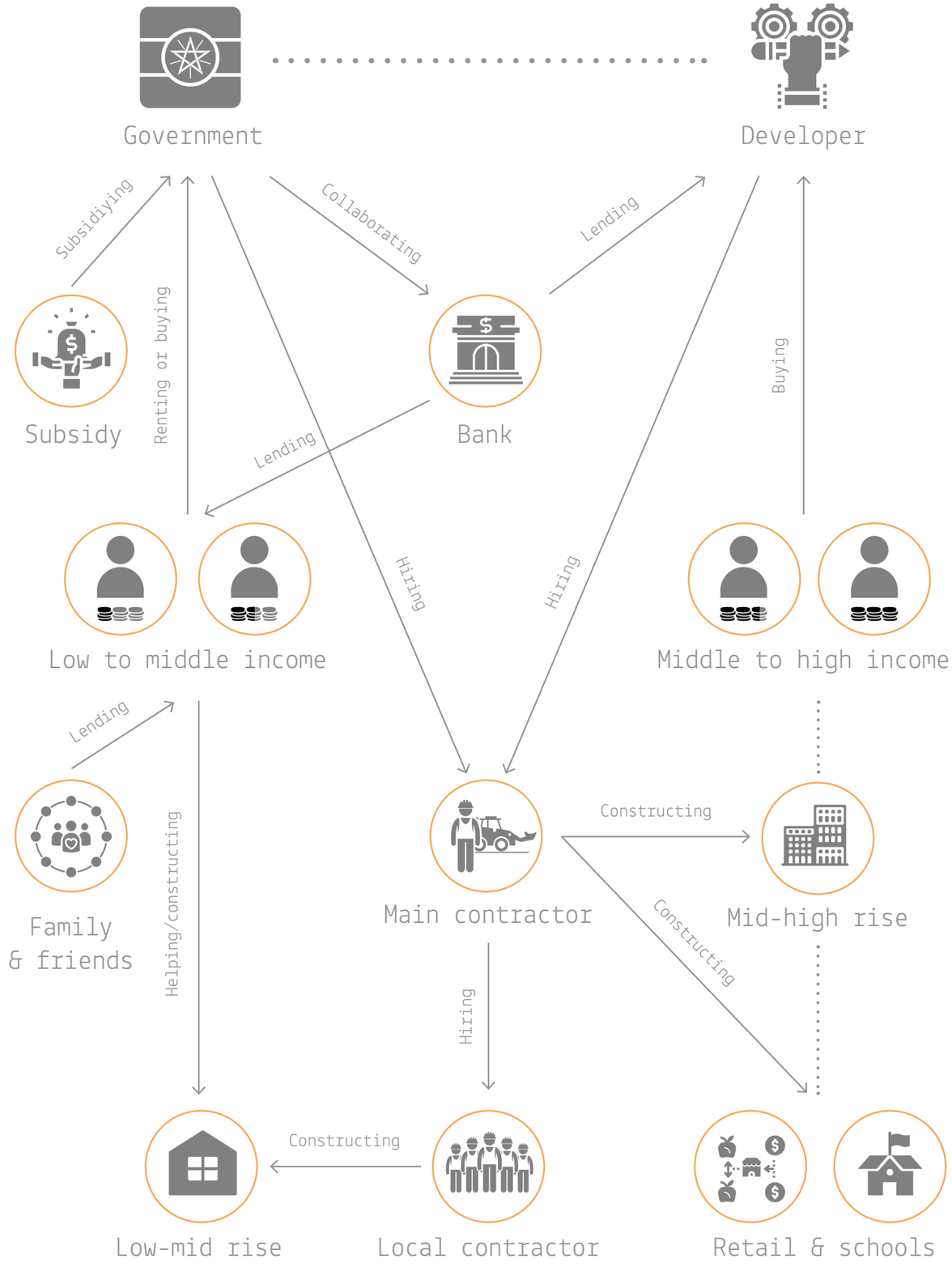
Public housing agencies

Stakeholder analysis - Stakeholders & relations

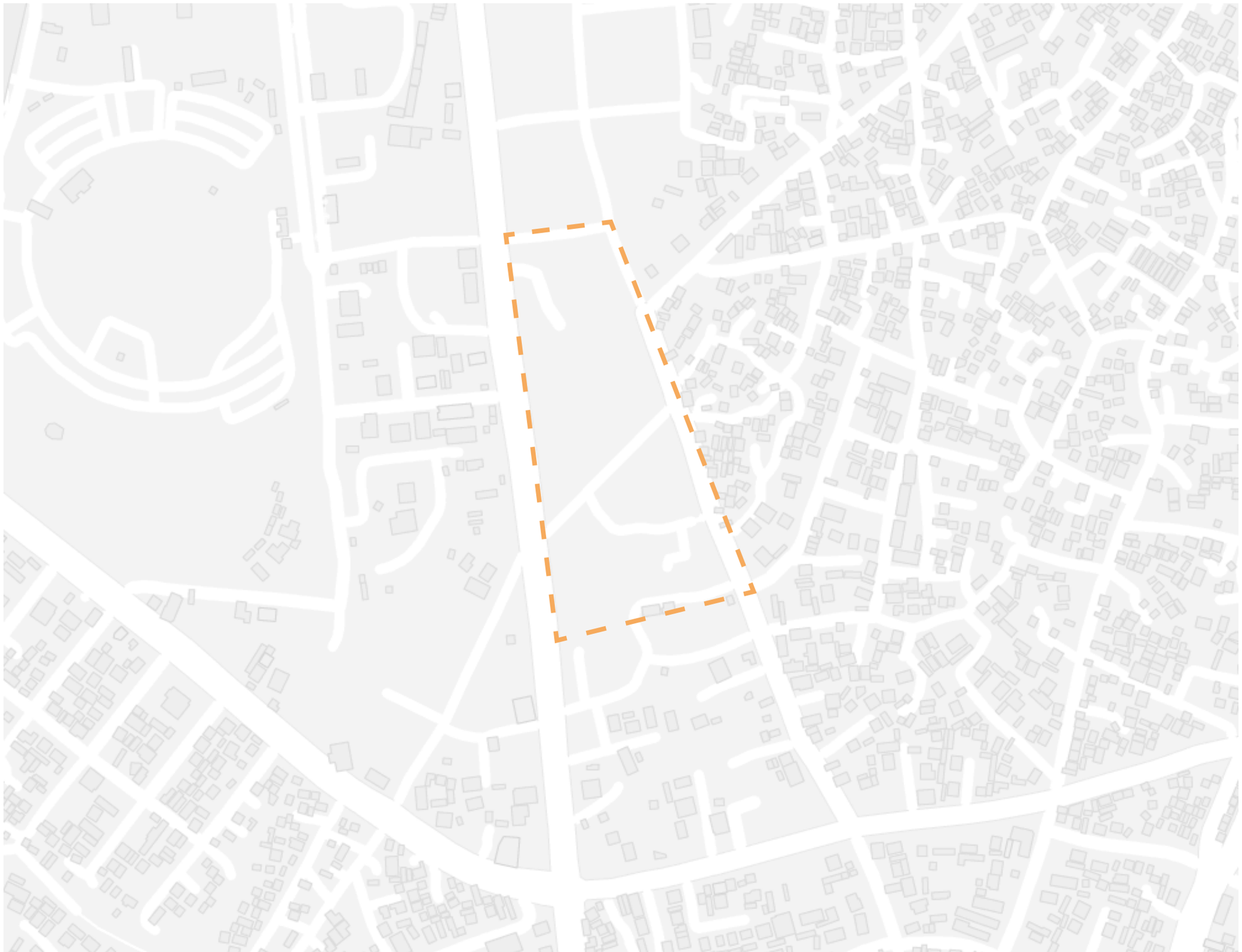
Other stakeholders besides the aforementioned stakeholders:

- Commercial bank
- NGO's & volunteers
- Investors & sponsors
- Main contractor & local contractor
- Small businesses
- Retail
- Schools (primary & secondary)





Phasing - Brown-field development



Kera sub-city

Vacant plot

100 m

Phasing - Project phasing

Phasing - Project phasing

REFLECTION

Reflection

Introduction

The purpose of this reflection report is to evaluate the overall progress, the initial methodologies and the results of the graduation project of the Global Housing Studio Addis Ababa Living Lab. This report will refer back to the conducted research, cover my process and learning points while referencing key elements that helped in accomplishing the necessary degree of information. Moreover, I will cover my aims for the remaining graduation period and describe the techniques to accomplish them successfully. This will add to a more accurate view of the actual developments that occurred in the final stages of my process.

Background information and research questions

Over the past two decades, the capital city of Ethiopia Addis Ababa, has faced a huge flare-up of its population, with 2.38 million in 2000 ascending to 4.86 million in 2020 (PopulationStat, 2020). The number of inhabitants in Ethiopia is mainly composed of children, with 43.5% of the population being under the age of 15 (Ozturk, Humanium, 2020). No less than 88% of these children live in poor circumstances and are deprived of basic needs, goods and services; such as education, nutrition, sanitation, health and housing.

Besides child poverty, Ethiopian cities are facing several housing problems, resulting in severe housing shortage, a decline in the existing housing stock, and a lack of basic services and infrastructure for housing development. In order to solve these critical poverty and housing problems in Ethiopian cities, the government has launched the Integrated Housing and Development Plan (IHDP) in 2005, which promoted the construction of condominium blocks. The condominium programme in Addis Ababa was not successful in meeting the housing needs of the urban poor. Participation in the Mass Housing Program proved to be too expensive for the most needy people in the city. Nowadays, these condominium apartments are generally occupied by lower-middle-income and upper-income groups (Gilbert & Gugler, 1982; Keller & Mukudi-Omwami, 2017). The urban lower class of Addis Ababa has no integrated place in this plan. Ultimately, this results in (further) segregation between socio-economic groups in the housing and urban context of Addis Ababa.

The capital city of Ethiopia is unique for its co-existence between different ethnic groups and income groups. The aforementioned rapid developments in terms of urbanization and population growth have triggered and aggravated the socio-economic mix that has historically been at stake in Addis Ababa. The developments of the 21st century have entailed new processes and patterns of socio-economic segregation. Therefore the research questions are based on the concept of co-existence within the capital city of Addis Ababa that were historically typified by a mixed ethnic and economic character. The main research question to be explored during the design process was: *"How to restore and maintain the traditional socio-economically mixed neighbourhood character of the city of Addis Ababa through a child-friendly approach?"*.

Goal

The initial purpose of this research was to gain a deeper understanding of the different modalities and patterns of both the socio-economic segregations and the socio-economic mixes which are at play in the context of Addis Ababa, from the point of view of housing. A new housing program could become an opportunity to unify the different socio-economic groups. Among all the groups, children are most prominent. Children could become the catalyst for creating social mixes and promote community bonds among the different groups.

Preliminary results of research and design

Research has shown that only 47.4% of the Ethiopian children complete primary education (Unicef, 2016). A large proportion of Ethiopian children cannot continue or follow formal education, because they are engaged in economic activity in their daily lives, in order to contribute financially to their families (Ozturk, Humanium, 2020). Poverty is the main trigger for children to be forced to work or beg on the streets.

The large number of children living in Addis Ababa and the rampant poverty are perceived as direct motives for initiating a child-friendly design for developing and fast-growing cities. As the capital city is densifying at a rapid pace and the child population is growing, it is important to embed the needs of the children within the planning and further developments of the city. Children are the common ground of families from different income levels. The two components, children and mixed-income housing, could feed each other and create more inclusive environments. These two components have been the motive and the starting points for my design process. Within my housing design and strategies, children are the main catalyst in overcoming the present segregation. Therefore, I came up with an urban strategy that divides the plot into smaller communities/ neighbourhoods that are completely pedestrian-friendly zones in which children are the main centre point in organizing the programme and the neighbourhoods. On an urban scale, this resulted in a system of clusters that combine different building typologies that are articulated around the core. It is defined by a central square surrounded by facilities designated for children. Education is one of the main strategies and the primary school is the key catalyst within the cluster scale. On a bigger scale, the secondary school is the key element that unifies all clusters. Therefore, the schools became part of the urban fabric, resulting in housing schemes in which schools are (to some extend) integrated. The intention is that inhabitants within each cluster know each other considering the children are sharing the same school, facilities and public spaces. In such manner, parents from different income classes who usually don't interact with each other in daily life are unified. Integrating low, middle and high-income inhabitants in a housing development will foresee more chances for people from different environments to learn from each other and gain more open-mindedness and respect for people who appear 'unlike' themselves. Besides the social mixing arising from educational point of view, different scales are applied to unite the inhabitants from different income levels. On the scale of the housing block, inhabitants share extensive galleries and a communal courtyard, where they could perform their daily domestic activities and engage with neighbours while keeping an eye on the playing children. Aside from the connecting primary school on the scale of the cluster, other child-related facilities on ground floor level, as well as on rooftop levels, unify both parents and children. On the scale of the plot, the different income classes are not only mixed in the secondary school, but also in the shopping street that unites particularly the parents. To conclude, the environment and its programme aim to promote childcare and education to all income groups and build strong community bonds among the different groups and ages.

From the conducted research in the first phase, it could be concluded that children from low-income families growing up in mixed-environments would have better future opportunities. The benefit of security, better schools and access to amenities will shift the youth on the farther side of their current economic state. It is expected that these children will further grow their ambitions in education and business, and will eventually have the capacity and resources to support these ambitions. Not only children and members of the lower-income class benefit from mixed-developments, but also the living conditions of the middle-class inhabitants will be improved through the revealing of a more diverse inhabitation (Duke, 2009).

Methods

During the research plan course a sociological approach was applied when diving into the topic of children and the design of child-friendly cities. Moreover, it was also fundamental to understand the lifestyles and life-patterns of Ethiopian children. Therefore anthropological and sociological articles were consulted, in which the main research method was in-depth interviews. Furthermore, it was important to create an understanding of how cities should provide in the basic needs for children. In order to establish this understanding, the universal ideas on child-friendly design on both the level of the neighbourhood and the city were of great importance.

After the literature review during the starting phase, a more ethnographic approach was enforced to gain more insights and knowledge about the ideas children have regarding the ideal city and neighbourhood that would best meet the children's needs. Therefore, a survey was formed based on Dutch children between the age of 6 and 14 years old. The aim of the survey was to collect information about the children's needs, wants and wishes in regard to topics such as education, childcare, facilities and neighborhood designs. Furthermore, the children had to explain in their own words and express in sketches their ideas. Unfortunately, the research would have been more authentic if it was done with Ethiopian children. Children growing up in the Netherlands are used to different lifestyles and therefore have different living standards and expectations than children growing up in developing and fast-growing cities such as Addis Ababa. However, some of the results were interesting to integrate in the design choices. Some of the results, such as the needs of having primary school facilities very close to home, were direct translations of the interview to the strategy of the programme of the cluster system.

Besides the interviews with the children, the initial idea was to interview former inhabitants of Addis Ababa and Ethiopia. Together with my fellow student Hatice Yilmaz, we have developed an interview format

in order to create a better understanding of the perspectives on social mixing and on how people from different economic classes interact with each other. Using our social media platforms to reach out to people living in the Netherlands with Ethiopian backgrounds, we managed to achieve more than twenty people that were willing to share their information with us. Initially, we hoped for face-to-face conversations, but due to the current situation not everyone was comfortable to meet in person. We decided to do the interviews partly online and partly physically. After some time had passed, people started to lose interest or communication became weakened. At the end, it took considerably some time that the plan eventually had failed.

The alternatives that were used to gain more insights and to get grip on the atmospheric spheres were the observations done during watching movies and videos that took place in Addis Ababa and surroundings. These visual outputs brought me very close to the lifestyles and living standards of Ethiopian people from different economic classes, which has strengthened the comprehension on why people are actually living segregated from each other in gated communities.

Other methods that helped with gaining more understanding and ideas regarding the main design topics were studied, such as case studies and project references globally with the same approach in terms of mixed neighbourhood design and child friendly design. It was difficult to find a reference project that represents both topics. The challenge was to adopt best qualities of both approaches and to bring them together in my design strategy with an own twist.

Feedback and learning process

The feedback given by the mentors during the tutorial sessions and the presentations were highly helpful during my design process. Their comments allowed me to achieve insights in various aspects, helped me see things in different perspectives and motivated me to be more critical about my design decisions. I often got absorbed in my project which lead to sloppiness and negligence. Sometimes it was even about the smallest and simplest things that I overlooked myself. In addition, their comments allowed me to understand my work better and it helped me realize whether I was not critical enough in decision making in certain stages. However, there were some challenges that I have been facing from time to time, for example, the lack of understanding of the feedback if it was only expressed in words and couldn't be expressed in any other forms like drawings. The words used in their feedback frequently floated in my head until I had deciphered what it actually meant.

Every now and then, the feedback from the mentors was literally translated and implemented into the design choices. Hence, I was often looking for a settlement in which both parties would agree. Occasionally, I noticed that I had to learn to cope with receiving critical feedback. It can take some moment to fully comprehend the adjustments that had to be made and at the same time to be aware of the possible outcome. Discussions that arose from the feedback allowed me to rethink some of my ideas in order to find more appropriate solutions. Reflecting on the given feedback, discussions and design actions also taught me to understand my own work better. Furthermore, I learned to be not afraid to make mistakes, to be open for new ideas and to implement them. In the end, I have always used the feedback to my advantage and used it to make my weekly design better and well grounded.

Another important form of feedback that I absolutely missed during this project is receiving feedback from my peers. On a regular day at the faculty, when students are gathered in the same area, they normally look into each other's project and share their thoughts with one another, which can provoke new insights and interesting ideas. I believe that the studio is the "place" where things actually happen, where knowledge can be found, where ideas are created and advice can be given to each other. In the 'normal' design situation, students can actually learn much more from each other during their learning and design process. Being not able to experience the original design process makes the process often harder and less enjoyable.

Relationships between research, design and topics

In my opinion, research signifies a thorough and in-depth exploration for the answers to the research questions, understanding different perspectives concerning the topic and discovering new ideas. The design process and the conducted research could possibly direct towards the outcome and product; the design. The design (as a product) has an allocated function and spatial dimensional form and can be researched and reflected on after realization, while designing (as a verb) is also a possible research method and can be researched during the design process. In my experience, designing is a process of exploring, experimenting, decision making and learning about and from consequences. Conducting research and designing are inextricably related and act together as an interwoven process.

The relation between my graduation topic and the studio topic, master track and programme, is that the design will eventually improve the quality of life for the Ethiopian dwellers of different income levels through child-friendly approaches and the design of socio-economic mixed neighborhoods. The studio topic focuses on global challenges such as affordable housing, inclusive cities, and resilient societies. Topical issues such as density, sustainability, integration, affordability, inclusivity and community participation are perceived as direct motives in the design hypothesis of my graduation project.

Research method and scientific relevance

The global housing studio has challenged me in finding suitable methods for the research and the design in a different societal environmental setting. During the course I have explored new methods, approaches and techniques to get a better understanding of the conditions in Ethiopia in terms of culture, society, environment, history, politics, and economy. During the course, I also applied new methods that were not often applied in one of my previous design processes. One of these new research methods used during the first phase, in order to gain the fundamental knowledge about the aforementioned conditions in Ethiopia, was the development of a common knowledge together with all of my fellow students. We created as a group the body of knowledge on four themes; hard data, soft data, spatial mapping and housing. Together with two other students, we focused on collecting the housing conditions and typologies through time. Normally we would do the research about these topics ourselves, but this time we had to use the given information from the past few years to build our own knowledge. The challenge of implementing this new research was to make a smart selection from the large amount of work that had been shared. This gives the student responsibility in conveying the correct and needed information to the rest of the group. Another challenge that we have experienced was the decision-making process. The research was done with a large number of people, which led to different options that were not made quickly. Fortunately, we soon appointed few people within the group who would be responsible for the layout and communication between the bigger and smaller work groups. Since we depended on shared information from previous years, the findings may not be fully scientific relevant. That is why our housing group decided to conduct our own research besides the selecting research in order to build on the given information and to make it more complete and clearer.

Scientific framework

In the occurring process of rapid growth, urban development has a great potential of improving the quality of life of the dwellers of Addis Ababa. Most of the city's growth was horizontal, which is characterized by low rise and mostly single storey buildings, failing to use the opportunity to explore a more balanced and integrated urban densification method. Unfortunately, when walking around the city, the different types of gated communities cannot be ignored. Considering that Addis Ababa seeks to retain its healthy balance of a social mix, it would be best to reduce its number of segregated communities, such as the gated communities. Now is the time to make use of architecture and urban design to move towards an 'inclusive' city, in which the social relations between the inhabitants of different cultural backgrounds and income levels are improved by the use of child-friendly design approaches. The living standards of the children and their families, from low, middle and high-income levels, need to be upgraded to higher standards.

The conducted research clearly addresses urgent societal matters such as social segregation, social mixing and child poverty. Next to the important societal relevance of the research, it also inhabits scientific relevance. This research describes the role of design of cities and its impact on children, the role of policy making, including playfulness in the life of cities, and social mixing. Eventually, the study will contribute to the

existing literature that deals with these specific topics.

Ethical dilemmas

Some of the tutorial sessions made me realize that I had encountered ethical issues and dilemmas without being aware of it. Sometimes my choice of words and ideas may seem wrong to someone else. I have to be more conscious on how to formulate certain words and sentences. Certain statements may appear unethical, even though my intentions are not wrong. Fortunately, the mentors are able to notice this quickly and suggest using different terminologies that are more appropriate. I may hurt someone with certain statements without knowing and therefore I am thankful for my mentors feedback. An example of this situation and miscommunication happened during the managerial strategy conversation. I made a statement saying that there would be a partnership between a local architect and a foreign architect, with the underlying thought that together they could find a way to bring back the harmonious mix, because Addis Ababa is 'the city' for mixing different income and ethnic groups. The foreign architect could share some references from present day mixed neighborhoods. I was expressing this idea while not being aware that this may sound offensive, neo-colonial and stereotyping. In the end, it doesn't matter if the architect is foreign or local, what matters is what they are doing. This made me realize to be careful before making a statement and taught me to take ethical dilemmas into consideration. This was definitely part of my learning process.

Another ethical dilemma that I consciously wanted to avoid was suggesting that specific income groups live in specific typologies. Fortunately, I was aware of this stereotype from the beginning, which is why I searched for elements in architecture to link the different groups. One of my starting points was that it should not be visible from the exterior that different income groups live in different typologies. Therefore, I have developed a scheme in my design strategy in which different income groups live harmoniously together within a cluster. The biggest architectural differentiations are expressed in the design and sizes of the dwelling units and therefore not openly expressed in the exterior of the housing blocks.

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